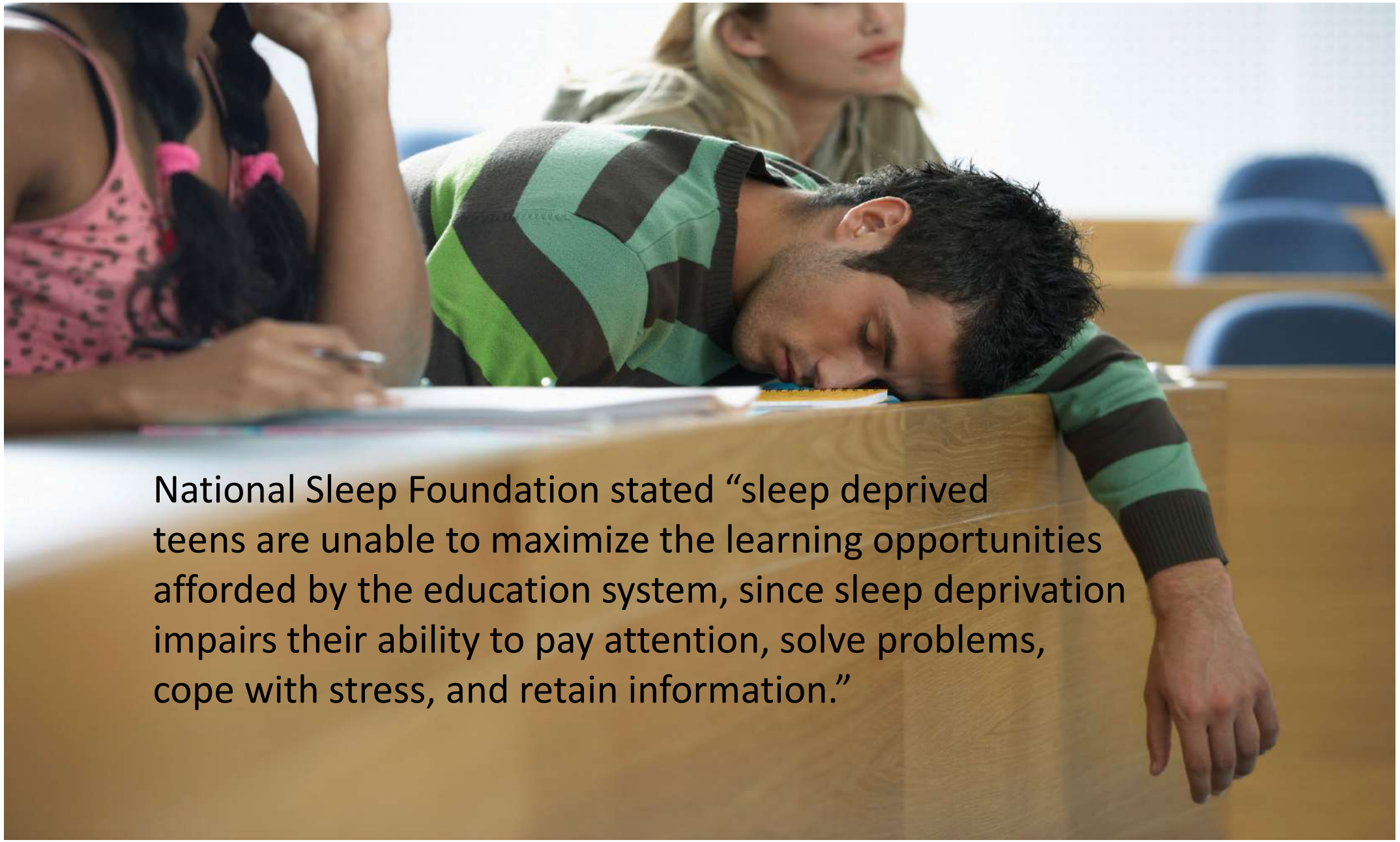
Adolescents & Sleep

- During puberty, around age 13, circadian rhythms put most teens on a later-sleep-wake clock due to biological changes involving melatonin in the brain.
- Stronger phase shift until peaking between 17-19.
- Clock says time to go to school, body says its is still the middle of the night.

On school nights, teens typically get less than 7 hours of sleep, yet need approximately 9 hours.


Why?

Of course, in addition to biological factors, lifestyle choices, environment and academic demands, negatively affect middle and high school students from obtaining adequate sleep.


National Sleep Foundation stated “sleep deprived teens are unable to maximize the learning opportunities afforded by the education system, since sleep deprivation impairs their ability to pay attention, solve problems, cope with stress, and retain information.”

What else?
Adolescents who do not get enough (insufficient): sleep

- More likely to be overweight;
- Not engage in daily physical activity;
- Suffer from depressive symptoms;
- Engage in unhealthy risky behaviors; and/or,
- Perform poorly in school.

Evidence strongly implicates earlier start time (earlier than 8:30 am) as a key modifiable contributor to insufficient sleep.

GHS: 7:32 am
GMS: 7:15 am

Work Cited: American of Pediatrics, 2018

Evidence suggests that …

1. delaying start times is an effective counter measure to chronic sleep loss as well as benefitting physical/mental health, safety and academic achievement.

2. later start times have an impact on standardized scores, especially lower performing students.

Work Cited: American of Pediatrics, 2018

- There are several advantages for teens to get the sleep they need:

1. less likelihood of experiencing depressed moods;
2. reduced likelihood for tardiness;
3. reduced absenteeism;
4. better grades;
5. reduced risk of drowsy driving; and
6. reduced risk of metabolic and nutritional deficits associated with insufficient sleep, including obesity.

