WHY DO I NEED TO SLEEP? pdf

1: Why Do Some People Need More Sleep Than Others? â€“ HealthyWay

The amount of sleep a person needs depends a lot on his or her age. Babies sleep a lot â€" about 14 to 15 hours a day! But many older people only need about 7 or 8 hours of sleep each night.

Where can I get more information? Introduction Sleep is an important part of your daily routineâ€"you spend about one-third of your time doing it. Quality sleep â€" and getting enough of it at the right times -- is as essential to survival as food and water. Sleep is important to a number of brain functions, including how nerve cells neurons communicate with each other. In fact, your brain and body stay remarkably active while you sleep. Recent findings suggest that sleep plays a housekeeping role that removes toxins in your brain that build up while you are awake. Everyone needs sleep, but its biological purpose remains a mystery. Sleep affects almost every type of tissue and system in the body â€" from the brain, heart, and lungs to metabolism, immune function, mood, and disease resistance. Research shows that a chronic lack of sleep, or getting poor quality sleep, increases the risk of disorders including high blood pressure, cardiovascular disease, diabetes, depression, and obesity. Sleep is a complex and dynamic process that affects how you function in ways scientists are now beginning to understand. This booklet describes how your need for sleep is regulated and what happens in the brain during sleep. Anatomy of Sleep Several structures within the brain are involved with sleep. The hypothalamus, a peanut-sized structure deep inside the brain, contains groups of nerve cells that act as control centers affecting sleep and arousal. Within the hypothalamus is the suprachiasmatic nucleus SCN â€" clusters of thousands of cells that receive information about light exposure directly from the eyes and control your behavioral rhythm. Some people with damage to the SCN sleep erratically throughout the day because they are not able to match their circadian rhythms with the light-dark cycle. The brain stem, at the base of the brain, communicates with the hypothalamus to control the transitions between wake and sleep. The brain stem includes structures called the pons, medulla, and midbrain. Sleep-promoting cells within the hypothalamus and the brain stem produce a brain chemical called GABA, which acts to reduce the activity of arousal centers in the hypothalamus and the brain stem. The thalamus acts as a relay for information from the senses to the cerebral cortex the covering of the brain that interprets and processes information from short- to long-term memory. During most stages of sleep, the thalamus becomes quiet, letting you tune out the external world. But during REM sleep, the thalamus is active, sending the cortex images, sounds, and other sensations that fill our dreams. People who have lost their sight and cannot coordinate their natural wake-sleep cycle using natural light can stabilize their sleep patterns by taking small amounts of melatonin at the same time each day. The basal forebrain, near the front and bottom of the brain, also promotes sleep and wakefulness, while part of the midbrain acts as an arousal system. Release of adenosine a chemical by-product of cellular energy consumption from cells in the basal forebrain and probably other regions supports your sleep drive. Caffeine counteracts sleepiness by blocking the actions of adenosine. The amygdala, an almond-shaped structure involved in processing emotions, becomes increasingly active during REM sleep. Each is linked to specific brain waves and neuronal activity. Stage 1 non-REM sleep is the changeover from wakefulness to sleep. During this short period lasting several minutes of relatively light sleep, your heartbeat, breathing, and eye movements slow, and your muscles relax with occasional twitches. Your brain waves begin to slow from their daytime wakefulness patterns. Stage 2 non-REM sleep is a period of light sleep before you enter deeper sleep. Your heartbeat and breathing slow, and muscles relax even further. Your body temperature drops and eye movements stop. Brain wave activity slows but is marked by brief bursts of electrical activity. You spend more of your repeated sleep cycles in stage 2 sleep than in other sleep stages. Stage 3 non-REM sleep is the period of deep sleep that you need to feel refreshed in the morning. It occurs in longer periods during the first half of the night. Your heartbeat and breathing slow to their lowest levels during sleep. Your muscles are relaxed and it may be difficult to awaken you. Brain waves become even slower. REM sleep first occurs about 90 minutes after falling asleep. Your eyes move rapidly from side to side behind closed eyelids. Mixed frequency brain wave activity becomes closer to that seen in wakefulness. Your breathing becomes faster and irregular, and your heart rate and blood pressure increase to near waking levels. Your arm and leg muscles

