## Health and Sleep

## Explanations and tips for a good sleep hygene



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„What sleep is for the body, joy is for the mind supply of new vitality."

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## Part A: Basics of sleep

## Why do we sleep?

Just like oxygen, food and water, sleep is one of our daily needs. There are different assumptions about the biological benefits of sleep. Some assume, that the human body regenerates during sleep and repairs cells and tissue, which were damaged during the wakefulness. Other experts think, that sleep is necessary for the maintenance of the metabolism. There is also evidence, that sleep is essentiell for storing memories. Experts agree however, that healthy and sufficient sleep is vital for everyone.

## States of sleep

Many studies have shown that sleep is a process with two phases: REM sleep and non-REM sleep (REM = "Rapid Eye Movement"). NonREM sleep, in turn, is composed of several phases and accounts for about $75-80 \%$ of the sleep of an "average" young, healthy adult. The remainder consists of REM sleep.

Non-REM sleep consists of three sleep phases, called N1, N2, and N3. The phases differ in terms of brain activity, perceived depth of sleep, and how difficult it is to wake the person.

N1: N1 sleep is perceived as very light; awakened from this phase, many people think that they had not slept at all. Yet N1 sleep appears to be an important part of normal sleep. People suffering from insomnia, as well as older adults, spend more of their sleep in the N1 sleep phase than people without sleep disorders.

N2: A young adult's nighttime sleep is about 40-55\% N2 sleep. It is more difficult to wake a person up from this stage and most people know afterwards that they have been asleep.

N3: Brain functions during N3 sleep are also called long-wave sleep because they are characterized by slow, prominent waves called delta waves when brain waves are measured. N3 sleep is perceived as the deepest sleep. It is from this stage that waking is most difficult. People tend to have more N3 sleep after prolonged wakefulness.

REM: REM sleep is when most dreams occur. During REM sleep, frequent rapid eye movements (with eyelids closed) can be measured, and heart and breathing rates also become more irregular. Blood flow to the brain increases; brain activities during REM are similar to those during wakefulness. However, the so-called skeletal muscles are shut down during REM sleep. This part of the musculature is normally responsible for voluntary body movements, such as the movement of arms and legs. This is then "suppressed" during REM sleep.

Ideal typical sleep profile (modified according to Penzel et al., 2005)


## Sleep Regulators

There are two processes that regulate sleep and wakefulness - the sleep drive and the so-called circadian rhythm. In addition, the state of arousal can also influence our ability to sleep.

## Sleep Drive

Our sleep drive is lowest in the morning and increases steadily throughout the day. Sleep gradually reduces our sleep drive as we replenish our energy reserves. That's why napping just before bedtime (e.g., dozing off while watching TV in the evening) can make it harder to fall asleep later. The longer it has been since we last slept, the more pronounced the sleep drive is and the easier it is for us to fall asleep. If the sleep drive is very strong, we feel sleepy.

## Circadian rhythm

Humans have a strong "internal clock" that can influence many areas of life. This includes, for example, bodily functions such as digestion, body temperature and also the sleep-wake rhythm. Most of these internal clocks work roughly in a 24 -hour rhythm. Among other things, our internal clock uses daylight as a clock: when it is light, the body's activity increases, and when it is dark, the body's activity decreases. Irregular sleep patterns (e.g., shift work) weaken our biological clock. Fixed sleeping and waking times, on the other hand, are good clocks for our internal clock and thus support restful sleep.

## Arousal

Feeling "on guard" or anxious can override sleepiness (i.e., a strong sleep drive) and make it difficult to sleep.
For example, if a sleep-deprived person is anxious about a court date, he or she is more likely not to feel sleepy during the hearing, even though he or she did not get enough sleep the night before. However, when the hearing is over and the person can unwind, he or she might doze off while reading the newspaper, for example, because the strong sleep drive is no longer overridden by anxiety (arousal).

Thus, a person's current level of arousal (such as perceived threat, anxiety, many circling thoughts, or physical tension) can affect the balance between sleep drive and the likelihood of sleep at a given time. Common causes of high arousal at bedtime include thinking about issues that could not be dealt with or adequately resolved during the day, worrying about sleep itself, trying to remember upcoming tasks, or worrying that certain things are out of one's control.

