

Body changes alter teen sleep cycles

High school students tend to be the most tired in class causing them to fall asleep during school. The cause of this problem is due to teenager's natural body clock which determines when they feel tired and when they feel awake.

According to a TED Talk by sleep study scientist, Wendy Troxel, teenagers experience delay in their biological clock. This is driven by a shift in the release of the hormone, melatonin.

Melatonin is a hormone made by a small gland in the brain called the pineal gland. Melatonin controls a person's sleep and wake cycle and for teenagers, the release is delayed.

"Waking a teenager up at 6 a.m. is the biological equivalent of waking an adult up at 4 a.m.," Troxel said.

Around adolescence, a change in the body clock in teens makes it hard for them to fall asleep as early as they did when they were younger.

"In middle school I used to go to bed at 9 p.m., now I typically can't fall asleep until 10:30 or 11 p.m.," freshman Avi Sarkar said.

Students sleep cycle have changed since entering high school not only because of the overload of homework, but because of the change in their natural body clock.

"Typically I go to bed between 11 p.m. and midnight... 9 p.m. is too early, I can't fall asleep then," junior Colin Walsh said.

Staying up late can push a teen's body clock out of sync with the outdoor cycle of light and dark.

"If I don't go to bed early, I get

cranky," junior Holle Guntz said.

Homeostasis tells us that a need for sleep is accumulating and that it is time for sleep. It creates a drive that attempts to balance feeling tired and feeling awake.

Most teens fall short of the required nine hours of sleep by a considerable amount, meaning that most teens are deprived of sleep. This leaves many teens feeling tired throughout the day.

"I feel tired until second period, and even in the shower I start to fall asleep," Sarkar said.

Ways to handle the effects of insufficient sleep include, mainly, an earlier bedtime. Though this seems obvious, getting to bed earlier increases the amount of hours and offers a simple solution to exhaustion.

"I definitely wouldn't be putting as much effort because I'd be so tired," Guntz said, "If I have to stay up late to study, I won't do as well at practice."

Many teens are subject to using their phones and other electronics which keep them awake at night so if they turned it off at an earlier time, it would be easier for them to achieve nine hours of sleep.

Students fight the natural body clock by drinking products with caffeine, using online chat rooms, iMessage and other activities.

Psychological, parental, societal and cultural features can lead to lack of sleep for a teenager and change in the body clock.

"Since puberty I have not gotten enough sleep, and it's killing me," Sarkar said. — *Hery Acosta, Ian Hansen*

Later start would benefit students

Six a.m. and my alarm is blaring for me to wake up. A typical morning in my life consists of me rolling out of bed, getting ready and then heading out the door at 6:30. Living out of the district requires for most of my morning to be spent driving to school.

My eyes are tired as I make my way north, every pitch dark morning. With an 8:30 start time, driving to school an hour later each morning when it is light outside would be much nicer, make me feel safer, and make me feel more awake. The possibility of a later start time would allow for students to follow more closely to their natural

body clocks. Going to bed later, and waking up later is how we are wired. I know there are many issues that need to be worked out in order to start later including, buses, traffic and after school activities, but schools all over Indianapolis are starting later and adjusting their systems to benefit students, so NC should too.

I will be very interested to see if the start time changes within a few years, and I am excited to see if the start time change effects school and sports performance, as well as the general well-being of students. — *Emily Spears opinion*

Starts & Stops

Reporters Jiamone Dumas and Kierra Griffith share the hours of several local high schools.

Avon

8 a.m. to 2:58 p.m.

Ben Davis

8:30 a.m. to 3:20 p.m.

Brebeuf

8:15 a.m. to 3:15 p.m.

Carmel

7:50 a.m. to 3:05 p.m.

Cathedral

7:50 a.m. to 3:10 p.m.

Center Grove

7:35 a.m. to 2:50 p.m.

Chatard

7:58 a.m. to 3:15 p.m.

Fishers/Hamilton Southeastern

7:35 a.m. to 2:35 p.m.

Franklin Central

7:55 a.m. to 3 p.m.

Heritage Christian

8 a.m. to 3:05 p.m.