become temporarily paralyzed, which prevents you from acting out your dreams. As you age, you sleep less of your time in REM sleep. Sleep mechanisms Two internal biological mechanismsâ€”circadian rhythm and homeostasisâ€”work together to regulate when you are awake and sleep. Circadian rhythms direct a wide variety of functions from daily fluctuations in wakefulness to body temperature, metabolism, and the release of hormones. They control your timing of sleep and cause you to be sleepy at night and your tendency to wake in the morning without an alarm. Circadian rhythms synchronize with environmental cues light, temperature about the actual time of day, but they continue even in the absence of cues. Sleep-wake homeostasis keeps track of your need for sleep. The homeostatic sleep drive reminds the body to sleep after a certain time and regulates sleep intensity. This sleep drive gets stronger every hour you are awake and causes you to sleep longer and more deeply after a period of sleep deprivation. Factors that influence your sleep-wake needs include medical conditions, medications, stress, sleep environment, and what you eat and drink. Perhaps the greatest influence is the exposure to light. Specialized cells in the retinas of your eyes process light and tell the brain whether it is day or night and can advance or delay our sleep-wake cycle. Exposure to light can make it difficult to fall asleep and return to sleep when awakened. Night shift workers often have trouble falling asleep when they go to bed, and also have trouble staying awake at work because their natural circadian rhythm and sleep-wake cycle is disrupted. In the case of jet lag, circadian rhythms become out of sync with the time of day when people fly to a different time zone, creating a mismatch between their internal clock and the actual clock. Your need for sleep and your sleep patterns change as you age, but this varies significantly across individuals of the same age. Babies initially sleep as much as 16 to 18 hours per day, which may boost growth and development especially of the brain. School-age children and teens on average need about 9. Most adults need hours of sleep a night, but after age 60, nighttime sleep tends to be shorter, lighter, and interrupted by multiple awakenings. Elderly people are also more likely to take medications that interfere with sleep. In general, people are getting less sleep than they need due to longer work hours and the availability of round-the-clock entertainment and other activities. Many people feel they can "catch up" on missed sleep during the weekend but, depending on how sleep-deprived they are, sleeping longer on the weekends may not be adequate. You spend about 2 hours each night dreaming but may not remember most of your dreams. Events from the day often invade your thoughts during sleep, and people suffering from stress or anxiety are more likely to have frightening dreams. Dreams can be experienced in all stages of sleep but usually are most vivid in REM sleep. Some people dream in color, while others only recall dreams in black and white. The Role of Genes and Neurotransmitters Chemical signals to sleep Clusters of sleep-promoting neurons in many parts of the brain become more active as we get ready for bed. GABA is associated with sleep, muscle relaxation, and sedation. Norepinephrine and orexin also called hypocretin keep some parts of the brain active while we are awake. Other neurotransmitters that shape sleep and wakefulness include acetylcholine, histamine, adrenaline, cortisol, and serotonin. Genes and sleep Genes may play a significant role in how much sleep we need. Scientists have identified several genes involved with sleep and sleep disorders, including genes that control the excitability of neurons, and "clock" genes such as Per, tim, and Cry that influence our circadian rhythms and the timing of sleep. Genome-wide association studies have identified sites on various chromosomes that increase our susceptibility to sleep disorders. Also, different genes have been identified with such sleep disorders as familial advanced sleep-phase disorder, narcolepsy, and restless legs syndrome. Some of the genes expressed in the cerebral cortex and other brain areas change their level of expression between sleep and wake. Several genetic modelsâ€”including the worm, fruit fly, and zebrafishâ€”are helping scientists to identify molecular mechanisms and genetic variants involved in normal sleep and sleep disorders. Additional research will provide better understand of inherited sleep patterns and risks of circadian and sleep disorders. Sleep studies Your health care provider may recommend a polysomnogram or other test to diagnose a sleep disorder. A polysomnogram typically involves spending the night at a sleep lab or sleep center. It records your breathing, oxygen levels, eye and limb movements, heart rate, and brain waves throughout the night. Your sleep is also video and audio recorded. The data can help a sleep specialist determine if you are reaching and proceeding properly through the various sleep stages. Results may be used to develop a treatment plan or determine if further tests are needed. Smart technology can record sounds and movement during sleep,

journal hours slept, and monitor heart beat and respiration. Using a companion app, data from some devices can be synced to a smartphone or tablet, or uploaded to a PC. Other apps and devices make white noise, produce light that stimulates melatonin production, and use gentle vibrations to help us sleep and wake. Here are a few tips to improve your sleep: Set a schedule â€" go to bed and wake up at the same time each day. Exercise 20 to 30 minutes a day but no later than a few hours before going to bed. Avoid caffeine and nicotine late in the day and alcoholic drinks before bed. Relax before bed â€" try a warm bath, reading, or another relaxing routine. See a doctor if you have a problem sleeping or if you feel unusually tired during the day. Most sleep disorders can be treated effectively. A key focus of research is to understand the risks involved with being chronically sleep deprived and the relationship between sleep and disease. People who are chronically sleep deprived are more likely to be overweight, have strokes and cardiovascular disease, infections, and certain types of cancer than those who get enough sleep.

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2: Sleep Needs: What to Do If Youâ€™re Not Getting Enough Sleep

While adults need hours of sleep per night, one-year-olds need roughly 11 to 14 hours, school age children between 9 and 11, and teenagers between 8 and During these critical periods of growth and learning, younger people need a heavy dose of slumber for optimal development and alertness.

