

Sleep and Performance

Sleep is essential to achieve the best state of physical and mental health. Research suggests that sleep plays an important role in learning, memory, mood, and judgment. Sleep affects how well you perform when you are awake—both your daily work and athletic performance. The amount of time you sleep as well as the quality of your sleep are both important. If you or your child is an athlete, it is even more important to regularly get a good night's sleep to allow your body to rest well and recover between periods of exercise, as well as to decrease risk of injury.



How much sleep is enough?

The American Academy of Sleep Medicine (AASM) released official guidelines on the amount of sleep needed to promote optimal health and avoid health risks associated with sleep deprivation. Table 1 shows general guidelines for sleep time by age. However, each person may still have different sleep needs.

Age	Recommended sleeping hours per 24 hours
3 - 5 years	10 to 13 hours
6 - 12 years	9 to 12 hours
13 - 18 years	8 to 10 hours
18 - 60 years	7 or more hours
61 - 64 years	7 to 9 hours
65 years and older	7 to 8 hours

Research suggests that athletes may need more sleep compared to people of the same age who are not active. If you do not get your recommended hours per night, you will start falling behind and gather a “sleep debt.” Depending on how much sleep debt you have, it is hard to make up for lost sleep with “catch-up” sleep because it adds up. For example, if you lose an hour of sleep for each of five days during the week, then you are behind five hours by the weekend and need to sleep five extra hours to “catch-up.”

How does sleep affect my athletic performance?

If you or your children are involved in sports or competitive physical activities, sleep should be a top priority. Sleep has a positive effect on speed, accuracy, and reaction time. Without a good night's sleep, you may notice that you are not able to think clearly or react as quickly during your training or game. You may be more sensitive, moody, or irritable which can affect how well you get along with your teammates and coach.

Constant poor sleep can lead to depression or anxiety that can affect your drive to practice and how well you do during events. Getting less sleep before a game increases your risk of getting injured during the event. Decreased sleep can increase the chance of getting an infection such as a common cold because it decreases how well your immune system works.

How does sleep affect my school or work performance?

Sleep is needed to remember the things you learned during the day. This is especially important if you are student or need to learn new job skills. Students who have trouble sleeping or sleep less than what they really need do not perform as well as students without sleep problems. So, it is important before a big test to sleep well. After a good night's sleep, you may notice that you have more energy, can think more clearly, concentrate better, recall information faster, and make fewer mistakes.

Why does being an athlete increase the chance for poor sleep?

Training time and schedules are long and busy, especially when taking part in training camps or preparing for competitions. Some sports like swimming and ice skating often involve early morning practices, which means early morning wake up times and can lead to shortened sleep. Other sports, like soccer and baseball, can go into late afternoon and evening that affects the timing of bedtime. Some sports can require long-distance travel with jet lag that can cause tiredness, impaired sleep, confusion, and discomfort from time zone jumps. The night before a big event, you may have increased stress or anxiety that can cause difficulty falling asleep. If you are a student athlete, balancing studying and training to be at your best level can be hard.

What are signs that you are not getting enough sleep?

Any of the following may signal you need more sleep:

- feeling drowsy during the daytime,

- falling asleep easily in 5 minutes of lying down or being inactive,
- finding you need to “micro-sleep,” which are brief periods of sleep while awake,
- being irritable and having mood changes,
- having difficulty paying attention or concentrating on tasks,
- taking longer to learn new information and tasks than you expect,
- getting sick frequently.

If you have any of these problems, review your sleep habits and see if getting more sleep helps.

What are long term problems if you do not get enough good sleep?

Long-standing poor sleep worsens medical conditions and increases your chance of getting the following problems:

- diabetes
- high blood pressure or heart disease
- obesity
- stroke
- be accident prone
- depression and other mental health problems

What can you do to improve your sleep?

1. If you have trouble falling asleep, try having a small snack containing tryptophan (TRIP-toe-fan), an amino acid that causes sleepiness. Foods such as turkey and other meats, seeds and nuts, fish, eggs, pastas, and warm milk can make tryptophan more available to your brain and help make you drowsy. Have your snack 1-2 hours before your bedtime and do not eat too much to avoid having an upset stomach while lying in bed.
2. Stress can make it hard to sleep. A relaxing bedtime routine with a cup of herbal tea (try chamomile, ginger, or peppermint teas that do not have caffeine) and clearing your mind 30 minutes before you plan to sleep may be helpful. Try deep breathing exercises to release stress and reduce tension.
3. Melatonin (MEL-a-toe-nin) is a hormone made by your body to help balance your sleep-wake cycle. You can buy melatonin at your local drug or health food store without a prescription. Using melatonin when you cross time zones can help with jet lag and falling asleep. Take it 2-3 hours before you plan to sleep. Doses come in 0.3mg to 5mg. Start small first as most people do well with 1mg. Contact your doctor for any questions.
4. Alcohol might make you feel sleepy but it is not good for sleep. It interrupts your sleep rhythm and you can wake up too early. It also relaxes your muscles so it can worsen snoring and sleep apnea (APP-knee-ah). It can also lead to extra bathroom trips because alcohol is a diuretic (makes you urinate more like a water pill). You may not feel as refreshed in the morning because you did not sleep soundly.
5. If you are tired mid-day, taking a short nap can be helpful. Most people feel refreshed after 20 minutes of napping because sleeping longer can leave you groggy. Avoid napping late in the day because then it will make it hard to

fall asleep at night.

6. Practice other good sleep habits such as:
 - sleep in a cool, dark, quiet room without electronics
 - drink caffeine (coffee, tea, soda) only in the morning because it is a stimulant that keeps you awake
 - have a regular bedtime and wake time
 - minimize very early or very late training sessions
 - when traveling across time zones, allow for 1 day per time zone before competition to properly adjust

For further information on healthy sleep in children, teens, and adults read the ATS Patient Information handouts at www.thoracic.org/patients/. If you continue to have sleep problems such as restless sleep or difficulty going to sleep, talk with your healthcare provider or a sleep specialist.

Authors: Hanna Hong, MD; Helena Schotland, MD; and Iris A Perez, MD

Reviewers: Marianna Sockrider MD, DrPH; David Gozal, MD, MBA

Rx Action Steps

- ✓ Sleep in a cool, dark and quiet room without electronics.
- ✓ Drink caffeine only during morning hours.
- ✓ Keep a regular bedtime and regular wake up time. If you nap, keep it under 20 minutes and avoid after the late afternoon.
- ✓ Avoid variable training times and try to avoid early morning or late evening training sessions.
- ✓ When traveling across time zones, allow for 1 day before competition per time zone crossed to adjust properly.
- ✓ If you have poor sleep or extreme daytime tiredness, then talk to your healthcare provider about being checked for a possible sleep disorder.

Healthcare Provider's Contact Number:

Additional Resources:

American Thoracic Society

- www.thoracic.org/patients

Official ATS Statement: The Importance of Healthy Sleep

- www.atsjournals.org

Sleep Education – American Academy of Sleep Medicine (AASM)

- www.sleepeducation.org

Centers for Disease Control and Prevention (CDC)

- www.cdc.gov/sleep

National Sleep Foundation

- <https://sleepfoundation.org/sleep-topics/the-importance-of-sleep-young-athletes-who-travel>

This information is a public service of the American Thoracic Society. The content is for educational purposes only. It should not be used as a substitute for the medical advice of one's healthcare provider.

