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Sleep Deprivation and the Body: How Catching Zs (or Not) Effects Your Health

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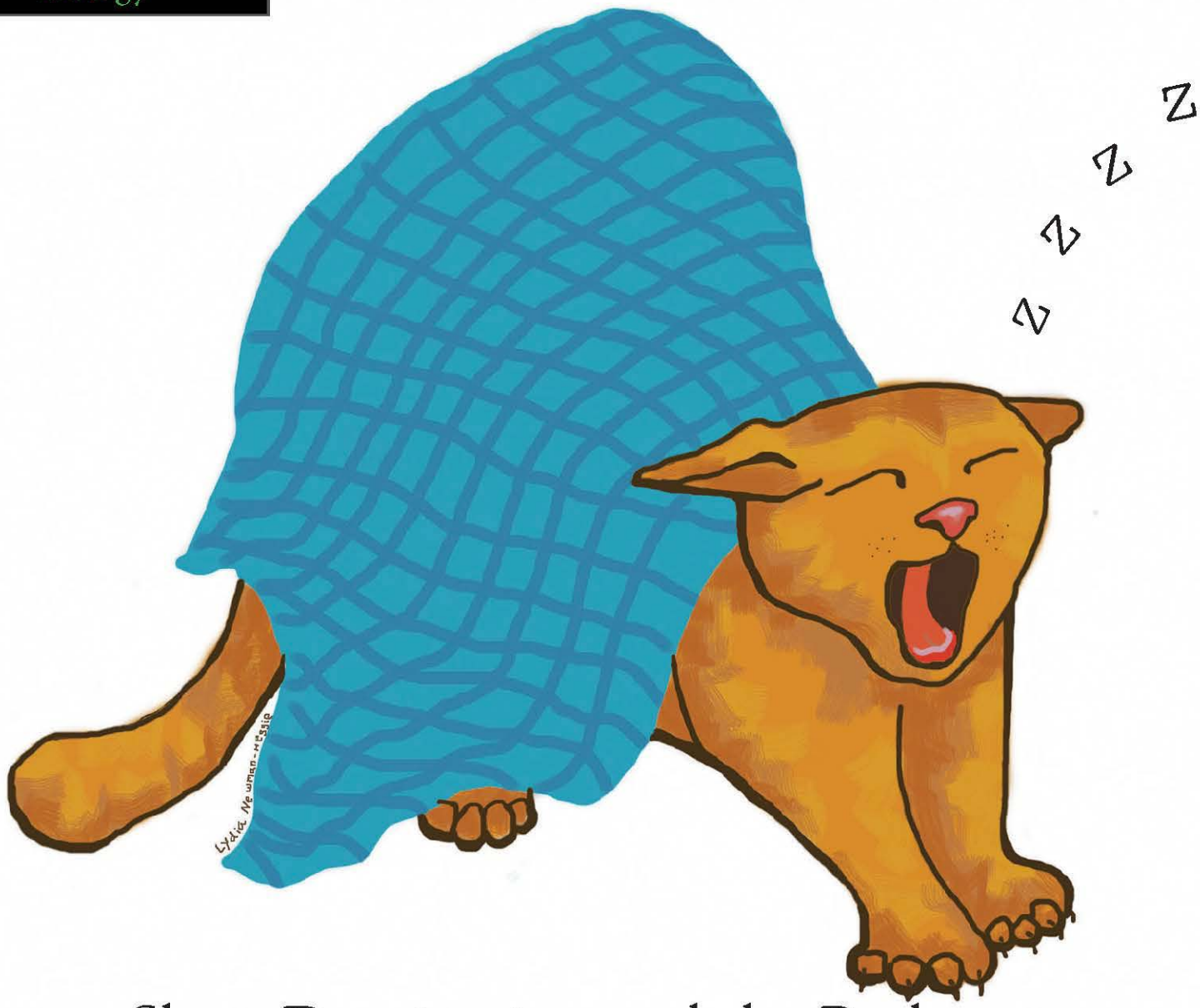

Sleep Deprivation and the Body

How Catching Zs (or Not) Effects Your Health

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How many hours of sleep a night would you estimate you usually get? Six? Maybe seven on a good week? It's no surprise that the college lifestyle is not exactly conducive to maintaining a healthy sleep schedule. Many nights, studying in a panic for an exam the next day takes precedence over hopping into bed at eleven so you can spend nine hours in dreamland and be up in time for your nine o'clock class.