By Tom Stafford 18 November Some people need eight hours. Others can exist on four. But the bottom line is that everybody needs sleep - it is as essential as breathing and eating. Yet, despite decades of study, scientists still do not know why we do it. However, there are some intriguing clues and theories. In humans the need for sleep gets so strong after a few days that nothing will keep you awake â€” with reports of people falling asleep standing up, even whilst being kicked or having intolerably loud music played at them. Within days of having no sleep, people report confusion, forgetfulness and hallucinations. In case you are wondering, the world record for going without sleep is eleven days. But saying that we sleep because we are tired is rather like saying we eat because we are hungry â€” it is why we sleep, but not necessarily why we need it. Memory aid One theory that has emerged in recent years is that sleep helps us to process and consolidate new memories. Our memory system is a psychological wonder, and several studies have suggested that sleep provides some behind-the-scenes maintenance. For instance, Matthew Walker and colleagues from the University of California gave volunteers aptitude tests like remembering sequences of patterns fired at them on a computer. Half the volunteers learned these patterns in the morning, and half in the evening. By the way, there is good news for siesta or powernap lovers. Similar comparisons indicate that you can get a memory boost from a daytime nap. So, if you have been studying or working hard in the morning, do not be too hard on yourself if you fancy closing your eyes for a while. One school of thought is that sleep aids our memories by refreshing and reorganising them without interfering with our waking thoughts. Evidence comes from several studies using methods that record the brain directly. For instance, when rats were trained to find their way around a maze, their brains produced the same activity patterns during sleep as when they had carried out the task â€” suggesting that the brain was reconstructing the experience. A rest might help ease bad experiences , too. Dream on From this we also gain an important insight into the fascinating phenomenon of dreams. These crazy adventures our minds have while we are sleeping may be a product of our memories randomly activating so as to keep them fresh, and of the mind seeking connections between all the things we have recently experienced. This could also explain why hallucinations accompany sleep deprivation. Without the opportunity to reorganise our memories during sleep, dreams intrude into our waking lives, causing difficulty in distinguishing our inner lives from reality. Much of this is informed speculation. It is likely that as well as fine-tuning our brains, our bodies use this opportunity to carry out a list of housekeeping tasks, for instance, repairing damaged cells. But some scientists argue that the purpose of sleep may not be restorative. In fact, they argue that the very question "why do we sleep? If you are safe and warm and fed, it is a waste of energy to be awake and moving around and possibly getting into trouble. Far better, this argument goes, is to be awake only when you have to and sleep when it suits you 4. One thing is certain, not only do we have to sleep, but it is good for your mind and body as well. Although everyone needs a different amount of sleep, the average is about seven hours â€” and people who sleep a lot less than this are at a higher risk of various illnesses, such as heart disease, and a shortened lifespan. So instead of feeling guilty the next time you fancy a nap, think about how much good it will do you. If you would like to comment on this story or anything else you have seen on Future, head over to our Facebook page or message us on Twitter.

WHY DO I NEED TO SLEEP? pdf

3: BBC - Science & Nature - Human Body and Mind - What is sleep

The actual quality of the sleep is normal and when able to sleep for 12 hours, people with long sleep syndrome wake up feeling refreshed. However most people are not able to sleep for such extended periods due to the demands of life.

Why You Need Sleep The average kid has a busy day. By the end of the day, your body needs a break. Sleep allows your body to rest for the next day. Even your dog or cat curls up for naps. Animals sleep for the same reason you do â€" to give your body a tiny vacation. Your Brain Needs Zzzzzs Your body and your brain need sleep. Most kids between 5 and 12 get about 9. Sleep is an individual thing and some kids need more than others. You might have a hard time following directions, or you might have an argument with a friend over something really stupid. One more reason to get enough sleep: But what happens next? Your brain swings into action, telling your body how to sleep. As you slowly fall asleep, you begin to enter the five different stages of sleep: Stage 1 In this stage of light sleep, your body starts to feel a bit drowsy. You can still be woken up easily during this stage. Stage 2 After a little while, you enter stage 2, which is a slightly deeper sleep. Your brain gives the signal to your muscles to relax. It also tells your heart to beat a little slower and your breathing to slow down. Even your body temperature drops a bit. Your brain sends a message to your blood pressure to get lower. Stage 4 This is the deepest sleep yet and is also considered slow-wave sleep. Like they do in stage 3, some people may sleepwalk or talk in their sleep when going from stage 4 to a lighter stage of sleep. Even though the muscles in the rest of your body are totally relaxed, your eyes move back and forth very quickly beneath your eyelids. This is also the stage when people dream! Who said sleep was boring? People dream during R. Everybody has dreams, although some people have a tough time remembering them. When you wake up can affect whether you can remember your dreams. If you wake up during R. If you wake up during another stage of sleep, you might not remember a thing. No one knows for sure why people dream. Many scientists today think that dreams are linked to how our brains organize memories and emotions. Others think that dreams allow your brain to sort through the events of the day, storing the important stuff and getting rid of the junk. Here are some tips to help you catch all the ZZZs you need: Try to go to bed at the same time every night; this helps your body get into a routine. Follow a bedtime routine that is calming, such as taking a warm bath or reading. Limit foods and drinks that contain caffeine. These include some sodas and other drinks, like ice tea. Research shows that kids who have one in their rooms sleep less. Do exercise earlier in the day â€" it helps a person sleep better. Use your bed just for sleeping â€" not doing homework, reading, playing games, or talking on the phone. If you have a hard time falling asleep for more than one or two nights or have worries that are keeping you from sleeping, tell your mom or dad. They can help you solve your sleep problems.

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4: Why do we sleep? - BBC News

Why is it that some people can get by on just four hours of sleep a night and others need at least 10? Varying needs for sleep are likely genetic and approximately 2 percent of the population need at least 10 hours of sleep to get by.

