Give It a Rest

How to make sleep your superpower.

I am a doctor, but I am not your doctor. This is education, not medical advice, and your results will vary. Persistent sleep problems are worth a real evaluation rather than a handout, and much of what looks like insomnia has a treatable cause underneath it.

Imagine reporting on us from somewhere else. They lapse routinely into a state resembling a coma. The body lies still and helpless while the mind fills with bizarre hallucinations. It consumes a third of their lives, and they have no idea why they do it.

Nearly every species does it anyway, at enormous cost. You cannot gather food, find a mate, or protect your young while unconscious. As Allan Rechtschaffen put it, if sleep does not serve an absolutely vital function then it is the biggest mistake the evolutionary process ever made. Two out of three adults fail to get the recommended amount, and the World Health Organization calls it an epidemic across the industrialized world.

Part 1: how it works

Two independent systems, and understanding that they are separate explains almost everything that goes wrong.

System one: the internal clock.

- In 1938 a researcher and his assistant lived in a cave for 32 days with no light cues. Their bodies settled into roughly 15 hours awake and 9 asleep, on a cycle a little longer than 24 hours. The clock is internal; daylight only sets it.
- Light is the primary timekeeper. It drives the release of melatonin, which is not a sedative but an announcement: it is night, begin.
- **Chronotype is real and largely not chosen.** The distribution is a normal curve, with most people in the middle and genuine larks and owls at the tails. It also shifts across a lifetime, which matters enormously for teenagers.

System two: the chemical timer.

- Adenosine accumulates in the brain every hour you are awake and is cleared while you sleep. Rising adenosine is what sleep pressure physically is.
- **Caffeine works by blocking the receptor,** so the adenosine is still there, you simply cannot feel it. The pressure has not gone anywhere and arrives all at once when the caffeine clears.
- The half-life is around six hours. Two caffeinated drinks at dinner leave you with half of it at midnight and a quarter at six the next morning, and clearance slows with age. A useful diagnostic: if you need caffeine to function before noon, you are not getting enough sleep.

What happens during the night

- Three states, each doing a different job. **Awake is reception. NREM is reflection,** moving memory from short-term to long-term storage. **REM is integration,** which is where creativity, insight and emotional processing happen.
- They alternate in cycles of about 90 minutes, and the mix is not even across the night. The first half is NREM-heavy, the second half REM-heavy.
- **That asymmetry is why cutting sleep short is worse than it sounds.** Go to bed at 11 and rise at 5 instead of 7, and you have lost 25 percent of your sleep but 60 to 90 percent of your REM. You did not take a quarter off the top. You removed most of one function.
- NREM appears to do two things at once. Cognitively, it transfers memory from the hippocampus to the cortex, like moving files from memory to permanent storage. Biologically, the glymphatic system, which is the brain's waste clearance, becomes 10 to 20 times more active. The slow waves work like a wash cycle, and one of the things cleared is beta-amyloid.

How sleep changes across a life

- **Before birth and in infancy,** REM dominates, because the network is being built.
- **Children** are early chronotypes and need at least ten hours. Just before puberty there is a large rise in deep NREM as the brain prunes and refines its connections.
- **Teenagers** need about nine hours, and their internal clock shifts genuinely later. Asking a teenager to sleep at ten is like asking an adult to sleep at eight, and waking them at six feels like being woken at four. **It is not a character flaw and it**

is not a choice. The frontal cortex matures last, which is roughly when car insurance drops.
- **Adults** need seven to eight hours. About 30 percent of Americans report six or fewer.
- **After 65,** the common belief is that older adults need less sleep. They do not; they are less able to generate it. That is an association mistaken for a cause, in the same way you might conclude that older people need less eyesight. We do not withhold glasses on that reasoning.
- Three things change together with age: deep NREM declines steeply, having already begun in the late twenties; sleep fragments, from apnea, urination, cramps, reflux, medication and mood; and the clock regresses earlier. Then the innocent evening doze in the armchair discharges the adenosine, so sleep will not come at eleven, and the regressed clock sounds the alarm at half four. That gets called insomnia when it is really a discharged timer.

Why we do it to ourselves

- Sleep has a public relations problem going back a long way. Historically it gets framed as sloth, and the modern version is worse, because now resisting it is a boast.
- Listen to how we talk. I will sleep when I am dead. I function fine on four hours. I get more done by sleeping less. I pulled an all-nighter. Early bedtimes are for children. Every one of those sentences is delivered as a small brag.
- For scale: the Guinness Book of Records stopped accepting attempts at the longest time awake, on the grounds that the risk of sleep deprivation was too high. They still accept a man balancing on a cable-car rope on Germany's highest mountain, and a man holding ten live rattlesnakes in his mouth. Sleep deprivation was the one they stopped.
- I will admit I did not believe any of this for years. I was not converted. If you take one thing from this session, take that the evidence is real, and that it took me an embarrassingly long time to accept it.

