

How Important is Sleep for My Young Athlete?

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It is commonly accepted that sleep is an important factor for overall health and well-being. This is especially true during childhood, when sleep is an important part of the mental and physical development of children and adolescents.

Background

Sleep is the period, when many of the body's systems slow down and enter a period of rest. Originally, it was thought that the brain followed suit; however, it is now known that the brain is very active at certain times during the sleep cycle, sometimes, as active as when people are awake. There are 5 stages in a sleep "cycle;" stages 1-4 and Rapid Eye Movement or REM sleep.

It usually takes 90-120 minutes to complete one sleep cycle. While the reasons why are not fully understood, it seems that unbroken sleep cycles are important for good quality sleep and may explain why people feel fatigued after frequently interrupted sleep, despite sufficient sleep duration.

Table 1: General Recommendations for Sleep Duration by Age

Age Group	Recommended Sleep Duration
3-5 years old	10-13 hours
6-13 years old	9-11 hours
14-17 years old	8-10 hours
18-64 years old	7-9 hours

*Adapted from 2015 recommendations by the National Sleep Foundation

Studies have shown that around one-third of parents believe that their children are not getting adequate amounts of sleep each night, and recent research on sleep habits and children has demonstrated that this is likely true for a variety of reasons. The recommended amount of sleep is variable from person to person and dependent on age (see table 1). The appropriate amount of sleep is best determined by how one feels throughout the day, although it should coincide with the recommended sleep window guidelines. The body's biological clock times and controls a person's normal sleep/wake cycle, which is the reason for differences in sleep needs from child to child. Light exposure, eating and exercise patterns can affect one's biological clock. For example, after a good night of sleep, one should feel awake and be able to engage in quiet activities, like reading or listening to lectures, without dozing off. Each time segment of lost sleep accumulates as sleep debt, which can affect focus, performance, speed of thought, and mood, among other body functions.



Academic Performance

Sleep is the period, during which memories are solidified in the brain, an important process for learning and retaining new information. Poor sleep can inhibit or prevent this from occurring. Research studies have shown that sleep-deprived students have lower performance on memory tasks, when compared to well-rested children.

Executive functioning is the ability of the brain to perform complex tasks or integrate multiple pieces of information. Examples of executive functioning tasks would be decision making, multitasking, and focusing on one specific task in the setting of multiple distractions. Children who have inadequate sleep have more difficulty with executive functioning, which may present as poor problem solving, difficulty focusing, trouble switching between tasks, or struggles comprehending abstract concepts. Clearly difficulty with these processes would negatively impact both academic and athletic performance.

Mental Health

Adequate sleep is important for children's emotional health, as well. Sleep deprivation is associated with an exaggerated emotional response to both positive and negative stimuli. Lack of sleep tends to make people more irritable and impacts the brain's ability to cope with stress, resulting in more anger and confrontational behavior. People, who are chronically sleep deprived, are also less likely to engage in exercise, have healthy eating habits, or pursue recreational activities that they would otherwise enjoy. This has led to some speculation that chronic sleep deprivation may actually predispose people to mood disorders, such as depression or anxiety.

Physical Health

Sleep is also important for maintaining physical health. There is a link between sleep deprivation and obesity. This may be partly due to the fact that adequate sleep is needed to suppress the hormones that control appetite. In other words, people, who sleep less than their sleep need, are hungrier. To make matters worse, in the extra time that sleep

deprived people are awake, they often make extra trips to the refrigerator, because of the similar psychological rewards between eating and sleeping. Additionally, sleep deprivation can have metabolic effects. Short periods of sleep deprivation have been shown to increase both blood sugar and insulin resistance, a pattern also seen in type II diabetes. Healthy immune system functioning is dependent upon proper sleep, and chronic sleep loss can lead to decreased ability to fight off illness. Adequate sleep appears to have positive effects on growth, as well as cardiovascular health.

Athletic Performance/Fitness

Adequate sleep is essential for peak athletic performance. Research has shown that athletes who are sleep deprived perform sub optimally and that replenishing sleep improves performance. Sleep has been found to influence speed, accuracy, and reaction time. All of the above are necessary components to succeed in sport. It is also suggested that athletes may require more sleep than non-athletes of the same age. Despite this, there is evidence that athletes commonly get less than 8 hours of sleep per night, thought to be due to multiple factors, such as late or early morning training sessions, excitement or anxiety about competitions, or frequent travel. The quality of sleep is important as well as the quantity of sleep. Factors that interfere with good sleep hygiene can negatively affect the sleep quality for athletes, so young athletes may need to spend longer time in bed than non-athletes, in order to experience the same amount of quality sleep.

Napping

Napping can be an effective tool for sleep deprived individuals. Short naps averaging 30 minutes can improve mood, reaction time, and alertness. This is a particularly effective method, if frequent early morning or late night practices repeatedly interrupt sleep patterns or prevent adequate quantity of sleep.

Sleep Hygiene

Sleep Hygiene refers to the bedtime habits that affect the quality and quantity of sleep. Good sleep hygiene leads to excellent sleep quality and appropriate sleep duration. Examples of good sleep hygiene behaviors are included above. (See Table 2)

Go to bed and wake up at the same time every day of the week. This can make it easier to fall asleep at bedtime and results in overall better quality of sleep.

Table 2: Healthy Sleep Hygiene Behaviors

Consistent waking and bedtimes
Avoid regular napping
Do not lie in bed awake for more than 10-15 minutes
Use the bed only for sleep
Avoid physical activity within 2-3 hours of bedtime
Limit evening caffeine or other stimulant intake
Eat breakfast consistently and stay well hydrated
Schedule one hour of quiet relaxation prior to bedtime

- Avoid regular napping. While 15-30 minute naps can be beneficial, when someone is sleep deprived, regular napping can delay the onset of sleep at bed time.
- Don't lie awake in bed for more than 10-15 minutes if you are unable to sleep. Instead, get out of bed and relax in a chair or couch until sleepy and then return to bed. While you are up, do not work on completing tasks that need to be done as this will reward your brain for being awake.
- Use the bed only for sleep. Don't watch TV, use the computer, or read while in bed as your brain will associate the bed with being awake. Also, make sure the bedroom is conducive for sleep: dark, cool, and quiet.
- Regular exercise and activity can help promote good sleep, but it shouldn't be done within 2-3 hours of bedtime.
- Caffeine can affect sleep for hours after ingestion. It should be ingested in limited amounts and not in the evening.
- Eat breakfast consistently and stay well hydrated.
- Consider having quiet time for an hour before going to bed. This could include reading, doing a puzzle, or relaxing. Try to avoid watching TV or using screens during this time. Also practice a regular routine just prior to going to bed.

The Message

More and more, sleep is being recognized for its function in the maintenance of physical and mental health and its role in the developing child and adolescent. In spite of this, sleep deprivation is a growing public health concern, including for children. Maintaining regular sleep routines is essential for maximizing academic and athletic performance.

References

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