The science of sleep We spend a third of our lives doing it. Napoleon, Florence Nightingale and Margaret Thatcher got by on four hours a night. Thomas Edison claimed it was waste of time. Why do we sleep? So why do we sleep? This is a question that has baffled scientists for centuries and the answer is, no one is really sure. We have to sleep because it is essential to maintaining normal levels of cognitive skills such as speech, memory, innovative and flexible thinking. In other words, sleep plays a significant role in brain development. After just one night without sleep, concentration becomes more difficult and attention span shortens considerably. With continued lack of sufficient sleep, the part of the brain that controls language, memory , planning and sense of time is severely affected, practically shutting down. In fact, 17 hours of sustained wakefulness leads to a decrease in performance equivalent to a blood alcohol level of 0. This is the legal drink driving limit in the UK. Research also shows that sleep-deprived individuals often have difficulty in responding to rapidly changing situations and making rational judgements. In real life situations, the consequences are grave and lack of sleep is said to have been be a contributory factor to a number of international disasters such as Exxon Valdez, Chernobyl, Three Mile Island and the Challenger shuttle explosion. Sleep deprivation not only has a major impact on cognitive functioning but also on emotional and physical health. Disorders such as sleep apnoea which result in excessive daytime sleepiness have been linked to stress and high blood pressure. Research has also suggested that sleep loss may increase the risk of obesity because chemicals and hormones that play a key role in controlling appetite and weight gain are released during sleep. What happens when we sleep? What happens every time we get a bit of shut eye? Sleep occurs in a recurring cycle of 90 to minutes and is divided into two categories: Non-REM sleep Stage one: Our muscle activity slows down and slight twitching may occur. This is a period of light sleep, meaning we can be awakened easily at this stage. True Sleep Within ten minutes of light sleep, we enter stage two, which lasts around 20 minutes. The breathing pattern and heart rate start to slow down. This period accounts for the largest part of human sleep. Stages three and four: Deep Sleep During stage three, the brain begins to produce delta waves, a type of wave that is large high amplitude and slow low frequency. Breathing and heart rate are at their lowest levels. Stage four is characterised by rhythmic breathing and limited muscle activity. If we are awakened during deep sleep we do not adjust immediately and often feel groggy and disoriented for several minutes after waking up. Some children experience bed-wetting , night terrors , or sleepwalking during this stage. We have around three to five REM episodes a night. Although we are not conscious, the brain is very active - often more so than when we are awake. This is the period when most dreams occur. Our eyes dart around hence the name , our breathing rate and blood pressure rise. After REM sleep, the whole cycle begins again. How much sleep is required? There is no set amount of time that everyone needs to sleep, since it varies from person to person. Results from the sleep profiler indicate that people like to sleep anywhere between 5 and 11 hours, with the average being 7. Species Average total sleep time per day Python.

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5: Why Do We Sleep, Anyway? | Healthy Sleep

While we may not often think about why we sleep, most of us acknowledge at some level that sleep makes us feel better. We feel more alert, more energetic, happier, and better able to function following a good night of sleep.

This restoration takes place mostly during slow-wave sleep , during which body temperature, heart rate, and brain oxygen consumption decrease. The brain, especially, requires sleep for restoration, whereas in the rest of the body these processes can take place during quiescent waking. In both cases, the reduced rate of metabolism enables countervailing restorative processes. In sleep, metabolic rates decrease and reactive oxygen species generation is reduced allowing restorative processes to take over. The sleeping brain has been shown to remove metabolic waste products at a faster rate than during an awake state. Sleep has also been theorized to effectively combat the accumulation of free radicals in the brain, by increasing the efficiency of endogenous antioxidant mechanisms. One study recorded growth, height, and weight, as correlated to parent-reported time in bed in children over a period of nine years age 1â€” It was found that "the variation of sleep duration among children does not seem to have an effect on growth. Dream During sleep, especially REM sleep, people tend to have dreams: They can include apparent sensations of all types, especially vision and movement. Sigmund Freud postulated that dreams are the symbolic expression of frustrated desires that have been relegated to the unconscious mind , and he used dream interpretation in the form of psychoanalysis in attempting to uncover these desires. Neatly, this theory helps explain the irrationality of the mind during REM periods, as, according to this theory, the forebrain then creates a story in an attempt to reconcile and make sense of the nonsensical sensory information presented to it. This would explain the odd nature of many dreams. Insomnia is often treated through behavioral changes like keeping a regular sleep schedule, avoiding stimulating or stressful activities before bedtime, and cutting down on stimulants such as caffeine. The sleep environment may be improved by installing heavy drapes to shut out all sunlight, and keeping computers, televisions and work materials out of the sleeping area. A review of published scientific research suggested that exercise generally improves sleep for most people, and helps sleep disorders such as insomnia. The optimum time to exercise may be 4 to 8 hours before bedtime, though exercise at any time of day is beneficial, with the exception of heavy exercise taken shortly before bedtime, which may disturb sleep. However, there is insufficient evidence to draw detailed conclusions about the relationship between exercise and sleep. Although these nonbenzodiazepine medications are generally believed to be better and safer than earlier generations of sedatives, they have still generated some controversy and discussion regarding side-effects. White noise appears to be a promising treatment for insomnia. When several of these episodes occur per hour, sleep apnea rises to a level of seriousness that may require treatment. Diagnosing sleep apnea usually requires a professional sleep study performed in a sleep clinic, because the episodes of wakefulness caused by the disorder are extremely brief and patients usually do not remember experiencing them. Instead, many patients simply feel tired after getting several hours of sleep and have no idea why. Major risk factors for sleep apnea include chronic fatigue, old age, obesity and snoring. Fatal familial insomnia , or FFI, an extremely rare genetic disease with no known treatment or cure, is characterized by increasing insomnia as one of its symptoms; ultimately sufferers of the disease stop sleeping entirely, before dying of the disease. Drugs and diet Drugs which induce sleep, known as hypnotics , include benzodiazepines , although these interfere with REM; [99] Nonbenzodiazepine hypnotics such as eszopiclone Lunesta , zaleplon Sonata , and zolpidem Ambien ; Antihistamines , such as diphenhydramine Benadryl and doxylamine ; Alcohol ethanol , despite its rebound effect later in the night and interference with REM; [99] [] barbiturates , which have the same problem; melatonin , a component of the circadian clock, and released naturally at night by the pineal gland ; [] and cannabis , which may also interfere with REM. Dietary and nutritional choices may affect sleep duration and quality. One review indicated that a high carbohydrate diet promoted shorter onset to sleep and longer duration sleep than a high fat diet. Research suggests that sleep patterns vary significantly across cultures. In many nomadic or hunter-gatherer societies, people will sleep on and off throughout the day or night depending on what is happening. Roger Ekirch thinks that the traditional pattern of " segmented sleep ,"

