

## Want to improve your GPA? Get to bed.

By Gabriella Boston

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Have you ever told your teens to get enough sleep now because in 10 years they'll run the risk of being depressed and overweight? If so, you probably didn't get very far.

Instead, try telling them that a lack of sleep can hurt their GPA and SAT scores, along with their performance on the school athletic team – right now. (It can also make you more likely to have skin problems, make you sick so you miss school and increase a young driver's risk of having a car accident.)

Both sets of warnings are based on data, but the more immediate one probably resonates more with teens, who tend to be chronically sleep-deprived, says Mary Carskadon, a sleep expert and professor of psychiatry and human behavior at Brown University.

Teens need around nine hours of sleep, but studies have found that as many as two-thirds of them regularly get less than seven hours as changes in their circadian rhythm push them toward later sleep times, while many high schools start very early. (Studies suggest this later sleep cycle for adolescents is common for mammals generally.)

Experts say getting teens to manage their sleep better would help them in many ways that are particularly important to them at this time of life.

### Athletics

"It you're running track and your reaction time slows by even 10 milliseconds, it's huge," says Carskadon. The "psychomotor vigilance test" – designed to show links between insufficient sleep and reaction time – shows that lack of sleep can lead to completely missed cues (you don't see the pitcher releasing the baseball, for example) and slowed reaction time (you do see the pitch, but you react a blink too slowly).

Part of the issue here is that sleep – REM (rapid eye movement) sleep in particular – is when the brain learns or puts information into context (as opposed to just gathering it, which is a daytime function), says Helene Emsellem, medical director at the Center for Sleep and Wake Disorders in Chevy Chase, Md.

"So if you are playing baseball and your coach has given you pointers about your swing, the brain replays those sequences at night and learns them to the point of knowing them reflexively," Emsellem says.

### Learning

So we gather information while awake and we learn it while sleeping. This is true for academic work, too.

"The brain restores the synapses – taking the information worth keeping and learning it," Emsellem says. As for the information not worth keeping – i.e., not important for the task at hand – the brain flushes it out, she says. "It's as though it cleans up the excess riffraff."

Some studies have suggested that teens may not need as much sleep as previously thought. But Carskadon and other sleep researchers say these studies tend to be based on self-reporting, which makes their conclusions questionable.

### Healthy bodies

The link between lack of sleep and weight gain can be a concern for teens sensitive about how they look.

"We don't metabolize fat well at night, and we see an increase in lipid levels and blood glucose," says Michael Twery, director of the National Center on Sleep Disorders Research at the National Institutes of Health.

In other words, the body doesn't process and store nutrients the same way at night as it does during the day. "Nighttime eating is linked to the body's storing more calories for the same amount of food," Emsellem says.

Skin can suffer, too. "You look better after good sleep. There is a reason it's called beauty sleep," Carskadon says.

Carskadon also studies the link between sleep and illness in teens. She and fellow researchers found that adolescents – particularly males – are more likely to get a cold when sleep is lacking.

Another study found that adolescents who slept six hours or less were at an increased risk of automobile accidents.

Depression and sleep issues have been linked in many studies, including a 2008 report that tied sleep disturbances to suicide in teens.

### Getting more sleep

Given the negative repercussions of sleep deprivation, Carskadon and others say it is important to help teenagers embrace helpful techniques.

"One of the ways to help teens control sleep patterns is to educate them about the importance of limiting screens before bed and turning off lights," Carskadon says, adding that turning on lights in the morning when a teen rises and it's still dark outside is important to increase wakefulness.

It is also important, she says, to have set bedtimes and to not shift the sleep pattern by more than two hours on weekends, even though that is when many teens want to party.



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If your teens get up at 6 a.m. on weekdays to make it to school on time, ideally they should get up no later than 8 a.m. on weekends. This is especially true on Sunday, or they will have a hard time falling asleep Sunday night and end up being sleep-deprived right as the week begins.

This can be easier said than done, Carskadon acknowledges. "What 16-year-old is going to go to bed at 9 p.m.? That's both biologically and socially difficult."

The best way for someone to judge if they have had adequate sleep is whether they feel wakeful the entire day, with no oppressive dip in energy and low mood in the afternoon, experts say.

Carskadon says she hopes pediatricians probe the sleep habits of adolescents they see to check for depression and low motivation.

"Instead of getting mood-elevating medication, start asking about sleep," she urges.

But a big impediment to identifying and diagnosing sleep deprivation problems in adolescents is their general ability to bounce back – whether from an injury or lack of sleep – faster and better than adults. "Part of the issue when you are young and full of health is that you have a great capacity to absorb anything," Twery says. Even no sleep.

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