## Sleepiness and tiredness

The terms sleepy and tired are often used interchangeably, but have different meanings.

- Tired means that the person has low energy but does not necessarily need to sleep.
- Sleepy, on the other hand, refers to the actual need for sleep.

Thinking carefully about one's own tiredness and sleepiness and specifically distinguishing between them helps to distinguish when one actually needs sleep (i.e. has a strong urge to sleep) and should therefore try to sleep, or whether there is rather a general lack of energy where it would be sufficient to rest the body.

# Part B: Things that can disturb your sleep 

## What are sleep disorders?

So-called "insomnia" is an impairment of night sleep in the sense of "too little sleep" and is considered the most common form of sleep disorders. This includes various forms such as problems falling asleep and staying asleep, early morning awakenings and generally unrestful sleep. Each form, in turn, can be associated with a variety of consequences for daytime well-being, such as increased daytime fatigue or concentration and performance disorders.

## PTSD and sleep

Post-traumatic stress disorder (PTSD) describes a range of symptoms that can occur in response to a potentially traumatic event, such as being involved in an accident or military combat mission, or being a victim of physical or sexual violence.
Symptoms include feeling "on guard" most of the time, reliving the traumatic event in the form of uncontrolled thoughts, images (called flashbacks), or nightmares, and feeling emotionally numb to people or situations.
In addition, sleep disturbances are a very common complaint of PTSD. Some sufferers report that they avoid sleeping for fear of nightmares, or even because they might not be able to respond to potentially dangerous situations while asleep. Further, they exhibit increased safety behaviors, such as specifically listening for noises from outside and checking door and window locks. Also, some sufferers of PTSD prefer to sleep in places other than the bedroom or try to delay their bedtime. Sleep may be particularly complicated by the fact that it itself brings back memories of the trauma, for example, if the traumatizing event occurred at night.

## Nightmares

Nightmares are dreams from which one wakes up and which are accompanied by strong negative emotions (such as fear or panic). After waking up, some sufferers mentally repeat the content of the nightmare in order to find out why they had the nightmare and what it might mean. However, experts suggest that avoiding sleep and mentally "replaying" nightmares increases the likelihood of future nightmares. PTSD sufferers in particular often experience traumarelated, usually distressing nightmares. Nightmares represent a severe impairment of sleep behavior and cause a high degree of suffering, which is why rapid treatment is important. Imagery Rehersal Therapy (IRT) according to Krakow \& Zadra (2006) is considered a very effective and proven form of treatment for nightmares. The goal is to change the content of a dream so that it no longer represents a burden or threat. For this purpose, individual particularly stressful and anxietyproducing scenes are rewritten with the help of a dream script and repeatedly relived within the framework of imaginations (internally imagined film scenes), so that the actual nightmare can be overwritten with the new content. In a study of PTSD patients, it was shown that the treatment reduced nightmares and PTSD symptoms and improved sleep quality.

## Depression and sleep

Sleep disorders also occur very frequently in depressive patients. These can occur in the form of problems falling asleep and staying asleep, early morning waking (waking up much earlier than desired/planned), or a morning low, in which those affected have difficulty getting out of bed. It has been widely confirmed that e.g. cognitive behavioral therapy is very effective for sleep disorders as well as for people with depression. In addition, better sleep can also significantly improve mood.

## Sleep apnea syndrome

Sleep apnea syndrome is a condition in which the airways (nose and throat) are completely or partially blocked. This can lead to a reduction in the amount of oxygen in the blood and, as a result, to reflexive waking. Symptoms of sleep apnea during the night include loud snoring, snuffling or gasping for air. Unless told by their partner, many people do not even know they have these symptoms. During the day, sleep apnea then manifests itself mainly through morning fatigue as well as sleepiness during the day. In addition, morning headaches that quickly resolve after getting up and waking up with a dry mouth could be clues. If you notice these symptoms regularly in yourself, you should talk to your doctor. Sleep apnea increases the risk of heart disease and stroke.