as it is called, began to disappear among the urban upper class in Europe in the late 17th century and the change spread over the next years; by the s "the idea of a first and second sleep had receded entirely from our social consciousness. In other cultures, people rarely sleep with anyone except for an intimate partner. In almost all societies, sleeping partners are strongly regulated by social standards. For example, a person might only sleep with the immediate family , the extended family , a spouse or romantic partner, children, children of a certain age, children of specific gender, peers of a certain gender, friends, peers of equal social rank, or with no one at all. Sleep may be an actively social time, depending on the sleep groupings, with no constraints on noise or activity. Some sleep directly on the ground; others on a skin or blanket; others sleep on platforms or beds. Some sleep with blankets, some with pillows, some with simple headrests, some with no head support. These choices are shaped by a variety of factors, such as climate, protection from predators, housing type, technology, personal preference, and the incidence of pests. July Writing about the thematical representations of sleep in art, physician and sleep researcher Meir Kryger noted:

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6: Brain Basics: Understanding Sleep | National Institute of Neurological Disorders and Stroke

While sleep requirements vary slightly from person to person, most healthy adults need between 7 to 9 hours of sleep per night to function at their best. Children and teens need even more. And despite the notion that our sleep needs decrease with age, most older people still need at least 7 hours of sleep.

Why Do We Sleep, Anyway? At a Glance Our bodies regulate sleep in much the same way that they regulate eating, drinking, and breathing. This suggests that sleep serves a similar critical role in our health and well-being. Although it is difficult to answer the question, "Why do we sleep? Understanding these theories can help deepen our appreciation of the function of sleep in our lives. Hunger and Eating; Sleepiness and Sleep As with eating well, good sleep is a staple of optimal health. While we may not often think about why we sleep, most of us acknowledge at some level that sleep makes us feel better. We feel more alert, more energetic, happier, and better able to function following a good night of sleep. However, the fact that sleep makes us feel better and that going without sleep makes us feel worse only begins to explain why sleep might be necessary. One way to think about the function of sleep is to compare it to another of our life-sustaining activities: Hunger is a protective mechanism that has evolved to ensure that we consume the nutrients our bodies require to grow, repair tissues, and function properly. And although it is relatively easy to grasp the role that eating servesâ€" given that it involves physically consuming the substances our bodies needâ€"eating and sleeping are not as different as they might seem. Both eating and sleeping are regulated by powerful internal drives. Going without food produces the uncomfortable sensation of hunger, while going without sleep makes us feel overwhelmingly sleepy. And just as eating relieves hunger and ensures that we obtain the nutrients we need, sleeping relieves sleepiness and ensures that we obtain the sleep we need. Still, the question remains: Why do we need sleep at all? Is there a single primary function of sleep, or does sleep serve many functions? Scientists have explored the question of why we sleep from many different angles. They have examined, for example, what happens when humans or other animals are deprived of sleep. Yet, despite decades of research and many discoveries about other aspects of sleep, the question of why we sleep has been difficult to answer. The lack of a clear answer to this challenging question does not mean that this research has been a waste of time. In fact, we now know much more about the function of sleep, and scientists have developed several promising theories to explain why we sleep. In light of the evidence they have gathered, it seems likely that no single theory will ever be proven correct. Instead, we may find that sleep is explained by two or more of these explanations. This essay outlines several current theories of why we sleep. To learn more about them, be sure to check out the "Bookshelf" feature at the end of this essay. The theory suggests that animals that were able to stay still and quiet during these periods of vulnerability had an advantage over other animals that remained active. These animals did not have accidents during activities in the dark, for example, and were not killed by predators. Through natural selection, this behavioral strategy presumably evolved to become what we now recognize as sleep. A simple counter-argument to this theory is that it is always safer to remain conscious in order to be able to react to an emergency even if lying still in the dark at night. Thus, there does not seem to be any advantage of being unconscious and asleep if safety is paramount. Energy Conservation Theory Although it may be less apparent to people living in societies in which food sources are plentiful, one of the strongest factors in natural selection is competition for and effective utilization of energy resources. Lions conserving energy after a meal. Research has shown that energy metabolism is significantly reduced during sleep by as much as 10 percent in humans and even more in other species. For example, both body temperature and caloric demand decrease during sleep, as compared to wakefulness. Such evidence supports the proposition that one of the primary functions of sleep is to help organisms conserve their energy resources. Many scientists consider this theory to be related to, and part of, the inactivity theory. Restorative Theories Another explanation for why we sleep is based on the long-held belief that sleep in some way serves to "restore" what is lost in the body while we are awake. Sleep provides an opportunity for the body to repair and rejuvenate itself. In recent years, these ideas have gained support from empirical evidence collected in human and animal studies. The most striking of these is that animals deprived entirely of sleep lose all

