

Why Sleep Matters to your Health How to get a good night's sleep

You may have heard the expression: you can sleep when you die. Sleep scientists say that's the worst advice that you can give to someone. Sleep deprivation can shorten your life span and increase your chance of heart disease, diabetes, stroke and suicide.

The recommended amount of nightly sleep is still between seven and eight hours. However, only 59 percent of Americans get that amount of sleep and 40 percent get less than seven hours. Although those figures have not changed since the 1990s, Americans slept more in the 1940s. The most recent Gallop poll on sleep showed people were sleeping 6.8 hours in 2013 when compared to 7.9 hours in the 1940s.

Stages of Sleep and the Brain

There are three stages of sleep: rapid eye movement (REM) sleep, and non-REM deep characterized by slow-wave or deep sleep. It's common to cycle in and out of REM and non-REM sleep throughout the night. Dreaming occurs only during REM sleep, which is why people don't recall their dreams if they wake up during non-REM sleep.

While we sleep, our brain is busy consolidating and pruning information acquired throughout the day. "The brain is replaying the information that is stored in the hippocampus, which strengthens memories. Our brains are also making decisions about what is important to keep or eliminate. Emotionally encoded memories are better remembered than neutral memories," says Daniel Pardi, M. S. Pardi is currently a Ph D. in neuroscience candidate at Leiden University. He studies the influence of sleep loss on cognition, decision – making and hormones.

Different stages of sleep appear to play different roles in the learning and memory process. For example, the non-REM sleep cycle plays a significant helping people learn new information by processing and consolidating it. REM sleep, on the other hand, seems to play a critical role in consolidating procedural information such as how to ride a bike or play a musical instrument. Visual learning seems to depend on the amount and timing of both REM and non-REM sleep.

However, when you're sleep deprived, your ability to learn and remember new information is impaired. You have trouble focusing, paying attention and lose your ability to access previously learned information.

In addition, sleep deprivation may affect your interpretation of events. You may lose the ability to assess a situation accurately and make a sound decision. Research shows people will take frequent and large risks when they are sleep deprived. "The ability to weigh the pros and cons of decision is compromised. People are more likely to follow their personal standards. This can lead to poor financial choices such as gambling or lifestyle choices such as eating doughnuts or not going to the gym," says Pardi. The reward system (limbic) of the brain is over-stimulated compared to the amygdala that controls emotional impulses.

Disruption to Circadian Rhythms

Your circadian rhythm is basically a 24-hour internal clock that runs in the background of your brain. It cycles between sleepiness and alertness at regular intervals. It's also known as your sleep/wake cycle. A part of your brain called the hypothalamus controls your circadian rhythm. However, lightness and darkness can also affect the cycle. When the sun sets and it becomes dark, your eyes send a signal to the hypothalamus that it's time to feel tired. Your brain, in turn, sends a signal to your body to release melatonin, which makes your body tired. As a result, your circadian rhythm tends to coincide with the cycle of daytime and nighttime. Additionally, individuals who work night shifts or change time zones tend to have trouble adjusting to new time schedule and are often sleep deprived. This can lead to long term health consequences.

Shift workers, including emergency responders, nurses, and hotel workers, are particularly vulnerable. A long-term study of nurses performing night shifts showed a significantly higher risk of diabetes, cancer and cardiovascular disease, according to Pardi. The World Health Organization even classified shift workers as a "probable carcinogen."

He pointed out that you don't have to travel to a foreign country or do a night shift to have your circadian rhythm disrupted. "In our 24/7 digital environment, we are constantly exposed to artificial light from TV screens computers, tablets and cell phones. The constant adjustment to artificial light results in impaired physiology, behavior and cognition" says Pardi.

Aging and Sleep

Baby boomers need just a much, if not more, sleep as they age but their brains are incapable of generating the proper amount of sleep. According to sleep scientist Matthew Walker and author of *Why We Sleep*, people lose total sleep as well as the deepest stage of sleep – nonREM sleep – as they age. "By the time you're in your 50s, you perhaps lost almost 40 to 50 percent of the deep sleep you had when you were younger. By age 70, you may have lost 90 percent of that deep sleep." Walker directs the center for Human Sleep Science at the University of California, Berkeley, where he's a professor of neuroscience and psychology. He recently discussed this book on National Public Radio.

The quality of sleep also suffers as people age. Sleep is more fragmented with more frequent awakenings. People wake up more often during the night for a variety of reasons ranging from pain to making a trip to the bathroom.

Older adults also experience a shift in circadian rhythms. They tend to wake up earlier and go to bed earlier. They also tend to nap during the day which can be beneficial if they limit the nap to about 20 minutes – a power nap. Healthy older adults also tend to be better sleepers when compared to unhealthy adults.

What to Avoid

Unfortunately, the sleeping pills currently available are a broad set of chemicals called sedative hypnotics that do not produce naturalistic sleep, according to Walker. "Sedation is not sleep. It's very different. It doesn't give you the restorative natural benefits of sleep." Once you stop

taking sleeping pills, your bad habits tend to return. “But worse, you tend to have what’s called rebound insomnia, where your sleep is even worse,” says Walker. Another concern with sleeping pills is that they have been linked to a high risk of death and cancer.

Walker also discourages consuming caffeine after 2PM and having a nightcap. Alcohol is a sedative and contributes to fragmented sleep and dream (REM) sleep. He also advises against going to bed too full, too hungry or leaving the TV on at night.

What to Do

- Go to bed and wake-up at the same time each day.
- Set digital devices to “night-time” to avoid blue light and limit screen time before bedtime.
- Set the thermostat between 65 and 67 degrees so the body can drop its temperature for a good night’s sleep.
- If you can’t get to sleep within an hour, leave the bedroom and read, meditate or take a warm bath.

Natural Sleep Treatments

- Both Walker and Pardi recommended cognitive behavioral treatment for insomnia (CBTI), which can only take a few weeks. It can be as effective as sleeping pills rebound insomnia effect.
- Choose natural sleep aids from reputable supplement companies. Melatonin only helps with the timing of sleep. It can be useful when you’re traveling across time zones and need to adjust your sleep schedule.
- See your doctor if you have sleep apnea, which can increase your risk of several health conditions.

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