

Newsletter

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SLEEP: TRAINING WITH YOUR EYES CLOSED

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There is a reciprocal relationship between sleep and exercise. If you sleep properly, you will probably perform well during your next workout or race, and if you exercise regularly, you will be able to sleep well. By understanding and applying the science of sleep, you will know how to optimize your health, fitness and performance.

How Sleep Works

Scientists recommend that people get between 7 and 9 hours of sleep per night because that is the amount of time required for all of the critical sleep-based recovery processes to occur. A very lucky and small percentage of the population has a gene that allows them to recover fully on about 4 hours of sleep - but the rest of us need much more! When you sleep, your body takes advantage of the regenerative processes that occur during this highly relaxed state. Acute exercise experiments that have measured sleep physiology directly from subjects who either performed, or refrained from, daytime exercise indicate that exercise is associated with a small, but reliable increase in Stage 2 and slow wave sleep.¹ Exercise may improve sleep quality by regulating body temperature although the exact physiology to explain how exercise improves sleep is still being explored by researchers. However, because body temperature does play a key role in sleep, it has been suggested that people should sleep in a cool room that is about 21 degrees Celsius.

One example of a critical restorative process that occurs while you are sleeping is the release of Human Growth Hormone (HGH). HGH promotes fat breakdown and increases in muscle mass, which allows the body to recover from the physiological stresses that occur during training. If you are sleep deprived and have less HGH in your system, not only will you restrict your body's ability to recover while you are sleeping, but it also appears that you will limit your ability to exercise the next day. Lower levels of HGH may decrease the amount of time an athlete can exercise at maximum effort due to reduced energy stores in their muscles.²

One of the most important things to know about sleep is that it is critical that you attain a highly relaxed state while sleeping. This means limiting the amount of stress in the hours leading up to when you want to fall asleep. The problem with stress goes beyond lying awake thinking about whatever is causing you stress. When you are in a stressed state, you secrete increased levels of a hormone called cortisol into your body and your body can respond to the apparent stress with changes like increased blood pressure and more rapid processing of glycogen. Cortisol is really helpful when you are faced with a stressful situation - like meeting a deadline or saving your family from a sabre tooth tiger - but it inhibits the adaptive processes of your body.

The mental effects of sleep are well known to all of us. If we are well rested, we are more able to cope with life's stresses, stronger and more effective in our exercise, sharper in our work and just plain more fun to be around. The catch is that the North American attitude toward sleep tends to be that it isn't particularly important. As you plan for your next race, or even if you are just reassessing your life in general, the more you can commit to getting a proper amount of sleep, the healthier and more effective you will be.

What The Research Tells Us

Some research on sleep that is relevant for runners has to do with understanding the ideal conditions for a good night's sleep so that you can promote the secretion of key hormones that regulate sleep, in particular melatonin. Melatonin is produced by your pineal gland, which is located deep inside your brain, and organizes the sleep cycle by controlling sleep-wake cycles. Because the pineal gland responds to light via neurons that project from your eyes, you have to ensure that you are in a dark space while you sleep. You also need to limit your use of your TV or computer since looking at a bright screen may disrupt sleep patterns by inhibiting the release of melatonin. Time to cut out the late night talk shows!

An interesting finding related to sleep and eating is that research is discovering links between sleep and weight loss. The conclusions are only beginning to form but it appears that there are hormones released while we are sleeping that help to regulate our weight. Not to mention that you are less likely to dive into the sugar and fat to keep yourself going if you are exhausted.

It is also important to avoid caffeine within six hours of heading to bed as caffeine (coffee, tea, green tea, chocolate etc...) will disrupt sleep patterns. In terms of the timing of your sleep, there is also an increasing body of evidence that suggests that sleeping on a regular schedule is even more important than the total amount of time you are asleep. Studies show that when an athlete's bed time is shifted around but the total number of hours they sleep remains the same, there is a measurable decrease in athletic performance. So sticking to a consistent routine is critical.

Improve Your Sleep Performance

Personally, I recommend people get 8 hours on a consistent basis. I also recommend sleeping between 10 pm – 6 am to ensure at least 2 hours of sleep before midnight to allow people to get their 8 hours in while still having time to wake up early and get that morning run in. To ensure that you get the best quality sleep you can, keep the following things in mind:

- Keep your stress levels to a minimum, especially in the hours before sleeping
- Sleep in a room that is as dark as possible - even clock lights can be a problem
- Avoid screen time within 45 minutes of going to bed
- Keep the room you sleep in at roughly 21 degrees Celsius
- Try to maintain a consistent sleep schedule
- Try to get into bed a couple of hours before midnight
- Avoid caffeine within six hours of going to bed

References

1. ukpmc.ac.uk/abstract/MED/7556348/reload=0;jsessionid=Z7aUGPsjR61IBT5vKEX5.22
2. VanHelder T, Randomski MW (1989). Sleep deprivation and the effect on exercise performance. *Sports Medicine* 7(4):235-247.