immune function and die in just a matter of weeks. This is further supported by findings that many of the major restorative functions in the body like muscle growth, tissue repair, protein synthesis, and growth hormone release occur mostly, or in some cases only, during sleep. Other rejuvenating aspects of sleep are specific to the brain and cognitive function. The build-up of adenosine in the brain is thought to be one factor that leads to our perception of being tired. Incidentally, this feeling is counteracted by the use of caffeine , which blocks the actions of adenosine in the brain and keeps us alert. Scientists think that this build-up of adenosine during wakefulness may promote the "drive to sleep. During sleep, the body has a chance to clear adenosine from the system, and, as a result, we feel more alert when we wake. One of the most recent and compelling explanations for why we sleep is based on findings that sleep is correlated to changes in the structure and organization of the brain. This phenomenon, known as brain plasticity, is not entirely understood, but its connection to sleep has several critical implications. It is becoming clear, for example, that sleep plays a critical role in brain development in infants and young children. Infants spend about 13 to 14 hours per day sleeping, and about half of that time is spent in REM sleep, the stage in which most dreams occur. A link between sleep and brain plasticity is becoming clear in adults as well. Clues to the functions of mammalian sleep. Adenosine in sleep and wakefulness. The mystery of sleep function: Reviews in the Neurosciences. This theory and the role of sleep in learning are covered in greater detail in Sleep, Learning, and Memory. Although these theories remain unproven, science has made tremendous strides in discovering what happens during sleep and what mechanisms in the body control the cycles of sleep and wakefulness that help define our lives. While this research does not directly answer the question, "Why do we sleep?

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7: Why We Need to Sleep | Tuck Sleep

Some people need eight hours. Others can exist on four. But the bottom line is that everybody needs sleep - it is as essential as breathing and eating. Yet, despite decades of study, scientists.

Why do we need sleep? People who can get by on four hours of sleep sometimes brag about their strength and endurance. But recent scientific studies show that a lack of sleep causes many significant changes in the body and increases your risk for serious health concerns such as obesity, disease, and even early death. Sleep is an important function for many reasons. When you sleep, your brain signals your body to release hormones and compounds that help: In fact, consistently sleeping more than six to eight hours a night can negatively impact your health. Read on to learn why seven to eight hours of sleep a night is ideal. Seven to eight hours for longevity The healthy amount of sleep for the average adult is around seven to eight hours each night. Researchers in the United Kingdom and Italy analyzed data from 16 separate studies conducted over 25 years, covering more than 1. They published their findings in the journal Sleep. Those who generally slept for less than six hours a night were 12 percent more likely to experience a premature death. People who slept more than eight to nine hours per night had an even higher risk, at 30 percent. Researchers also found that people who reduced their sleep time from seven hours to five hours or less had 1. At night, movement and need for calories is reduced. But when you are sleep-deprived, your brain will release chemicals to signal hunger. This can lead to eating more, exercising less, and gaining weight. Researchers conducting a study of almost 5, Japanese adults with type 2 diabetes found that those who slept fewer than 4. Those who slept between 6. Sleep deprivation also affects children. A study showed that children who slept less had an increased risk for obesity and high BMI. These risks can affect children as they mature. Sleep helps your immune system function When you sleep, your immune system releases compounds called cytokines. Some cytokines have a protective effect on your immune system by helping to fight inflammation and infection. Without enough sleep, you may not have enough cytokines to keep from getting sick. These are the same compounds associated with conditions like asthma and allergies. The researchers studied people who had long-term sleep deprivation as well as limited sleep deprivation of four to five hours a night for a week. In addition to helping you focus, sleep helps protect and strengthen your memory. Research shows that sleeping after learning can help with memory retention. It also reduces interference from external events. People who are sleep-deprived: No one stage is responsible for memory and learning. Two stages rapid eye movement and slow wave sleep contribute to:

8: BBC - Future - Why do we need to sleep?

