SELINSGROVE AREA HIGH SCHOOL

SEALS Health News

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January: to your Health!

And mamma in her 'kerchief, and I in my cap,
Had just settled down for a long winter's nap...,

Experts say that if you feel drowsy during the day, even during boring activities, you haven't had enough sleep.

What Is Sleep?: A Dynamic Activity

Until the 1950s, most people thought of sleep as a passive, dormant part of our daily lives. We now know that our brains are very active during sleep. Moreover, sleep affects our daily functioning and our physical and mental health in many ways that we are just beginning to understand.

So What is Sleep?....

Nerve-signaling chemicals called neurotransmitters control whether we are asleep or awake by acting on different groups of nerve cells, or neurons, in the brain. Neurons in the brainstem, which connects the brain with the spinal cord, produce neurotransmitters such as serotonin and norepinephrine that keep some parts of the brain active while we are awake. Other neurons at the badeepse of the brain begin signaling when we fall asleep. These neurons appear to "switch off" the signals that keep us awake. Research also suggests that a chemical called adenosine builds up in our blood while we are awake and causes drowsiness.

America Sleep Association

What are the Stages of Sleep?

During sleep, we usually pass through five phases of sleep: stages 1, 2, 3, 4, and REM (rapid eye movement) sleep. These sleep stages progress in a cycle from stage 1 to REM sleep, then the cycle starts over again with stage 1. We spend almost 50 percent of our total sleep time in stage 2 sleep, about 20 percent in REM sleep, and the remaining 30 percent in the other stages. Infants, by contrast, spend about half of their sleep time in REM sleep.

How Much Sleep Do We Need?

The amount of sleep each person needs depends on many factors, including age. Infants generally require about 16 hours a day, while teenagers need about 9 hours on average. For most adults, 7 to 8 hours a night appears to be the best amount of sleep (this may vary.)

Stages of Sleep

Stage One Sleep

During stage 1, which is light sleep, we drift in and out of sleep and can be awakened easily. Our eyes move very slowly and muscle activity slows. People awakened from stage 1 sleep often remember fragmented visual images. Many also experience sudden muscle contractions called hypnic jerks, often preceded by a sensation of starting to fall. These sudden movements are similar to the "jump" we make when startled.

Stage Two Sleep

When we enter stage 2 sleep, our eye movements stop and our brain waves (fluctuations of electrical activity that can be measured by electrodes) become slower, with occasional bursts of rapid waves called sleep spindles.

Stage Three, Four & REM Sleep

In stage 3, extremely slow brain waves called delta waves begin to appear, interspersed with smaller, faster waves. By stage 4, the brain produces delta waves almost exclusively. It is very difficult to wake someone during stages 3 and 4, which together are called deep sleep. There is no eye movement or muscle activity. People awakened during deep sleep do not adjust immediately and often feel groggy and disoriented for several minutes after they wake up. Some children experience bedwetting, night terrors, or sleepwalking during deep sleep.

When we switch into REM sleep, our breathing becomes more rapid, irregular, and shallow, our eyes jerk rapidly in various directions, and our limb muscles become temporarily paralyzed during sleep. Our heart rate increases, our blood pressure rises, and males develop penile erections. When people awaken during REM sleep, they often describe bizarre and illogical tales – dreams.

How Many Hours of Sleep Do I Need?

The first REM sleep period usually occurs about 70 to 90 minutes after we fall asleep. A complete sleep cycle takes 90 to 110 minutes on average. The first sleep cycles each night contain relatively short REM periods and long periods of deep sleep. As the night progresses, REM sleep periods increase in length while deep sleep decreases.

People awakened after sleeping more than a few minutes are usually unable to recall the last few minutes before they fell asleep. This sleep-related form of amnesia is the reason people often forget telephone calls or conversations they've had in the middle of the night. It also explains why we often do not remember our alarms ringing in the morning if we go right back to sleep after turning them off.

What Does Sleep Do For Us?

Although scientists are still trying to learn exactly why people need sleep, animal studies show that sleep is necessary for survival. For example, while rats normally live for two to three years, those deprived of REM sleep survive only about 5 weeks on average, and rats deprived of all sleep stages live only about 3 weeks. Sleep-deprived rats also develop abnormally low body temperatures and sores on their tail and paws. The sores may develop because the rats' immune systems become impaired. Some studies suggest that sleep deprivation affects the immune system in detrimental ways.

Impact of Sleep on The Nervous System

Sleep appears necessary for our nervous systems to work properly. Too little sleep leaves us drowsy and unable to concentrate the next day. It also leads to impaired memory and physical performance and reduced ability to carry out math calculations. If sleep deprivation continues, hallucinations and mood swings may develop. Some experts believe sleep gives neurons used while we are awake a chance to shut down and repair themselves. Without sleep, neurons may become so depleted in energy or so polluted with byproducts of normal cellular activities that they begin to malfunction. Sleep also may give the brain a chance to exercise important neuronal connections that might otherwise deteriorate from lack of activity.