Recommendations

American Academy of Pediatrics: MS/HS start at 8:30 am or later.

Recommendations

American Academy of Sleep: students aged 13-18 regularly need 8-10 hours of sleep.

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Sleepless No More In Seattle — Later School Start Time Pays Off For Teens

Patti Neighmond 2-Minute Listen

Teens' biological clock drives them to stay up late and sleep in. Most school start times don't accommodate that drive.

Jasper Cole/Getty Images

Many American teenagers try to put in a full day of school, homework, after-school activities, sports and college prep on too little sleep. As evidence grows that chronic sleep deprivation puts teens at risk for physical and mental health problems, there is increasing pressure on school districts around the country to consider a later start time.

In Seattle, school and city officials recently made the shift. Beginning with the 2016-2017 school year, the district moved the official start times for middle and high schools nearly an hour later, from 7:50 a.m. to 8:45 a.m. This was no easy feat; it meant rescheduling extracurricular activities and bus routes. But the bottom line goal was met: Teenagers used the extra time to sleep in.

Researchers at the University of Washington studied the high school students both before and after the start-time change. Their findings appear in a study published Wednesday in the journal *Science Advances*. They found students got 34 minutes more sleep on average with the later school start time. This boosted their total nightly sleep from 6 hours and 50 minutes to 7 hours and 24 minutes.

"This study shows a significant improvement in the sleep duration of students, all by delaying school start times so they're more in line with the natural wake-up times of adolescents," says senior author Horacio de la Iglesia, a University of Washington researcher and professor of biology.

The study also found an improvement in grades and a reduction in tardiness and absences.

Seattle's switch to later start times is still unusual for school districts around the country, where school typically starts around 8 a.m. In 2014, the American Academy of Pediatrics issued a policy statement calling on school districts to move start times to 8:30 a.m. or later for middle and high schools so that students can get at least 8 1/2 hours of sleep a night. But according to the National Center For Education Statistics, only 17 percent of public middle and high schools, including some school districts in Minnesota and Kentucky, start at 8:30 a.m. or later.

Getting a little extra sleep in the morning can be vital for teens, explains de la Iglesia. Once children reach puberty, their biological clock changes. "They fall

asleep later than older adults and young kids," he says.

Teens' biological bedtime is more like midnight, he says, and if parents expect them to go to sleep at 10 p.m., it often doesn't work. "They'll just lay in bed and not fall asleep," he says. Of course, this means teens need to sleep later in the morning. "To ask a teen to be up and alert at 7:30 a.m. is like asking an adult to be active and alert at 5:30 a.m.," says de la Iglesia.

In the study, researchers compared two separate groups of sophomores enrolled in biology classes at two Seattle high schools, Franklin High School and Roosevelt High School. The first group of 92 students, drawn from both schools, wore wrist monitors to track their sleep for two-week periods in the spring of 2016, when school still started at 7:50 a.m. The wrist monitors collected information about light and activity levels every 15 seconds so researchers could determine when students were awake and when they were asleep.

In 2017, after schools changed start times to nearly one hour later, researchers looked at a group of 88 students taking the same biology classes. They also wore wrist activity monitors and kept a sleep diary.

You might think that when school starts later, teens will just stay up later. But that's not what researchers found. Bedtimes stayed relatively constant and kids caught some extra sleep in the mornings. "We've put them in between a rock and a hard place where their biology to go to bed later fights with societal expectations," says lead researcher Gideon Dunster, a graduate student studying sleep at the University of Washington.

"Thirty-four minutes of extra sleep each night is a huge impact to see from a single intervention," says de la Iglesia.

The study also shows a link between getting more sleep and better academic performance. Students who took the biology class after the later start time got final

grades that were 4.5 percent higher than students who took the class when it started earlier. That could be the difference between an A and a B, says de la Iglesia. He says sleep deprivation makes it more difficult to learn and to retain new information.

Even though researchers can't be sure that more sleep gave students an academic edge, the school's biology teachers say the difference was striking.

"When we started at 7:50 a.m. there would always be stragglers who were having a hard time getting here," says Cindy Jatul, who teaches biology at Roosevelt High School. Students were groggy and noticeably different from students who took her class later in the day. "For example, if I gave them a project in the lab, they would be the most likely class to mess up," she says.

Franklin High School science teacher A.J. Katzaroff says "there was lots of yawning" when school started at 7:50 a.m. Students had a hard time engaging in the work or in brief discussions, which is extremely unfortunate. "Some of the best practices in science education have students talk, discuss and investigate together and those are all very hard when the brain is not fully powered," Katzaroff says.

After the time switch, many more kids were able to engage in deeper thought and scientific discourse. Katzaroff says. The number of students who were tardy or absent also decreased significantly, putting Franklin High School — which is in a low-income neighborhood — on par with students from a higher-income neighborhood. The later school start time gave them a better opportunity to make it to school on time.

"We need to give every bit of equity we can for kids in lower socio-economic families," says Dr. Cora Collette Breuner, spokesperson for the American Academy of Pediatrics and professor of pediatrics at the University of Washington School of Medicine. Breuner was not involved in the study.

Breuner calls the findings "exciting" and says that while an extra 34 minutes of sleep might not sound like a lot to the average person, when it comes to sleep "every minute counts."

Breuner says that while only a handful of school districts nationwide have switched to later start times, that is changing "as counties and cities like Seattle make changes and see positive benefit."