The human need for sleep is a mystery. Credit: www.enganchecubano.com Humans spend nearly a third of their lives asleep. Going without sleep will literally make you psychotic and, eventually, kill you. It's.

Kim on December 16, at 8: It started when I would have sleepovers and my friends all use to snore. Then it started becoming a regular thing and then suddenly I find every little noise in the house use to wake me so I would go to sleep in my own home with headphones in playing music or with the TV on. I now only fall asleep with the TV on but any noise from outside will wake me so I put my ear plugs in and normally go straight back to sleep. I just want to feel normal when it comes to sleep. Michelle Winters on January 5, at 8: I would make sure you talk to your doctor about it, there could be something going on where you are not getting into the deeper sleep you need to be in to not be awoken by every little noise. I would also try a noise machine, maybe with ocean waves or something like that. That is something you can have on all night, without worry about light from it, and it will stay consistent so there will not be breaks in the noise for you to wake up in. The other thing you may want to do is start off the night with ear plugs and see if that helps. Also, if your partner is snoring all the time, make sure he discusses it with his doctor as well â€" he may be having some sleep issues as well! I start hearing noises that i know are in my head. When the TV is on i have no problem with the anxiety, but as soon as i turn it off, i wont be falling asleep. Michelle Winters on December 8, at 8: Hi, A white noise machine could help with these noises, it may be something that is worth a try for you to see if it helps. Or you could just use an app on your phone for a night to see if that helps. Please help Michelle Winters on November 22, at 2: Or are you also using the tv to fall asleep? It sounds like the tv may be keeping you up, and I would discuss this with her. Maybe she can agree to still fall asleep with it on, but then keep it off the rest of the night? Angela on September 7, at 4: I have always used a fan to help me sleep, but in , I was diagnosed with Non-Hodgkins Lymphoma. It turned my world upside down. Then I begin reliving every treatment, my hair falling out, me being sick, etc. What can I do? Michelle Winters on September 24, at I am so sorry for what you are going through Angela. I wonder if having a pen and paper next to your bed and writing about how you are feeling in the middle of the night could help? You also may want to look into finding a meditation CD or learning how to meditate yourself. This may help you when you wake in the middle of the night. Kelly on June 17, at 1: Please could someone help. Thanks x Michelle Winters on June 18, at 2: Hi Kelly, If you are using your ipad or iphone before bed, that could be causing you to stay awake. I would try for a few nights to not use those for around an hour before bed and see if that helps. If you still need something, I would maybe use a radio with music, but try not to be using anything with light coming from it.

WHY DO I NEED TO SLEEP? pdf

9: Learn Why Do I Need To Sleep Food For Sleep Body During Sleep Condition

Read on to learn why seven to eight hours of sleep a night is ideal. Seven to eight hours for longevity The healthy amount of sleep for the average adult is around seven to eight hours each night.

Awake Children easily drift into deep sleep. This is a period of growth and renewal for the body. Even adults experience a surge in growth hormone during their first deep sleep period of the night. If there is any type of sleep that most middle-aged and older adults crave more of, it is deep sleep. As we pass from young adulthood to middle age, we get less deep sleep and more light sleep. Scientists have yet to determine exactly why people sleep. However, they do know that humans must sleep and, in fact, people can survive longer without food than without sleep. Sleep serves many functions â€" or more precisely, many things happen while we are asleep. Scientists have floated many hypotheses on why humans require sleep: The brain is able to reorder without the inputs it gets while awake. The brain has a chance to exercise important neuronal connections that might otherwise deteriorate due to lack of activity. Sleep gives the brain an opportunity to reorganize data to help find a solution to problem , process newly learned information and organize and archive memories. Sleep is a time for serious rest. The allostatic load on the body takes a toll and sleep is a respite. The cardiovascular system also gets a break during sleep. During sleep, the body has a chance to replace chemicals and repair muscles, other tissues and aging or dead cells. Growth hormones are released during deep sleep. What is the function of sleep? There is no single purpose. The body does many things in during sleep. Rebecca Reh at Harvard University posits four possible reasons for sleep: Recovery â€" rest for the body, cell growth, housekeeping for body Protection â€" keeping quiet and still reduces risk from predators Energy regulation â€" use less energy when asleep Memory consolidation â€" formation of long-term memories and learning These are high-level reasons. Even this list is too-high level to be of much use in really understanding sleep. It is a framework, but the details have yet to be filled in. Caltech professor David Prober enumerates four hypotheses. Repair of cell damage caused by life. Small animals with high metabolism sleep much of the day. Large herbivores can get by with only a few hours of sleep a day. Long period of intense rest. Brain and memory reorganization. Synapses are pruned and cleared. Reinforcing memory and learnings that were formed during the day. REM sleep waves look like waking brain waves there are minor differences. Memory consolidation and growth hormone release happen in earnest during NREM. Complex cinematic dreams happen in REM. Four common tests are used to measure and quantify effects of stimulants and symptoms of disorders. Maintenance of Wakefulness Test MWT â€" time to get to sleep Wilkinson addition test â€" cognitive test Digital symbol substitution â€" cognitive test The two-phase model provides some guidance as to why people get sleepy â€" duration of prior waking and place in the circadian cycle. But it is not clear at a biochemical level what this refreshment means. The brain uses plenty of energy during sleep, so sleep is not analogous to resting a muscle and allowing energy stores to recharge. Sleep is about cycles. We run through the stages one after another. Waking stage 0 transitions to NREM sleep â€" stage 1 followed by stage 2 followed by stage 3 followed by REM sleep stage R After REM the brain may briefly wake maybe for less than a minute or go directly to stage 1 again. Each cycle lasts about 90 minutes. Deep stage 3 sleep may disappear in the later cycles â€" when the brain has recovered from its need for deep sleep. Sleep as an Emergent Property Borrowing from system theory, we can see sleep as an emergent property of populations of local neural networks undergoing state transitions. Emergence is a word used to describe complex systems arise from simpler interactions of small elements. Many properties in organismic and evolutionary biology are emergent, and the concept finds its way to explanation of many phenomena including swarming behavior of insects and the movement of stock prices. When enough sections of the brain are in this sleep-like state, the person can be said to be asleep. Falling asleep is a state shift for the network. Anatomists have identified cortical columns in the brain. Also called neuronal assemblies, these are theorized to be a basic processing unit of the brain. They periodically flip between states as shown by input-output relationships. This is evidence for localized sleeping in the brain and may be the cause of microsleeps, mental slips, and foggy thinking. What we are getting at here is that sleep as a behavior of the brain as a whole is an emergent property that arises