Herron

9 a.m. to 4 p.m.

Lawrence Central/North

8:50 a.m. to 3:40 p.m.

North Central

7:20 a.m. to 2:35 p.m.

Park Tudor

8 a.m. to 2:50 p.m.

Pike

7:15 a.m. to 2:23 p.m.

Warren Central

7:20 a.m. to 2:45 p.m.

Zionsville

7:45 a.m. to 4 p.m.



Senior Jazmine Davis drives down the court during the girls basketball game against Franklin Central earlier this season. For athletes, homework time doesn't start until much later in the evening, considered problematic to those who think a 7:20 a.m. start time is too early. Vyla Carter photo.

Athletes deal with long days

Student athletes are affected by the early start time because they have to wake up early and they have to stay after school for practices and games most nights of the week.

Wendy Troxel is a clinical psychologist with a focus on behavioral treatments for sleep disorders.

In this case, students and student-athletes can't focus on their learning nor their sport if they suffer from lack of sleep.

"When teenagers don't get their sleep," Troxel said during a TED Talk, "their brain and body won't function well."

When the body of a teen is resting their body needs eight hours or more to have time to repair itself.

"Waking up a teenager at 6 a.m. is like waking up an adult at 4 a.m.," Troxel said.

High school students' bodies are in the teenage stage. This stage undergoes puberty which causes

fatigue mentally and physically.

Athletic Director Paul Loggan, believes teenagers should sleep more so they can function well in learning and in sports.

"If student-athletes get eight hours of sleep and eat properly," Loggan said, "this will help them for their daily lives."

Loggan believes power naps would help student athletes be more active.

"Sleep can help the immune system," Loggan said, "it can get you sick if you don't sleep enough."

Many student-athletes don't have enough free time for themselves, they say. They have to study, finish homework, eat and practice their sport. Many even have either chores to do or have a job. These things give students less time to rest.

Many students think school should start later so they can get one to two extra hours of sleep.

"I think that we should be going

to school later because we would be able to get more sleep at night and we would have more energy to do our work," senior Andreyanna Martin said

There are other students who think the school start time and end time should stay the same. Football player Dallis Bates thinks NC should just stick with the schedule that the school has.

"I'm used to waking up early," Bates said, "If I went to school any later I would waste my entire day."

These students think they are used to the school's schedule and they also don't want to leave later from school.

"I think we just need a small break in between school and sports," Bates said.

There are many different opinions on school start time. Students hope that the future entails energy filled and non-drowsy days. —Alejandro Maciel & Hunter Rhea

Principal discusses start times

When the first bell rings at 7:14 a.m. through the upper halls of North Central, it acts as a second alarm for the students slumped against backpacks and lockers, startling them awake and launching them into the shuffle to their first class, half-asleep.

It's not even light outside, but the day has begun for students who've been awake since 6 a.m., a day that will go late into the night with school work and after school activities.

The early start that seems to get earlier every year is a large topic of discussion all across the nation, but it's most definitely riled the student body of NC.

Luckily, students aren't the only ones advocating for a later start to the day. They've got the administration on their side.

Principal Evans Branigan III has been working at NC for years, back when the first class started at 7:30 a.m. Fast forward a handful of years, and the time has barely changed. In fact, it's been pushed five minutes earlier.

"Do I think a later start will assist students with their intuitiveness, their being awake at school? Yeah, I think it will help out drastically," Branigan said.

Branigan believes the research done about teens and their sleep makes valid points about the need for later starts in the day and sleeping in for students.

"Research is showing that for your age group, a later start in the day is a better start in the day," Branigan said.

Branigan thinks that high school students suffer the most from early starts and late nights.

"When you go off to college," Branigan said, "most of you won't see a 7:30 class, because most of the time that doesn't exist."

Though he thinks that a later start time has advantages for students, Branigan admits there are some challenges in changing how early that first bell rings.

"Transportation has been a real issue," Branigan said, "it's very complicated - buses. Buses are an

issue in Washington Township."

In fact, these buses may be the main reason for a large debate about high school start times throughout the township.

