# SLEEP & PERFORMANCE IN HIGH SCHOOL ATHLETES:

## *EMPOWERING ATHLETES WITH THE LATEST SCIENCE ON SLEEP*

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Athletes and coaches often overlook the importance of sleep on athletic and academic performance. There are many reasons why athletes have a hard time getting enough sleep, but there are a few simple things they can start to do right away to help. High school athletes often balance school work, homework, family time, and a job, while still trying to excel in their sport. This is often too much to handle, and sleep can be affected. The body's normal physiological systems (how your body functions) rely on sleep to help stay healthy. Among other things, poor sleep can lead to problems with memory, balance, coordination, strength, endurance, muscle repair, and immunity (Walsh et al., 2021). An athlete getting poor sleep might not train as well and may get sick more often, causing them to miss school and training. But when an athlete gets better sleep, their health and performance improve. For example, in one study of collegiate basketball players, when they increased their sleep over the span of 5-7 weeks, their sprinting speed and shooting accuracy improved (Mah et al., 2011). Sleep is one of the easiest things to address that can improve an athlete's performance in the classroom and on the field. This article will explain how coaches can help educate their athletes about sleep.

If an athlete is often tired at training, gets sick regularly, or their athletic performance is lower than it should be, they may be suffering from poor sleep. When the body does not get enough sleep, it cannot recover as well from hard training. Unfortunately, this can lead to even worse sleep, which is why it is very important to educate athletes early on about the importance of good sleep habits. There are several ways to figure out whether athletes are getting quality sleep. The simplest way is to ask them about their sleep: what time they usually get to bed and whether they wake up at different times during the night. There are scientific sleep questionnaires that are designed to help coaches ask these questions. While not all athletes will have access to sleep-measuring wearable technology, these tools are another good way for an athlete to monitor their own sleep. If an athlete is concerned about how much sleep they get, they should talk to a doctor about having their sleep tested. A doctor will educate them about sleep and help them decide whether it is necessary to have a laboratory sleep assessment (test) done. For many people, this is a very good way to learn if they have a health condition that affects their sleep.

For most people however, there are a few simple and inexpensive ways to get better sleep. Coaches should educate athletes to avoid looking at a screen, whether a TV, smartphone, tablet or computer in the hour or two before bed. If the student absolutely must look at a screen to complete their homework, he or she should use night mode if possible. This will reduce the amount of blue light that the screen emits. Blue light tricks the brain into being awake, so night mode helps the brain relax and fall asleep. Additionally, a cool and dark bedroom can help sleep quality because sleep is easier when body temperature is cooler. It is also important to avoid caffeine after about 2 p.m. since caffeine can make it harder to fall asleep and can reduce sleep quality. Athletes that take caffeine before a night game to improve performance will have a harder time falling asleep after the game. If an athlete cannot get enough sleep during the night, naps are a good way to replenish sleep. Post-lunch naps have also been shown to improve sprint speed and reaction test accuracy in athletes that were sleep deprived (Waterhouse et al., 2007). Shorter naps of 30 minutes or less will prevent falling into deep sleep, which can make it harder to wake up and be alert.

Coaches can help their athletes to perform at their best with a basic understanding of the body's natural clock, or circadian rhythm. Tasks that require fine motor coordination or learning new skills/tactics are best undertaken in the morning around 8-9 a.m. Training that involves hand/eye coordination such as tennis or baseball is best performed at 1-3 p.m. Activities that require substantial strength or power, and the coordination of large muscle masses, are best performed between 5-8 p.m. Interestingly, endurance performance does not change much between the morning and evening. Scientists believe body temperature changes throughout the day cause these changes in alertness and performance. Whether or not a team has to travel to competitions, it is still important to understand that travel can disrupt sleep schedules and result in decreased performance. If a team is traveling west across time zones, coaches should avoid scheduling competitions in the late afternoon or evening. If traveling east, avoid scheduling competitions in the early morning.

While coaches have to work around facility availability when scheduling training, they should also consider the impact of training times on their athlete's sleep. For example, while many sports such as swimming train in the morning, studies show this substantially reduces the amount of time swimmers sleep (Sargent et al., 2014). On the other hand, when an athlete trains late in the evening they may have a hard time falling asleep. If possible, coaches should work to balance scheduling constraints with an understanding of how sleep quality is affected by different practice times, especially as they approach an important competition. It is also important that coaches regularly remind athletes about getting good sleep. Coaches and other sports medicine personnel often forget to tell athletes about proper sleep habits and why it is important for academic and athletic performance. To help make this easier, coaches can use this sleep handout available here (link to handout) to educate their athletes. Coaches must also be mentally alert and ready to perform in the high-stakes and high-stress world of high school athletics. But studies show that coaches often get less sleep and of poorer quality than their athletes on the night before a competition. This can reduce reaction time, alertness, and critical thinking when it is needed most. Coaches will benefit from following the same recommendations as athletes to improve sleep quality and performance.

If you are an athlete who is concerned about your sleep or know an athlete that might benefit from learning about their sleep, Dell Children's Sleep Program offers a full range of services to get to the bottom of youth sleep disorders. Our specialized care team is dedicated to the diagnosis and treatment of sleep disorders in children. Sleep is essential to the healthy growth and development of any child. Specialists at the Dell Children's Sleep Program can detect conditions that may be keeping your child from having good, consistent sleep patterns. Our qualified team of specialists treat a wide variety of pediatric sleep conditions for children through 18 years of age. Or, if you are a coach or parent who would also like to learn more about your sleep health, an Ascension Seton sleep specialist can work with you to understand your sleep concerns. To schedule an appointment with one of our providers, please visit *ascension.org* .

***References***


Mah, C. D., Mah, K. E., Kezirian, E. J., & Dement, W. C. (2011). The Effects of Sleep Extension on the Athletic Performance of Collegiate Basketball Players. Sleep, 34(7), 943–950. https://doi.org/10.5665/SLEEP.1132

Sargent, C., Halson, S., & Roach, G. D. (2014). Sleep or swim? Early-morning training severely restricts the amount of sleep obtained by elite swimmers. European Journal of Sport Science, 14(sup1), S310–S315. https://doi.org/10.1080/17461391.2012.696711

Walsh, N., Halson, S., Sargent, C., Roach, G., Nedelec, M., Gupta, L., Leeder, J., Fullagar, H., Coutts, A., Edwards, B., Pullinger, S., Robertson, C., Burniston, J., Lastella, M., Le Meur, Y., Hausswirth, C., Bender, A., Grandner, M., & Samuels, C. (2021). Sleep and the athlete: Narrative review and 2021 expert consensus recommendations. BRITISH JOURNAL OF SPORTS MEDICINE, 55(7), 356–368. https://doi.org/10.1136/bjsports-2020-102025

Waterhouse, J., Atkinson, G., Edwards, B., & Reilly, T. (2007). The role of a short post-lunch nap in improving cognitive, motor, and sprint performance in participants with partial sleep deprivation. JOURNAL OF SPORTS SCIENCES, 25(14), 1557–1566. https://doi.org/10.1080/02640410701244983