

LATE START OF SCHOOL ACTIVITIES FOR HIGH SCHOOL STUDENTS

Research and recommendations on the importance of sleep for teenagers.

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Introduction

In 2005, the 79th Legislature adopted [Texas Health and Safety Code Section 1001.0711](#). This section directed the Executive Commissioner of the Health and Human Services Commission to establish the Texas Health Advisory Committee (TSHAC) by rule. The purpose of TSHAC is to provide a leadership role for the Texas Department of State Health Services (DSHS) in the support for and delivery of coordinated school health programs and school health services. In 2007, the 80th Legislature expanded TSHAC's responsibilities to assess the effectiveness and develop recommendations for coordinated health programs provided by schools. [Texas Administrative Code, RULE §37.350](#) lists the rules and responsibilities of TSHAC.

The Late Start to School Activities for High School Students document was developed by TSHAC in 2016 to emphasize the importance of sleep for teenagers. The TSHAC Chair established the Later Start subcommittee in the November 1, 2021 meeting. The goal of this subcommittee was to update the research and recommendations of the original Late Start to School Activities for High School Students document. DSHS provided administrative support for this subcommittee by scheduling meetings, compiling research, and posting the TSHAC research and resources document to the [Texas School Health Advisory Committee: Recommendations webpage](#).

The Late Start to School Activities for High School Students document was approved by TSHAC at the September 12, 2022, meeting.

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Background

Sleep is essential for optimal health, especially for children and teens as they grow and develop.¹ Healthy People 2030 released two new objectives dedicated to increasing child and teen sleep, based on data from the National Survey of Children's Health.^{2, 3} One objective focuses on children aged 4 months to 14 years. The other focuses on the sleep of high school students.

Data from the National Survey of Children's Health shows that the proportion of high school students who get enough sleep has decreased. The proportion fell from 25.4% in 2017 to 22.1% in 2019.² The proportion of children (4 months to 14 years) who get sufficient sleep remained approximately the same. It was 65.6% in the 2018-2019 survey compared to 65.9% in the 2016-2017 survey.³

Research states that teenagers need about 9 hours of sleep a night to maintain optimal cognitive function and attention throughout the day.⁴ However, teenagers sleep an average of about 7 hours on school nights.⁵ Multiple factors contribute to this decline in sleep. Two of these factors include the slowing homeostatic drive to sleep, which allows teenagers to stay awake longer, and the delayed onset of sleep in their natural circadian rhythm.⁶ These biological changes push peak alertness and bedtimes later in the evening and waketimes later into the morning.

There are many factors affecting a teenager's sleep hygiene that can and should be modified, such as late-night screen exposure, texting, inconsistent sleep-wake times, and other behaviors.^{6, 7, 8, 9, 10} Family or social factors and stress can also be serious sleep disruptors.^{11, 12} Even if these factors are managed, early school start times contribute to sleep deprivation because they conflict with teenagers' delayed sleep cycles.¹³

Effects of Sleep Deprivation

Insufficient sleep is associated with lower academic achievement and behavioral issues. Studies have shown that sleep loss can worsen several cognitive functions impacting memory, attention, and capacity to handle complex tasks.^{14, 15, 16} These cognitive functions are imperative to a student's academic success. In a study by Beebe, Rose, and Amin, students that were sleep deprived had lower quiz scores and more inattentive behaviors such as closing their eyes or laying their head down.¹⁴ Poor sleep has a strong relationship with poor academic performance.¹⁷ Several studies have found that aggressive behaviors had a high correlation with shorter sleep and earlier school start times.^{18, 19, 20, 21, 22} Additional research has shown that sleep-deprived teenagers had decreased motivation and struggled with emotional regulation.¹⁸



Sleep-deprived teenagers have increased stress levels, are more likely to be overweight, and exhibit higher rates of drug abuse.¹⁷ These results show important relationships between sleep quantity and behavioral difficulties in teenagers. Contrary to popular belief, there is no such thing as “catch-up sleep.” Studies show that the combination of napping during the week and sleeping longer on the weekends is not as restorative as getting sufficient sleep during the week.⁶

In addition, the following health effects are associated with sleep deprivation:

- Increased incidence of anxiety, depression, and other mood disorders;¹⁷
- Increased incidence of suicidal ideation;¹⁷
- Increased risk for obesity and type 2 diabetes;¹⁷
- Increased risk for school violence;¹⁷
- Increased susceptibility to infections;²³
- Increased risk of motor vehicle accidents;¹⁷
- Increased risk for alcohol and substance use; and¹⁷
- Increased risk for sports-related injuries.²⁴

Logistics and Other Concerns

Available evidence supports a high school start time no earlier than 8:30 a.m. to provide teenagers with adequate time for sleep.²⁵ However, 42 states report that 75% to 100% of their public schools start before 8:30 a.m.²⁵

The following are some of the main objections from community stakeholders to later school start times:

- They may be too disruptive to the schedules of families, teachers, and students, particularly to those with students at different grade levels (e.g., elementary school and high school).²⁶
- Districts have concerns about potential increases in transportation costs.²⁶
- Research cannot prove late start time improves academic performance.¹⁷
- Athletics and other extracurricular activities’ practices, competitions, and other events become difficult to schedule.²⁷

District Implementation and Success

Logistics and other concerns can make it difficult for districts to change school start times. There is no one way to implement late start times in schools. Each community is unique with its own needs and limitations. However, research shows that engaging the community in the process of changing school start times allows for a wide range of input. It can create a policy that best reflects the interests of student learning.²⁷ School districts can hold meetings such as the School Health Advisory Council (SHAC) and

survey parents/guardians and school staff. They can present preliminary changes, get feedback, and plan to address common concerns.