How Does Sleep Affect Growth In Children?

Deep sleep coincides with the release of growth hormone in children and young adults. Many of the body's cells also show increased production and reduced breakdown of proteins during deep sleep. Since proteins are the building blocks needed for cell growth and for repair of damage from factors like stress and ultraviolet rays, deep sleep may truly be "beauty sleep."

Activity in parts of the brain that control emotions, decision-making processes, and social interactions is drastically reduced during deep sleep, suggesting that this type of sleep may help people maintain optimal emotional and social functioning while they are awake. A study in rats also showed that certain nerve-signaling patterns which the rats generated during the day were repeated during deep sleep. This pattern repetition may help encode memories and improve learning.

Top Ten Benefits of Sleep

Sleep Benefit #1: Improves Blood Circulation

Blood circulation transfers oxygen, minerals, and nutrients to every part of the body. In addition, maintaining proper circulation promotes organ function and cell growth. Common symptoms of poor blood flow throughout the body are tingling sensations or numbness in certain parts of the body, an irregular heartbeat, pain in the legs, muscle cramps, headaches, edema, dry skin, hair loss, dizziness, fatigue, and cold feet and hands.

Although the research cannot explain why, acute sleep loss and cardiovascular health go hand-in-hand. As a pattern of sleep deprivation forms, vascular health is compromised and can eventually result in the development of cardiovascular disease. On the same note, getting an adequate amount of sleep improves blood circulation

Sleep Benefit #2: Appetite Regulation

It is well known that appetite is regulated by hormones leptin and ghrelin. In the brain, leptin – secreted by fat cells – signals fullness while ghrelin – secreted by the digestive system – signals hunger to stimulate the appetite. Together these hormones maintain the body's weight.

Sleep deprivation causes leptin blood levels to drop reducing one's ability to recognize being full. Additionally, ghrelin levels elevate for an increase in appetite. In other words, not getting enough sleep results in a hormonal imbalance which causes you to overeat.

Sleep Benefit #3: Improves Memory

Sleep plays a significant role in memory consolidation. When you sleep, your body is at rest, but your brain is busy processing the day's events. During deep sleep, the brain is able to make better connections and link memories together based on what was learned during the day.

Chronic sleep deprivation prevents the neurons in the brain from firing optimally. Thereby, the brain has trouble receiving and learning new information as well as recalling previously learned information. Memory recall requires adequate sleep and rest.

Sleep Benefit #4: Increased Energy

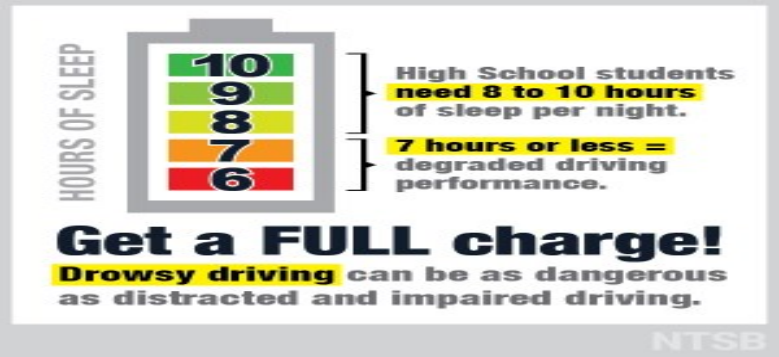
While this may seem like an obvious benefit of sleep, the relationship between energy and sleep is quite interesting. During sleep, neuronal activity is reduced. Research suggests that as the neuronal activity goes down, there is a surge in ATP levels, which is the energy currency of brain cells.

Therefore, an important function of sleep is related to providing the brain with increased energy stores. After waking up, this energy is used to keep our bodies functioning and ready for whatever life has in store.

Sleep Benefit #5: Prevents Excessive Weight Gain

Since sleep has such a strong influence on ghrelin and leptin, it only makes sense to say that while sleep deprivation causes overeating, getting adequate amounts of sleep leads to weight maintenance with appetite regulation. Therefore, plenty of sleep prevents excessive weight gain through the regulation and homeostasis of leptin and ghrelin.

Top Ten Benefits of Sleep (cont.)



Sleep Benefit #6: Promotes Healing

Protein is the macronutrient needed for building muscle mass as well as facilitating many chemical reactions in the body. Your cells produce more protein while you are sleeping, which increases tissue healing and regeneration.

These protein molecules form the building blocks of cells, allowing them to repair any damage from skin cells to muscle tissue and everything in between.