"The same buses that pick you up in the morning then turn around and go get middle schoolers and all of the elementary," Branigan said, "somebody's got to go first."

This overlapping schedule results in a debate that, simply put, is seated on who wakes up the earliest and boards the bus.

"This time of year you see it's

his head.

The truth is, there's no simple solution, and finding a win-win for all levels of school is nearly impossible. Branigan said the township is trying to find a solution from the students and parents of all schools.

"They sent a survey out, and one of the surveys talks about when should the high school start," Branigan said. "There's real possibility that in two years we're looking at an 8:30 start time."

Despite the headway being made with transportation challenges, Branigan said another challenge presents itself after school.

"The high school's also limited based upon the number of activities we have after school," Branigan said, "we can't show up to a [sporting] event 30 minutes later or else we'll forfeit."

Sporting events are regulated and have set start times, and if a school shows up later, even because of a late dismissal, that team forfeits the game. The main effects however, show up in school attendance and tardiness.

"I think it impacts the number of people who are late to school," Branigan said. "There is an increase of people who are tardy to their period one."

This problem sticks even without an early start, as attendance is bad on two-hour delay days as well. The problem with starting at 9:20 a.m. isn't a result of sleep, it's a result of traffic.

"Here's the problem with two-hour delays," Branigan said, "when you drive or are driven to school, the

biggest problem you face is getting to school."

This, Branigan points out, is an advantage of an earlier start.

"By the time we load in the morning, traffic isn't bad," Branigan said. "The only traffic out there is us."

All in all, Branigan agrees with students on the need for a later start, but he recognizes shifting the entire district's starting time is easier said than done. — Lilly Milspaugh



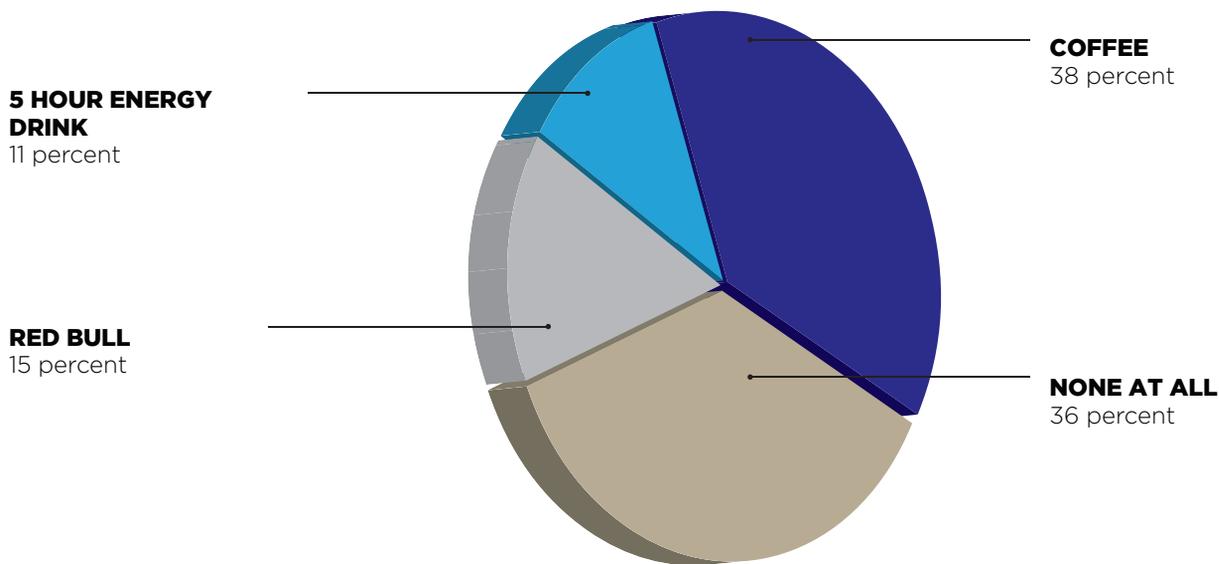
Principal Evans Branigan III sees the pros and cons of an early start and a late start. Carly Barnes photo.

dark outside when you get up in the morning," Branigan said, "who is best equipped emotionally and mentally to function in the morning at that point?"

