NEWSLTR

The Workplace Wellness Conference and Exhibition

Sleep

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Speaker Highlight

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Dr. Tracie Stewart is the creator of the TRiMM Model© of workplace implicit bias training. As a training designer and facilitator, Dr. Stewart has worked with numerous businesses and government agencies to help them "TRiMM" – transform, reduce, manage, and mitigate – implicit bias and its damaging effects on both workers and the organization as a whole.

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Sleep is essential to your daily routine—you spend about one-third of your time doing it. Quality sleep – and getting enough of it at the correct times -- is as essential to survival as food and water. Without sleep, you can't form or maintain the pathways in your brain that let you learn and create new memories, and it's harder to concentrate and respond quickly.

Sleep is essential to several brain functions, including how nerve cells (neurons) communicate. Your brain and body stay remarkably active while you sleep. Recent findings suggest that sleep plays a housekeeping role, removing toxins in your brain that build up while awake

Everyone needs sleep, but its biological purpose remains a mystery. Sleep affects almost every tissue and system in the body – 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..

There are two basic types of sleep: rapid eye movement (REM) sleep and non-REM sleep (which has three different stages). Each is linked to specific brain waves and neuronal activity. You cycle through all non-REM and REM sleep phases several times during a typical night, with increasingly longer, deeper REM periods occurring toward morning.

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 your 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 than in other sleep stages.

Stage 3 non-REM sleep is the period of deep sleep you need to feel refreshed in the morning. It occurs in more extended 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 wake you. Brain waves become even slower.

REM sleep first occurs about 90 minutes after falling asleep. Your eyes rush from side to side behind closed eyelids. Mixed-frequency brain wave activity becomes closer to that seen in wakefulness. Your breathing becomes faster and more irregular, and your heart rate and blood pressure increase to near-waking levels. Most of your dreaming occurs during REM sleep, although some can occur in non-REM sleep. Your arm and leg muscles become temporarily paralyzed, which prevents you from acting out your dreams. As you age, you spend less of your time in REM sleep. Memory consolidation requires both non-REM and REM sleep.

Two internal biological mechanisms–circadian rhythm and homeostasis–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 sleep timing and cause you to be sleepy at night and your tendency to wake in the morning without an alarm. Your body's biological clock, based on a roughly 24-hour day, controls most circadian rhythms. Circadian rhythms synchronize with environmental cues (light, temperature) about the actual time of day, but they continue even without cues.

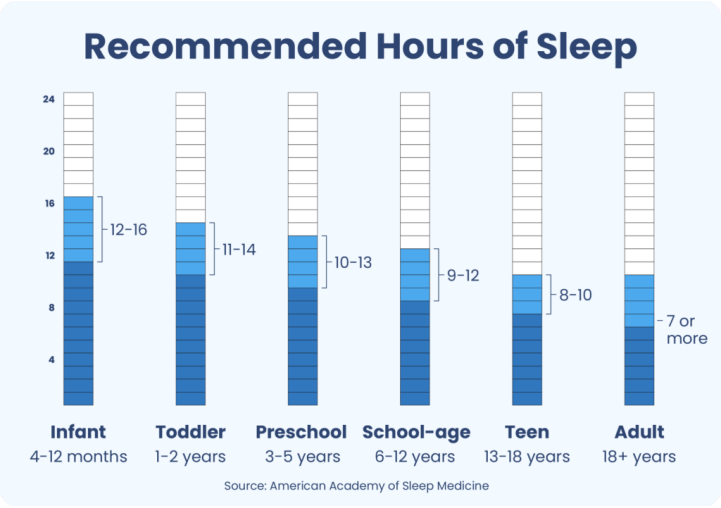
Sleep-wake homeostasis keeps track of your need for sleep. The homeostatic sleep drive reminds the body to sleep after a specific time and regulates sleep intensity. This sleep drive gets stronger every hour you are awake and causes you to sleep longer and more intensely after sleep deprivation.

Factors influencing your sleep-wake needs include medical conditions, medications, stress, sleep environment, and what you eat and drink. The most significant 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 sunlight 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 staying awake because their natural circadian rhythm and sleep-wake cycle are disrupted. During 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 and actual clock.

How Much Sleep Do You Need?

Sleep needs change with age as shown on the chart above. Initially, babies sleep 16-18 hours a day. School-age children and teens need about 9.5 hours of sleep each night. Most adults require 7-9 hours of sleep at night. However, older adults (age 60 and above) tend to sleep for shorter periods at night.



Your need for sleep and your sleep patterns change as you age, but this varies significantly across individuals of the same age. No magic "number of sleep hours" works for everybody 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 9.5 hours of sleep per night. Most adults need 7-9 hours of sleep a night, but after age 60, nighttime sleep tends to be shorter, lighter, and interrupted by multiple awakenings. Older people are also more likely to take medications that interfere with sleep. People generally need more sleep 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.

Dreaming

Everyone dreams. You spend about 2 hours each night dreaming but may only remember some of your dreams. Its exact purpose isn't known, but dreaming may help you process your emotions. 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.

Tracking Sleep Through Smart Technology

Millions of people use smartphone apps, bedside monitors, and wearable items (including bracelets, smart watches, and headbands) to collect and

analyze data about their sleep informally. Innovative technology can record sounds and movement during sleep, journal hours slept, and monitor heartbeat 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.

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 sleep timing.

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 genes expressed in the cerebral cortex and other brain areas change their expression level between sleep and wake. Several genetic models–including the worm, fruit fly, and zebrafish–are helping scientists to identify molecular mechanisms and genetic variants involved in normal sleep and sleep disorders. Additional research will better understand inherited sleep patterns and circadian and sleep disorders risks.

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.

Getting enough sleep is good for your health. Here are a few tips to improve your sleep:

- Set a schedule – go to bed and wake up at the same time each day.
- Exercise 20 to 30 minutes daily but no later than a few hours before bed.
- Avoid caffeine and nicotine late in the day and alcoholic drinks before bed.
- Try a warm bath, reading, or another relaxing routine before bed.
- Create a room for sleep – avoid bright lights and loud sounds, keep the room at a comfortable temperature, and don't watch TV or have a computer in your bedroom.
- Don't lie in bed awake. If you can't get to sleep, do something else, like reading or listening to music, until you feel tired.
- See a doctor if you have a problem sleeping or feel unusually tired during the day. Most sleep disorders can be treated effectively.

Article re-written from National Institutes of Neurological Disorders and Stroke

"I finally get eight hours of sleep. It took me three days, but whatever"

The 2024 Workplace Wellness Conference and Exhibition

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