Sleep Benefit #7: Stress Relief

Stress is a normal part of life. It is a physical reaction to the environment around us, as well as our own thoughts. Stress causes your body to release a series of hormones – cortisol, adrenaline, etc. – to address the situation at hand.

Stress can be positive by keeping us alert, motivated, and ready to avoid danger. However, stress becomes negative when a person continues to face stress without relief or relaxation between stressors. This is where sleep comes in. When you sleep, your body begins to relax, thereby normalizing hormone levels and relieving stress.

Sleep Benefit #8: Prevent Impotence

Impotence, also known as erectile dysfunction, is the inability for a male to sustain an erection. Some factors that contribute to this disorder include stress, illness, and poor blood circulation. Fortunately, sleep can help increase blood flow to the genital regions of men in addition to the rest of the body.

Quality sleep keeps testosterone levels up, prevents impotence, and ensures that you are not too exhausted for sex. Not getting enough sleep, on the other hand, is correlated with reduced testosterone levels.

Sleep Benefit #9: Reduces Inflammation

Many chronic conditions are a result of inflammation in various parts of the body. Although there is a host of anti-inflammatory foods, simply getting enough sleep can help reduce some of the chronic inflammation.

Studies on the effects of sleep loss have shown that mediators of inflammation are influenced by sleep. As these mediators are elevated by sleep loss, shifts in basal inflammatory cytokines occur. Over time, sleep loss can lead to the future development of metabolic syndrome disease as a result of increased inflammation.

Sleep Benefit #10: Mood Regulation

Mood and sleep is one relationship that is easy to see every day. When you don't sleep enough, it affects your mood and energy. Running low on sleep and it seems like the world is out to get you. Sleep deprivation leads to increased irritability, anger, and hostility. When you sleep, your body normalizes hormone levels resulting in mood regulation, similar to the mechanism behind stress relief

Recommended Amount of Sleep for Pediatric Populations*

Age	Recommended Sleep Hours per 24 Hour Period
Infants: 4 to 12 months	12 to 16 hours (including naps)
Toddlers: 1 to 2 years	11 to 14 hours (including naps)
Preschoolers: 3 to 5 years	10 to 13 hours (including naps)
Gradeschoolers: 6 to 12 years	9 to 12 hours
Teens: 13 to 18 years	8 to 10 hours

*The American Academy of Pediatrics (AAP) has issued a Statement of Endorsement supporting these guidelines from the American Academy of Sleep Medicine (AASM).

Source: Paruthi S, Brooks LJ, D'Ambrosio C, Hall W, Kotagal S, Lloyd RM, Malow B.Maski K, Nichols C, Quan SF, Rosen CL, Troester MM, Wise MS. Recommended Amount of Sleep for Pediatric Populations: A Statement of the American Academy of Sleep Medicine. J Clin Sleep Med. 2016 May 25. pii: jc-00158-16. PubMed PMID: 27250809.

What happens if I don't sleep?

Everyone's experienced the fatigue, short temper and lack of focus that often follow a poor night's sleep.

An occasional night without sleep makes you feel tired and irritable the next day, but it won't harm your overall health.

After several sleepless nights, the mental effects become more serious. Your brain will fog, making it difficult to concentrate and make decisions. You'll start to feel depressed, and may fall asleep during the day. Your risk of injury and accidents at home, work and on the road also increases. Everyone's experienced the fatigue, short temper and lack of focus that often follow

Simple lifestyle changes can make a world of difference to your quality of sleep.

Follow these 10 tips for a more restful night.

Keep regular sleep hours

Going to bed and getting up at roughly the same time every day will program your body to sleep better. Choose a time when you're likely to feel tired and sleepy.

Create a restful sleeping environment

Your bedroom should be a peaceful place for rest and sleep. Temperature, lighting and noise should be controlled so that your bedroom environment helps you to fall (and stay) asleep.

If you have a pet that sleeps in the room with you, consider moving it somewhere else if it often disturbs you in the night.

Exercise regularly

Moderate exercise on a regular basis, such as swimming or walking, can help relieve some of the tension built up over the day. Make sure that you don't do vigorous exercise, such as running or the gym, too close to bedtime, though, as it may keep you awake.

Make sure your bed is comfortable

It's difficult to get restful sleep on a mattress that's too soft or too hard, or a bed that's too small or old.

Cut down on caffeine

Cut down on caffeine in tea, coffee, energy drinks or colas, especially in the evening. Caffeine interferes with the process of falling asleep, and also prevents deep sleep. Instead, have a warm, milky drink or herbal tea.

Don't over-indulge

Too much food or alcohol, especially late at night, can interrupt your sleep patterns. Alcohol may help you to fall asleep initially, but it will disrupt your sleep later on in the night.

Don't smoke

Nicotine is a stimulant. Smokers take longer to fall asleep, they wake up more frequently, and they often have more disrupted sleep.

