

er losing sleep

Of all university student priorities, sleep is often the most neglected. A stressful academic environment, coupled with trying to maintain some semblance of a social life, tends to leave students scrambling to find the time to recharge. Despite attempts to replace sleep with caffeine or drugs, the brain can't be fooled forever, and experts agree that students can't function without a proper amount of rest—though that amount is dependent on a number of factors—and pulling yet another all-nighter might not help you ace that midterm after all. Delving into the foggy world of slumber, the Gateway discovers what a little shut-eye can do for the average university student.

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After a weekend initially devoted to a writing a research paper turns into quality time with Jack Daniels, many attempt to catch up on that school-work with a couple of late nights. Similarly, it's not uncommon to crack the books at 10:30pm the night before a final exam, thinking that a solid cramming session is all that stands in the way of that 4.0 GPA. However, sacrificing sleep may take more of a toll on grades and day-to-day life than many think.

"There are large numbers of people who are not getting enough sleep due to school constraints; a lot of people are working through university, and they want to party on weekends," explains Dr Lawrence Pawluk, a clinical professor of psychiatry. "It's a never-ending battle."

Pawluk, who specializes in sleep disorders from narcolepsy to insomnia, understands the costs of missing out on those 40 winks.

"Sleep deprivation is something that's rampant in our society, and there are a number of consequences simply from receiving insufficient sleep," he says. "You have the ability to get the right amount of sleep; you just don't have the time to get it in."

According to Pawluk, a lack of sleep disrupts the brain's ability to translate information into memory and impairs problem-solving skills.

"I'm surprised there aren't even more major accidents or problems that have arisen in the world as a result of people making decisions when they're sleepy."

Get rhythm when you need to snooze

The loss of concentration and the inability to focus on mental tasks is due in part to the interruption of circadian rhythms in the body. Circadian rhythms are the body's natural way of adjusting to the 24-hour cycle of light and dark. When the cycle is disrupted, as with a change in sleeping patterns, the brain loses the restorative effects of rest. Symptoms can resemble the condition called jetlag, which is also the result of a change in circadian rhythms.

The deep phases of sleep, which cycle throughout the night, are the most important in terms of mental and physical rejuvenation, Pawluk explained. In particular, if a person is woken up during these stages, they tend to be groggy throughout the day. The four phases of sleep usually last from 70–120 minutes each.

"Everyone's sleep went to hell in a hand basket when Edison invented the lightbulb," Pawluk says. "With the ability to artificially lengthen our day, that result[ed] immediately in us sacrificing our sleep."

The typical day of a university student varies in start times, but not in length. Whether you're the early bird with the 8am lecture or the owl who only comes out for their night class, the workload is overwhelming, and in order to stay afloat, the days are long.

"Unfortunately, the people who need more [sleep] are severely impacted by society's expectations because we don't really hold it in any esteem at all," Pawluk explains.

Unpredictable schedules contribute to fluctuating sleep patterns, making it difficult to get a good night's rest. A lack of sleep will not only make your classes seem unbearably boring—it'll also increase stress levels.

"Everyone knows how much sleep they need, and we're all willing to sacrifice some of that," explains Dr Irv Mayers, director of pulmonary medicine at the University of Alberta Hospital and a specialist in sleep apnea. "I think when you start finding it is impairing your ability to interact with your friends and family, if you're snappy all the time or irritable, if you're falling asleep when you don't want to, you're overdoing it, and you need to give yourself more sleep."

Although the required amount of sleep is unique to each individual, most people don't get enough rest to function at their highest capacity. It's generally thought that people need an uninterrupted 7–8 hours per night, but Pawluk said that for some people, even that isn't enough.

"I think we've always underestimated how much sleep people truly need [...] People in

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FOR BLEARY-EYED AND SLEEP-DEPRIVED students, the solution to tiredness may be closer than you think.

A recent study published in the December issue of *The Journal of Neuroscience* has revealed the findings of a newly tested nasal spray. The treatment contains a naturally occurring brain hormone called orexin-A.

The research was prompted by work done by Dr Jerry Siegel, who discovered that the absence of orexin-A is what we know as narcolepsy—a condition that results in frequent and uncontrollable periods of deep sleep.

Testing was carried out on monkeys who were sleep deprived for 30–36 hours and then given orexin-A or a placebo supplement. The test-subject monkeys, along with alert ones, then participated in cognitive tests.

Those monkeys who were administered the nasal spray scored around the same as the alert ones, while the placebo group fell significantly behind.

The Defense Advanced Research

Projects Agency (DARPA), an independent research branch of the US Department of Defense, funded the project.

As explained in an official statement issued to the Gateway by DARPA, although the research has not looked into the prevention of sleepiness, it "demonstrated that orexin-A ameliorated some of the cognitive deficits associated with sleep deprivation. Specifically, it improved short-term memory."

While the news of this discovery is potentially groundbreaking, medical professionals are quick to point out that the long-term affects of true sleep deprivation are unknown.

Exciting as the prospect of a no-sleep nasal spray is, the research done to date is purely fundamental—an important first step, but it will be years before orexin-A makes its way to drug-store shelves. Until then, you'll just have to stay awake the old-fashioned way: a good night's sleep, or a huge pot of coffee in the morning.

What's the longest all-nighter you've ever pulled? Join the discussion and read about our experiences staying up all night in this week's online features section at

www.thegatewayonline.ca