Texas has over 1,000 public school districts. They are not required to report their start times. In January 2018, Start School Later-Texas documented the start times of 977 school districts in Texas. Only 12% of those school districts' start times were 8:30 a.m. or later.²⁸

It has been demonstrated that a delayed school start time can result in:

- Improved academic performance;^{13,}
- Improved mood, energy, and motivation;¹⁷
- Less drowsiness and sickness;¹⁷
- Decreased violence;¹⁷
- Decreased motor vehicle crashes;¹⁷ and
- Fewer absences and truancies.¹⁷

In schools with later start times, 92% of parents preferred the later start time after its first year of implementation.¹³ This was despite previous concerns about busing, athletics, and childcare.



Several studies suggest that elementary students are able to fall asleep earlier and obtain sufficient sleep even with an earlier school start time.^{1, 27, 16, 28} In 2017, a district in Colorado conducted a two-year study on the effects of changing school start time. The study included their elementary, middle, and high schools.¹ The district staggered start times. High school was delayed to 8:20 a.m. and

middle school to 8:50 a.m. Elementary was moved earlier to 8:00 a.m. The study showed that elementary students still received enough sleep after their school start time changed. The study also showed that middle and high school students slept more. After the school start time changed, sleep increased by 21% for middle school students and 32% for high school students.¹

A 2021 study showed that a change in school start time increased the percentage of parents reporting sufficient sleep duration.²⁹ Parents of any combination of elementary, middle, and high school students; parents of only middle school students; and parents of only high school students reported an increase of sleep duration. Only parents of elementary students reported receiving the same amount of sleep.

The concern about decreased athletics and extracurricular activities is contradicted by the Stanford Basketball Study. It showed that players who slept 10 more hours per month boosted their 3-point throws by 9%.³⁰

Recommendations

Based on the evidence, the Texas School Health Advisory Committee (TSHAC) recommends that districts delay high school start times. The earliest start time recommended is 8:30 a.m., including extracurricular activities.

One way to implement later school start times is for districts to exchange their high school/middle school schedule with their elementary school schedule. As studies have shown, elementary students can fall asleep earlier and get enough sleep even with an earlier school start time.^{1, 16, 31, 32} Middle and high school students struggle to obtain significant sleep because of biological changes.⁶

The delayed start time of high school activities should be combined with encouragement for teenagers to:

- Decrease visual stimulation two hours before going to bed, particularly with videogames and television, and
- Remove distracting electronics from the sleeping area (e.g., phone, television, and computer).

Resources

The National Sleep Foundation

[thensf.org/](https://www.thensf.org/)

Center for Disease Control and Prevention: Sleep and Health

[cdc.gov/healthyschools/sleep.htm](https://www.cdc.gov/healthyschools/sleep.htm)

American Academy of Pediatrics

publications.aap.org/pediatrics/article/134/3/642/74175/School-Start-Times-for-Adolescents

American Academy of Sleep Medicine

jasm.aasm.org/doi/10.5664/jasm.6558

American Medical Association

[news.cision.com/american-medical-association/r/ama-supports-delayed-school-start-times-to-improve-adolescent-wellness,c2029027](https://www.ama-assn.org/news/cision.com/american-medical-association/r/ama-supports-delayed-school-start-times-to-improve-adolescent-wellness,c2029027)

American Psychological Association

[apa.org/pi/families/resources/school-start-times.pdf](https://www.apa.org/pi/families/resources/school-start-times.pdf)

National Association of School Nurses

startschoollater.net/uploads/9/7/9/6/9796500/position_statement_2016.10_society_of_pediatric_nurses.pdf

National Parent Teacher Association

[pta.org/home/advocacy/ptas-positions/Individual-PTA-Resolutions/Resolution-on-Healthy-Sleep-for-Adolescents](https://www.pta.org/home/advocacy/ptas-positions/Individual-PTA-Resolutions/Resolution-on-Healthy-Sleep-for-Adolescents)



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² U.S. Department of Health and Human Services. (n.d.). *Increase the proportion of high school students who get enough sleep — SH-04*. Retrieved from Healthy People 2030: <https://health.gov/healthypeople/objectives-and-data/browse-objectives/sleep/increase-proportion-high-school-students-who-get-enough-sleep-sh-04>

³ U.S. Department of Health and Human Services. (n.d.). *Increase the proportion of children who get sufficient sleep — EMC-03*. Retrieved from Healthy People 2030: <https://health.gov/healthypeople/objectives-and-data/browse-objectives/children/increase-proportion-children-who-get-sufficient-sleep-emc-03>

⁴ Short, M., Weber, N., Reynolds, C., Coussens, S., & Carskadon, M. (2018). Estimating adolescent sleep need using dose-response modeling. *Sleep*, 1-14.

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⁶ Crowley, S., Wolfson, A., Tarokh, L., & Carskadon, M. (2019). An update on adolescent sleep: new evidence informing the perfect storm model. *Journal of Adolescence*, 55-65.

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