Branigan also makes the point of the challenges with waking up younger kids and sending them off to school before the sun.

"Do you really want a third grader standing at the bus stop when it's dark outside?" Branigan said, shaking

Caffeine preferences



100 students surveyed by Day Moore.

CRASH & BURN

Caffeine boost temporary, affects students

As adolescents continue to chug down caffeine-filled drinks every morning for school they take the risk of facing terrible caffeine crashes.

Starbucks, Red Bull and 5 Hour Energy are all drinks taken by teenagers around the country, just to have energy to stay awake and be ready for school. These teens are relying on various products to keep their blood pumping and mind focused.

"Caffeine in moderation is fine for students who are feeling drowsy. It's important to be awake and alert for class," parent and staff member Kelly Wheat said.

Caffeinated crashes send students spiraling into an exhausting downfall resulting in students who are unable to learn in school.

"Caffeine definitely affects me a lot but the only problem is I crash after like four hours," sophomore Margaret

Robinson, a frequent caffeine drinker, said, "and I have major headaches when I don't drink coffee."

Robinson is one of the many students who rely on caffeinated beverages to get them through the first few hours of the school day.

"I pay way more attention in my first three classes than my later ones," Robinson said.

English teacher Lynda McQuiston notices a difference in her first period class then the rest of her classes.

"My students are sleepy in the morning, especially my first period class. They were especially tired right after fall break, and that happens after every break," McQuiston said. "Wednesday is the first day they're 100 percent engaged."

Howard Hendricks, a sophomore track and cross country runner, doesn't prefer caffeine before sporting events.

"No, I don't drink caffeine because it can slow you down," Hendricks said.

Gabby Green, a runner for cross country and track, agreed with Hendricks.

"It takes away your full potential and it slows you down after it wears off," Green said.

On the other hand, some students think these sugary drinks help energize them during big games.

"I drink them when I need energy mid-game," said Colby Lemaster, a sophomore football player.

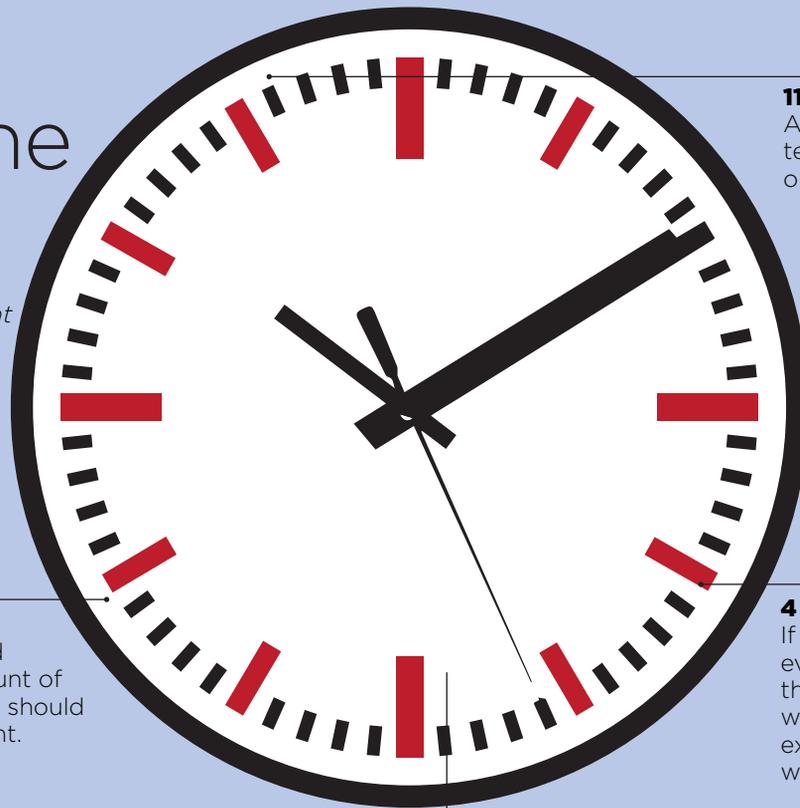
Within the contents of Red Bull, one drink alone can hold 39 grams of sugar and 160 calories.