While it may not seem like a big deal to get less than eight hours of sleep a night, losing sleep can lead to more than a rough wake-up and yawning throughout the day. The minor effects of sleep deficiency we often see and experience include yawning, irritability, and excessive drowsiness. Sleep decreases your overall cognition and both your short and long-term memory. You may also fall prey to microsleeps, which are brief unintended periods of sleep a few seconds long. While microsleeps may have minor repercussions if you accidentally snooze a bit during lecture, they could prove deadly if they occur while you're driving.

If sleep deprivation becomes prolonged you could be at risk for hallucinations, impulsive behavior, depression, and paranoia. Chronic lack of sleep also lowers the body's defenses, putting you at risk of a weakened immune system, heart disease, Type II diabetes, and many other diseases. In young adults, sleep loss generally refers to sleeping less than seven and a half to eight hours per night. When you're sleep deprived every bodily system is affected, and there can be serious consequences for your safety and health.

In the endocrine system (the body system that deals with producing and regulating hormones), sleep loss is often associated with Type II diabetes and impaired glucose tolerance. The body uses glucose as a main energy source. When you're stressed, cortisol, an integral stress hormone, cues the release of glucose so your body has extra energy to react. Cortisol production generally fluctuates throughout the day and drops in the late evening as we prepare to sleep so the body can regulate the amount of glucose in your system. But if your cortisol levels stay high longer through the

night because you're not sleeping (or because you're stressed by your exam the next day), blood sugar levels tend to be elevated as well. Once cortisol levels are elevated you are more likely to develop hormone imbalances, moodiness, and malfunctions in your immune system.

Like cortisol, insulin is another endocrine hormone, and it delivers the sugar in your bloodstream to your body's cells so your body has fuel. If your body develops a resistance to the insulin, the sugars can build up in your blood stream rather than being absorbed by body cells and lead to prediabetes or Type II diabetes. Fortunately, studies have found that returning to sufficient sleep can improve blood sugar control and reduce the effects of diabetes.

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In the digestive system, sleep deficiency has been linked to weight gain, obesity, and again, diabetes. Insufficient sleep lowers your body's production of leptin, a hormone that suppresses your appetite after you have eaten and makes your body recognize that it is "full". On the other hand, the body's levels of ghrelin, a hormone that stimulates your body to feel hungry, are then elevated, motivating you to eat more. Naturally, if your body is telling you that you're hungry and you are consuming an excess of food, you're going to gain weight. The effects of sleep insufficiency on insulin also impact the digestive system as a lack of sleep cues your body to release more insulin after you eat. This is because your body has to find a way to get the energy to function it would normally receive from sleep. Releasing more insulin increases the amount of glucose your body retrieves from the bloodstream and that can be used to power your cells. However, increased insulin levels promote fat storage, which again increases your risk of developing diabetes.

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In the immune system, sleep provides a period in which your body generates important antibodies and other protective molecules used to fight foreign invaders like bacteria and viruses. The less time you spend sleeping the less your body is able to prepare to fight illnesses. A study found that people who averaged less than seven hours of sleep per night were around three times more likely to develop cold symptoms than individuals who slept greater than eight hours a night when participants were exposed to the rhinovirus that causes colds. A great way to help your body prevent infection by that nasty virus sweeping through campus is to make sure that you're getting enough sleep!

In the cardiovascular system, sleep loss has major effects of the heart's ability to function. A recent study found that even minor sleep deprivation (around six to seven hours of sleep per night) was associated with a risk of coronary artery calcification. Coronary arteries are blood vessels responsible for carrying oxygenated blood to the heart. When calcium begins to build up in the inner walls of the vessels, oxygenated blood flow to the heart is limited and you're put a much higher risk of a heart attack or other heart disease related death. Sleep loss has also been tied to obstructive sleep apnea and greater sleep disordered breathing. Poor breathing during sleep has previously been related to an impaired ability to regulate blood sugar. Obstructive sleep apnea is a disorder where a person stops breathing for more than ten seconds per hour because the soft tissue in the back of the throat collapses and blocks the airways. A major cause of sleep apnea is being overweight, and the impaired ability to control blood sugar that results from sleep apnea just perpetuates this issue.

Sleep plays a vital role in your body's ability to maintain a healthy state and to function on a normal cognitive and physical level. From the cardiovascular to the digestive system, even minor sleep deprivation may negatively affect your health and put you at risk for developing illness. So do your body a favor and try to consistently catch 7.5 to 8 hours a night. You'll be much happier and healthier if you do.