Part 2: what it costs

My original title for this was how skimping on sleep could make you sick, fat and stupid. It was judged a little aggressive. It is also accurate.

- **Sick.** Rats deprived of sleep died in 16 to 21 days, losing weight despite eating more, with skin sores and immune, hormonal and digestive collapse resembling accelerated multi-organ failure. In people, sleeping six hours or fewer is associated with several times the risk of cardiac arrest and roughly double the risk of heart attack or stroke. Even the one-hour shift into daylight saving is followed by a measurable spike in heart attacks the next day.
- Immunity moves fast. One week at five hours cuts natural killer cell activity dramatically; people restricted before a vaccine produce roughly half the antibody response; and in controlled exposure to a cold virus, short sleepers get infected at several times the rate.
- Hormones move too. Five hours a night for a week lowers testosterone about 10 to 15 percent in men, with the usual consequences for energy and focus, and disturbs the hormonal control of the menstrual cycle in women.
- **Fat.** Not about appearance. Four hours a night for several nights leaves people roughly 40 percent less effective at clearing a standard glucose load, which on paper reads as prediabetes. Short sleep also raises ghrelin, which drives hunger, and lowers leptin, which signals fullness, while adding waking hours in which to eat and reducing the energy you spend. Every arrow points the same way.
- **Stupid.** Reaction time and attention degrade steeply and, worse, people cannot judge their own impairment. Emotionally, one night without sleep increases amygdala reactivity by about 60 percent and weakens its connection to the prefrontal cortex, which is the anatomy of irritability. There is no major psychiatric condition in which sleep is normal, and the relationship runs both ways.
- Learning suffers before and after: a tired hippocampus takes in less, and without the night afterwards, what was learned is not consolidated. Self-control also lives in the prefrontal cortex and is directly depleted by sleep loss.
- **And dementia.** Beta-amyloid accumulates in the very regions that generate deep sleep, so less deep sleep means less clearance, which means more accumulation. It is a loop, and sleep disturbance precedes diagnosis by years.

TRY THIS

- Answer the three questions honestly: could you fall back asleep at ten in the morning, can you function before noon without caffeine, and when did you last wake without an alarm feeling rested?
- Move your last caffeine to before noon for two weeks.
- Defend a seven-to-eight-hour sleep opportunity, in the calendar, like an appointment.
- Kill the evening doze in the armchair. That is the one costing you eleven o'clock.
- If your partner says you stop breathing at night, get evaluated.

Imagine a drug that improved memory and creativity, lowered food cravings, protected against cancer and dementia, boosted immunity, lowered heart attack and stroke risk, reduced depression and anxiety, and made you more attractive. Take once daily as directed.

Resources

What good sleep looks like, measured

- A sleep *opportunity* of 7 to 8 hours, defended as a window rather than hoped for.
- Sleep efficiency around 85 percent or better, meaning time asleep against time in bed.
- Falling asleep within about 30 minutes.
- Waking no more than once.
- Awake 20 minutes or less after first falling asleep.

Getting to sleep, and staying there

- **Getting to sleep.** No evening naps. Night mode at sunset, and blue-light glasses if you like. No screens for the hour before bed, films included. No phone in the bedroom overnight. A wind-down routine you repeat.
- **Staying asleep.** Cool, dark and quiet, with a mask and ear plugs or white noise if needed. Address the medical causes rather than working around them. For chronic insomnia, **cognitive behavioral therapy for insomnia (CBT-I)** outperforms medication and the effect lasts.
- **Naps,** if they suit you: around 20 minutes, early afternoon. Long or late ones discharge the pressure you need at bedtime.
- **Jet lag.** West is easier than east, and expect about a day of adjustment per hour of change. Start shifting during the journey, use light and darkness deliberately, and use melatonin and caffeine as timing tools rather than as sedative and stimulant.

Take-home points by stage of life

- **Parents:** sleep is to a developing brain what water is to a plant.
- **Teenagers and those who schedule them:** the late clock is biological, and early start times fight it.
- **Students:** cheating sleep is cheating only yourself, and it costs exactly the thing you are staying up to do.
- **Middle adults:** this is when the habit is set and when guarding it prevents the long-term consequences.
- **Seniors:** dysregulated sleep is common, treatable, and badly under-diagnosed. Seek help rather than accepting it.
- **Everyone:** do not drive tired.

Reading and watching

- *Why We Sleep*, Matthew Walker. Almost everything in this session traces back to it.
- Matthew Walker's TED talk, "Sleep is your superpower," for the twenty-minute version.
- *The Power of When*, Michael Breus, on chronotype.
- Trackers worth having: Oura ring, Apple Watch, or any of the wearables that report duration, awakenings, heart rate variability and oxygen saturation.

Theme: health. From my course *The Human Body*. The companion sessions are on nutrition, movement, and what breakdown looks like from the inside.