Caffeine is used for a temporary energy-boost, as students suffer from drowsiness when they wake up before the sun rises. —*Cicely Miller & Sarah Hart*

The sleep package was organized by the fall semester beginning journalism class. The class was led by Emily Spears and Alek Shabaz and assisted by Lilly Milspaugh. Members of the class include: Hery Acosta, Katie Goetz, Ian Hansen, Sarah Hart, Kylie Leavitt, Torian Longino, Alejandro Maciel, Emily McGrath, Cicely Miller, Austin Moore, Day Moore, Xio Moore, Jessica Reid, Hunter Rhea, Gus Siegel, Mitchel Wattlely and Cal Welker.

Beat the clock

A look at the numbers as they relate to student sleep. by Cal Welker



11 p.m.
Approximate time most teenagers go to sleep on a school night.

8 hours
Recommended minimum amount of time teenagers should sleep each night.

4 a.m.
If an adult woke up everyday to begin their day at 4 a.m. they would have a similar experience to a teen waking at 6 a.m.

6 a.m.
Approximate time most students wake up for school.

Tired students suffer with sleep debt

Every morning alarms across the country blare long before the sun rises. Herds of groggy students arrive to school, coffee in hand and struggling to stay awake.

Only about 13 percent of teens get the recommended nine hours of sleep a night, leaving the other 87 percent of teens to fall victim to sleep deprivation according to the most recent national poll by Stanford University.

Laney Isakson is a junior and a member of the varsity swim team and has practices before school during swim season.

"I am tired all the time," Isakson said.

Factors such as school, work or sports contribute to high-schoolers lack of sleep.

"I sleep at most five hours a night, and then wake up at 4:40 for practice in the morning, so I don't really get a good night's sleep," Isakson said.

A fellow varsity swimmer and IB student, Carleigh Hill, shares a similar situation with Laney.

"I'm definitely not getting enough

sleep, and sometimes it gets really frustrating, especially when I have to wake up at 4 for morning practice," Hill said, "I'd say on average I get five hours of sleep per night."

In addition to falling asleep in class, a lack of sleep can affect students school and sports performance.

"Sometimes when my class load is heavy, I dread going to practice or I don't perform as well because of stress or just lack of sleep," Hill said.

A recent study by Harvard University found that sleep loss is cumulative and can not be caught up on and when adolescents are reduced to a mere five hours of sleep a night they get progressively sleepier throughout the week, creating a "sleep debt."

This "sleep debt" may cause some students to fall asleep during class.

Maddie Brooks is a junior at Herron High School. Herron begins school at 9 a.m. Mondays through Thursdays and at 10 a.m. on Fridays. Later school start times allow students to get more sleep at night.

"I get like seven or eight hours of

sleep every night," Brooks said.

Brooks agreed that getting more sleep each night has affected her positively.

"The extra sleep helps me with my attitude and my homework," Brooks said.

Although teenagers are usually the ones who suffer the most from sleep loss, some adults have the same issue due to the nature of their jobs.

Casey Czekala is a trauma nurse and works the night shift often.

"I notice when I get about eight hours of sleep I don't get as moody and feel more awake," Czekala said.

Drowsy driving is responsible for at least 20 percent of all motor vehicle accidents resulting in approximately 1 million crashes, 500,000 injuries and 8,000 deaths in the U.S. per year according to the The National Highway Traffic Safety Administration.

"Driving to school in the morning can be really difficult because it's still dark outside and I still haven't woken up yet," junior Jackie Rhinesmith said.

— Katie Goetz

Studies show teens don't sleep enough

Early start times are causing concern throughout the nation. Students, parents, teachers, administrators and school board members are discussing the possibility of time change.

Colleen Russell is a tutor at NC.

"We should change the school start time because kids [teen's] age have a sleep cycle that dictates that they need to have more hours of sleep to academically succeed," Russell said.