when enough of these cortical columns are in the sleep state. The columns communicate with each other and synchronize through electrical and chemical signals. Chemical signals include neurotransmitters and neuromodulators such as adenosine, glutamate and GABA. They tend to flip together between waking and sleeping. Not all columns follow in line and there is plenty of evidence for different parts of the brain being in different depths of sleep at any time of the night. But this emergent property model of sleep appears to satisfy observations about sleep behavior. There is also new evidence that sleep is a time during which the lymphatic system removes metabolic products from the brain and surrounding tissue. Sleep is a time of cranial maintenance. Difference Between Symptoms and Signs Medically there is a difference. Signs are observable by outsides, perhaps using technology. High blood pressure, flushed skin, slow reaction times â€" these are signs. Symptoms are observable and experienced only by the patient subject. Pain, amnesia, and sleepiness are symptoms. Signs and symptoms may derive from different causes, which often makes diagnosis a challenge. Sleepiness is also a part of everyday life. It does not by itself indicate a disorder. Sleepiness is something every human feels as part of normal life, even when healthy. Yet it can also be a symptom, or at least marker, of a disease. What distinguishes between normal sleepiness and a sign or symptom of something else is its frequency and timing. There is also an intensity level to sleepiness. We know subjectively that sometimes we feel the propensity to sleep more strongly than others. Sleepiness is also a symptom of many illnesses and disorders, not just sleep disorders. Sleep Deprivation Leads to Injury Sleep deprivation leads to physical injury. Industrial accidents are more common, and drowsy driving car accident rates are higher. An epidemiology study concluded that chronic insomniacs are 2. Older people with sleep deficiency are more likely to experience increased falls and bone breaks. Drowsy driving accidents claim thousands of lives every year and result in millions of automobile accidents. The more you look into it, the worse insomnia seems. It has long been known that cytokines â€" biochemical typically thought of as part of the immune system â€" are involved in regulation of sleep. And scientists have found that even partial sleep loss results in the lower numbers of natural killer NK cells in the blood stream and decreased activity of lymphokine-activated killer cells. Additional Sleep Deprivation Resources:

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Be still moment : listen without fear A rival and high-definition television The Geometry of Ecological Interactions How to fix the premedical curriculum The Plays, Histories And Novels Of The Ingenious Mrs. Aphra Behn With Life And Memoirs V3 Academic library directors of color and their means of self-renewal Cheryl Metoyer and Peter Hernon The 1950s: the three faces of Eve Indiana Jones Golden Treasure Sticker Book Afterword: a medium with a message: R. D. Laing, by B. Nelson. Lazear and gibbs personnel economics in practice A Laymans Guide to Better Retirement Reel 746. Erie County (part), City of Buffalo, wards 4-5 Start loving, keep loving As Never Was (1944), by P. Schuyler Miller Guide du responsable hse Frauenfelder physics of proteins Ice Age environments of northern Eurasia with special reference to the Beringian Margin of Siberia Principles of French law Introduction to integral calculus Trees of Canada and the northern United States Tin Hats and Gas Masks Patrick and Ted at the beach Collins/Janes warships of World War II Estimating total forest biomass in Maine, 1995 The battle of the daughters Dan brown all novels Producing the duplicated newspaper Concept and strategies of sustainable development Participate in Christmas worship Motomaster nautilus intelligent battery charger manual Method in Unit Delimitation (Pericope) Blood Memory (Iles, Greg) Thunder Bay to Gunflint Hat on the letter O and other stories Introduction : theorizing multidirectional memory in a transnational age Ovid metamorphoses book 2 Aeschylus Plays, Lyrical Dramas Blood stream : Scriptures Developmental craniofacial biology The bane chronicles books