## Medication

Certain medications and substances can affect sleep. These include, for example, medications for asthma, some over-the-counter nasal drops/congestants, allergy and cold medications, some steroids, betablockers (medicine for heart conditions), medications for ADHD, and some antidepressants. Ask your doctor if one or more of the medicines you are taking may be affecting your sleep. However, do not stop taking medicines on your own until you talk to your doctor. "Sleeping pills" may be useful over a short period of time. However, long-term use can lead to tolerance development, causing you to need more pills for the same effect. In addition, prolonged use can cause psychological dependence. Individual tolerance to medications varies greatly, meaning that each person tolerates a different dose better and has different reactions to its use. For some people, the effects of medication reverberate for a long time, leaving them drowsy or lethargic all the next day. Use sleep medications only in the dosage prescribed by your doctor and tell him or her about any side effects.

## Teil C: Habits and sleep

## What is sleep hygiene?

Sleep hygiene refers to measures and behaviors that contribute to healthy and restful sleep. Even though many people are familiar with most of them, it is advisable, especially for people with sleep difficulties, to review their own habits with regard to the following rules.

## Tips for better sleep hygiene

## Tip 1: Better postpone your worries until tomorrow!

Preoccupying yourself in bed with small or large worries, overthinking problems, or planning future events can keep you awake. If such thoughts occur more frequently, it may be helpful to set aside a specific time during the day for worrying, problem-solving, and planning, and to postpone other intrusive thoughts during bedtime until the next day's "think-and-worry time." You will find that over time you will have fewer distressing thoughts while you are in bed. To help with this, you can use the "Set a Time to Worry" exercise in the CoachPTBS app:


App Store (Apple iOS)


Play Store (Google Android)

Download the CoachPTBS free of charge for your smartphone by scanning these codes or search for the word "CoachPTBS" in the stores.

Even though the app was primarily developed for soldiers and their families, you can use the content and exercises very well for yourself. When you first open the app, you will be asked whether you are a soldier or a dependant. Select "dependant" there. When you are asked to enter your name, you can choose any name or an imaginary name.

## Worry Time Exercise

One strategy that can calm worryful thoughts is to schedule time to think about worry. Although
seemingly the opposite would make sense, this can actually help you gain control over ruminating. If you find that you worry a lot at night, try scheduling a time during the day instead during which you think about issues that are on your mind. Briefly write down the thought on a piece of paper, then you can revisit it at the scheduled time. Try not to choose this "worry time" too close to bedtime. That way you will still have a chance to calm down afterwards.

Another phenomenon is that many people worry about not being able to fall asleep, which in turn keeps them awake. Keep in mind that although not sleeping can be uncomfortable, your body is also designed to tolerate some nights of "less than perfect" sleep. In fact, not sleeping for a manageable amount of time can increase your sleep drive, which in turn leads to better sleep in the aftermath. It's important to reduce anxiety before bedtime to increase your chances of getting restful, deep sleep.


## Tip 2: Don't look at the clock!

Keeping an eye on the time when you are in bed can increase frustration, which can interfere with sleep. Put your clock on the other side of the room, turn it around, and don't look at it in the middle of the night when you wake up or lie awake.

## Tip 3: Limit daytime sleep!

Sleeping at times other than your regular bedtime can weaken your sleep drive and upset your natural circadian sleep rhythm (see Part 1 of this booklet). However, if you find that you are very sleepy (not tired, but actually sleepy), you can take a short nap (15-30 minutes set an alarm!). Sleepy people more often make mistakes in everyday life, misjudge situations and can accidentally hurt themselves or others. In such a case, try not to stay awake.

If you feel you need a nap, the best time to take it is seven to nine hours after waking up in the morning - for most people that would be in the afternoon. The nap would then fit into the rhythm of your biological clock, which would have a natural dip (lower alertness) at
that time. Ideally, naps should always be taken at about the same time each day. You should take your nap in your bed, as this is how you train yourself on the connection between bed and sleep. Set an alarm clock so that you don't snooze too long.