Try to relax before going to bed

Have a warm bath, listen to quiet music or do some gentle yoga to relax the mind and body. Your doctor may be able to recommend a helpful relaxation CD.

Write away your worries

If you tend to lie in bed thinking about everything you have to do tomorrow, set aside time before bedtime to make plans for the next day. The aim is to avoid doing these things when you're in bed, trying to sleep.

If you can't sleep, get up

If you can't sleep, don't lie there worrying about it. Get up and do something you find relaxing until you feel sleepy again, then go back to bed.

If lack of sleep is persistent and affecting your daily life, make an appointment to see your physician

Insomnia: Relaxation techniques and sleeping habits

Nearly one out of five people sometimes have trouble with insomnia. It is often difficult to say why someone is sleeping poorly. Using relaxation techniques and changing sleeping habits can help you fall asleep faster and get more restful sleep.

Many people with insomnia want to get more sleep again without having to take sleeping pills. It can then be worth giving relaxation techniques a try and checking whether the problems might be caused by certain habits, such as drinking coffee late in the evening. It is also important to not worry too much about how much sleep you get. Lying in bed and worrying about not being able to fall asleep can actually prevent you from sleeping.

How do relaxation techniques work?

The aim of relaxation techniques is to achieve physical and mental relaxation. They are meant to reduce physical tension and interrupt the thought processes that are affecting sleep. Studies show that people who have learned relaxation techniques sleep a bit longer at night. The main benefit of the relaxation techniques was being able to fall asleep somewhat more quickly. But these approaches don't help everyone.

There are different types of relaxation techniques:

Progressive muscle relaxation, also called Jacobson's or deep muscle relaxation: This technique involves tensing groups of muscles all over the body one by one and then consciously relaxing them again. You can learn muscle relaxation by visiting a course or using an audio training course.

Autogenic training (AT): Autogenic training involves focusing awareness on different parts of the body and consciously relaxing them. At an advanced level, even involuntary bodily functions like pulse and breathing can be influenced to achieve deep physical relaxation. Autogenic training is taught in courses.

Biofeedback: This method helps you to feel how your body reacts to tensing and relaxing. It involves placing electrodes on your body to measure muscle tension, your pulse and brain activity. You can monitor these different measurements on a screen and see how muscle relaxation or thinking particular thoughts affects them. Biofeedback can be done at the doctor's or by using a portable biofeedback device at home once you've been instructed in how to use it.

Imagery (visualizations): Another common type of relaxation training is imagery, where you visualize peaceful, pleasant scenes or imagine yourself breathing quietly, gently falling asleep and having a good night's sleep.

Selinsgrove Area School District

Certain Foods can make us Sleepy!

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Information brought to you by:
NIH
Kidshealth.org
American Sleep Association

So, what are the foods that might help you sleep? Here are the top 10.

Poultry – Chicken or Turkey has tryptophan. Tryptophan is an amino acid that you can only get from what you eat/drink. It helps your body make serotonin (a relaxing mood hormone) which then helps your body make melatonin (a hormone that controls sleep cycles).

Fish – Vitamin B6 is abundant in fish, with salmon, tuna, and halibut having the most. B6 is what makes melatonin (melatonin is normally triggered by being in the dark). By eating fish for dinner you can give that melatonin a head start before turning out the lights.

Yogurt – Calcium processes hormones that help you sleep which are tryptophan and melatonin. Calcium, of course, can be found in anything dairy related if you don't like yogurt. Other things you could try are milk or cheese and crackers

Kale – This leafy green is also rich in calcium which again is important in making those sleep hormones go to work that we have mentioned above.

Bananas – They are high in potassium which helps to KEEP you asleep. It also has tryptophan and magnesium which are natural sedatives.

Whole Grains –Encourages insulin production that results in tryptophan activity in the brain. It also has magnesium which is said to help you STAY asleep. When magnesium levels are too low you are more likely to wake up during the night.

Honey – Glucose in honey lowers levels of orexin, orexin is a neurotransmitter in the brain that makes you more alert. Honey will put that alertness in reverse.

Nuts – Walnuts, flax seeds, pumpkin seeds, sunflower seeds. These all boost serotonin levels by having magnesium and tryptophan.

Eggs – Eggs are popular in the morning, but they also can make you sleepy due to having tryptophan. Try to have some breakfast for supper and see what happens.

White Rice – White rice has a high glycemic index. This simply means that they will give you a natural increase in blood sugar and insulin levels, which in turn, helps tryptophan go to work in your brain faster.

The key to remember is foods with a mix of calcium, potassium, magnesium, tryptophan, and B6 are going to be the foods to look for. All of the above have one of these or more. By trying these foods in the evening, you may be surprised by how fast you can fall asleep.