According to the American Academy of Sleep, teenagers' school days should not start any earlier than 8:30 a.m. Earlier start times are linked to poor academic performance, car accidents and depression because of the lack of sleep that comes with early start times.

Erin Lizer is a Spanish teacher

who agrees that a later start time would help increase her students' productivity.

"Students aren't awake and their brains aren't functioning until later on in the morning," Lizer said.

Students think the start time should be later to allow time to sleep in, since a reasonable bedtime is not always attainable.

"This school's start time is not reasonable because you will not get enough sleep if you don't go to bed at like 9 p.m. and teenagers do not go to bed anywhere near that time because they have homework, jobs, and sports, etc." sophomore Brooklyn McKelvin said.

The most recent national poll, from Stanford Medicine, showed more than 87 percent of high school students get far less than the recommended eight to 10 hours of sleep per night. It

is important for students to get sleep in order to perform their best in the classroom, when students are not awake they aren't learning.

The American Academy of Sleep Medicine states that increased sleep results in better daytime alertness, reduced tardiness, improved school attendance, better participation in class, and reduces irritability.

Student Kiya Massay is dismayed with the current start time.

"Every other school I went to started later, even though we got out later you still felt better and more alert in the morning," Massay said.

Lack of sleep can also tie into depression, especially in teens.

"The onset of new cases of depression skyrockets when kids become teens," sleep researcher Wendy Troxel said during a TED Talk. —*Kylie Leavitt & Torian Longino*

Sleep disorders can start based on teen habits

Sleep deprivation is like smoking cigarettes. Years of abuse can lead to problems that can become detrimental to individuals health.

More than 18 percent of adults report receiving insufficient sleep despite not having the confines of early start times.

Trauma nurse Casey Czekala said, "I saw a guy who became so psychotic due to the fact that he had not slept more than 12 hours over a month."

Sleep deprivation can have serious consequences that affect teens' quality of life, even long after they have graduated high school. Early school start times force teens to develop bad sleep habits which follows them into their adulthood.

"I think my sleep schedule is better, but there are those days where I have to stay up really late to finish homework or a project," senior

Yessica Santos said.

Habits like this lead to long term sleep loss and can cause a variety of problems affecting both mental and physical health. Over time, the sleep loss students suffer from has been found to lead to long-term mood disorders.

A study by Harvard University found that chronic sleep issues have been correlated with depression, anxiety and mental distress.

"The extra sleep helps me with my attitude and my homework; my test and quiz scores are still low though," sophomore Skylar Moore said.

Years of bad sleeping habits suffered by students can lead to the development of sleeping disorders in adulthood. The most prominent sleep disorder as a result of sleep deprivation is insomnia.

Alcohol acts as a mild sedative and is commonly used as a sleep

aid among people who have sleep problems according to Harvard. Using alcohol as a sleep aid can lead to health problems such as alcoholism and liver failure.

Insufficient sleep is associated with lower levels of leptin, a hormone that alerts the brain that it has enough food, as well as higher levels of ghrelin, a biochemical which stimulates appetite. Not getting enough sleep leaves the body exhausted which provokes one to eat foods high in sugar to provide them with the energy boost they need to get through the day.

"I usually just get food and go home [after school]," senior Liam Pierson said.

Studies have found people who habitually sleep less than five to six hours a night are at a higher risk of developing these problems. —*Emily McGrath*

The National Sleep Foundation

From sleepfoundation.org/sleep-topics:

FACTS:

- Sleep is vital to your well-being, as important as the air you breathe, the water you drink and the food you eat. It can even help you to eat better and manage the stress of being a teen.
- Biological sleep patterns shift toward later times for both sleeping and waking during adolescence -- meaning it is natural to not be able to fall asleep before 11 pm.
- Teens need about 8 to 10 hours of sleep each night to function best. Most teens do not get enough sleep — one study found that only 15% reported sleeping 8 1/2 hours on school nights.
- Teens tend to have irregular sleep patterns across the week — they typically stay up late and sleep in late on the weekends, which can affect their biological clocks and hurt the quality of their sleep.
- Many teens suffer from treatable sleep disorders, such as narcolepsy, insomnia, restless legs syndrome or sleep apnea.