## Tipp 4: Let the day end in peace! Develop a personal sleep ritual!

It is helpful to create a "buffer zone," a quiet period immediately before your bedtime when you can wind down and relax. This allows you to transition between the activities of the day and the night. Shaking off the excitement and tension of the day will calm you and allow your sleep to unfold naturally. If you need ideas on how to establish a buffer zone, check out the "practice part" of the CoachPTBS app.


App Store (Apple iOS)


Play Store (Google Android)

Download CoachPTBS free of charge for your smartphone by scanning these codes or search for the word „CoachPTBS" in the App stores

Tipp 5: Use the bedroom only for sleep!
While you are in bed, you should avoid activities that you normally do while awake. You should not read, watch TV, eat, study, or use your phone, tablet, or laptop. If you don't heed this advice, your brain will make a connection between bed and activities other than sleeping. So you may be training your brain to stay awake in bed. If, on the other hand, you use your bed exclusively for sleeping, you make it a place where sleep comes naturally. The brain's expectation of only sleeping in bed should be as strong as possible. Sexual activity is the only exception to this guideline.

The most important activity you should banish from bed is "trying to sleep", because this will inevitably interfere with your natural sleep process. If you notice that you are thinking about sleep itself while in bed, get up!
It can be difficult not to use your bed for other things, especially if you live in a one-bedroom apartment or a residential home. But it can prove to be an essential step in improving your sleep habits.

## Tipp 6: Avoid heavy meals for dinner!

During sleep, the digestive system slows down. A heavy meal shortly before bedtime can lead to stomach upset and heartburn during the night, which significantly disturbs sleep. An interval of about four hours between eating and going to bed is recommended so that food can still be digested. If you are still hungry, a light snack is advisable.

## Tipp 7: Avoid caffeine after noon!

Caffeine is a relatively long-lasting stimulant whose effects last for several hours after consumption. It can remain active for four to five hours after it has been consumed. In addition, there are big differences from person to person in how much and how long caffeine affects the body - older adults, for example, tend to be more sensitive to caffeine. If you want to make sure your sleep isn't affected by caffeine, avoid consuming it after noon. Also, limit your coffee intake to no more than three 250 ml cups per day.

## Tipp 8: Avoid extreme physical activity in the evening!

If you are active in sports just before your bedtime, it can have a negative impact on your sleep. Sport activates the body, increases the core body temperature and thus prevents the natural lowering of the body temperature shortly before sleep. Strenuous physical exercise should be stopped at least four hours before sleep. Gentle stretching exercises, on the other hand, are fine and can even have a relaxing effect.

## Tipp 9: Avoid alcohol in the evening!

Although alcoholic beverages can have a relaxing effect and make people feel dozy or drowsy, the opposite effect can occur during the night. The metabolism of alcohol during the night can lead to restless and fitful sleep. For most people - unless there is a medical history of alcoholism - a glass of beer or wine with dinner is unlikely to have a negative effect on their sleep. However, it may be advisable for sensitive people to avoid alcohol altogether in the evening.

## Tipp 10: Provide a comfortabe sleeping environment!

Your sleeping environment should be quiet, dark (or equipped with a night light), safe and well tempered. Noise and (possibly dimmed) light can disturb or shorten your sleep. If you are disturbed by unwanted noise, one option is to sleep with "white noise" in the background, i.e. to use soft sounds/frequencies to mask the disturbing noise. This could be the sound of a fan or the electric hum of the radio.

## Tipp 11: Avoid nicotin before going to sleep!

Nicotine is broken down in the body relatively quickly, usually about two hours after use. If you smoke just before bedtime, your body may crave new nicotine in the middle of the night. Therefore, it is best to avoid smoking at least two hours before bedtime.

## All tips at a glance

For a better overview and as a fact sheet, all rules are summarized again:


Texts formulated according to:

- US-American App „CBTi Coach" of the external cooperation partners in the project „Coach PTBS" (VA's National Center for PTSD und Stanford University Medical Center sowie DoD's DHA Connected Health und VA Sierra Pacific Mental Illness Research, Education, \& Clinical Center.)
More information:
https://www.ptsd.va.gov/professional/materials/apps/cbticoach_ app_pro.asp [Juli 2018]
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