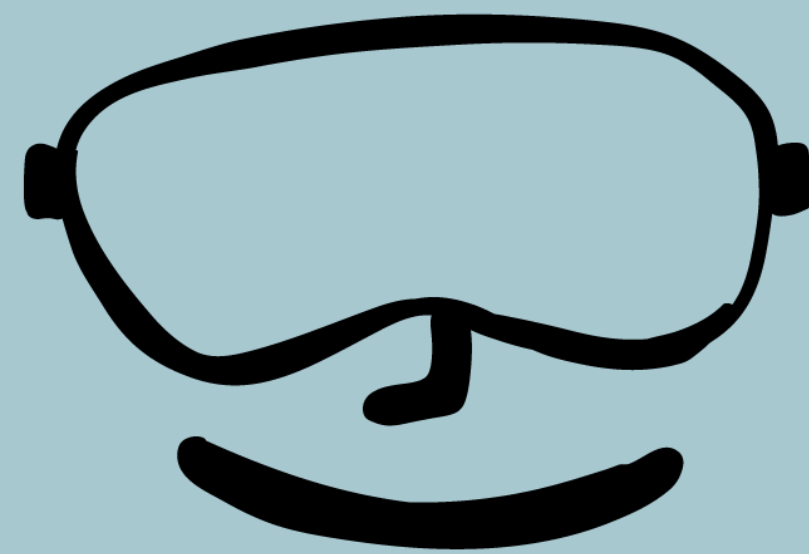


The Science of Sleep & How to Optimize It



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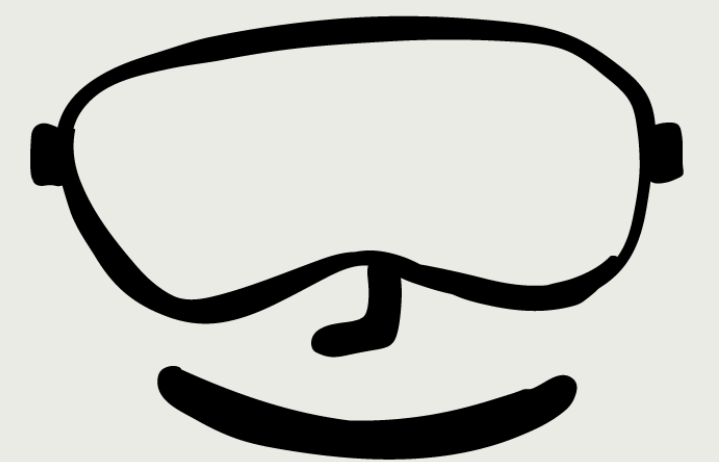
Outline

- **What is Sleep?**
 - Circadian Rhythm
 - Stages of Sleep
- **How Much Sleep Do We Need & Why?**
- **Factors That Impact Sleep**
 - Caffeine
 - Alcohol
 - Nutrition
 - Exercise
 - Other
- **Consequences of Poor Sleep**
- **How to Improve Sleep**
- **Resources**
- **Discussion**

What is Sleep?

“The Best Insurance Policy”

- Complex psychological process that occurs in cycles, each with distinct stages
- Period of rest when our body does a maintenance check, balances hormones, repairs, recovers, and resets
 - Role in physical, mental, heart and metabolic health, immune function, cognition, and more
- Major determinant of good health
- Without it systems decline and slow down

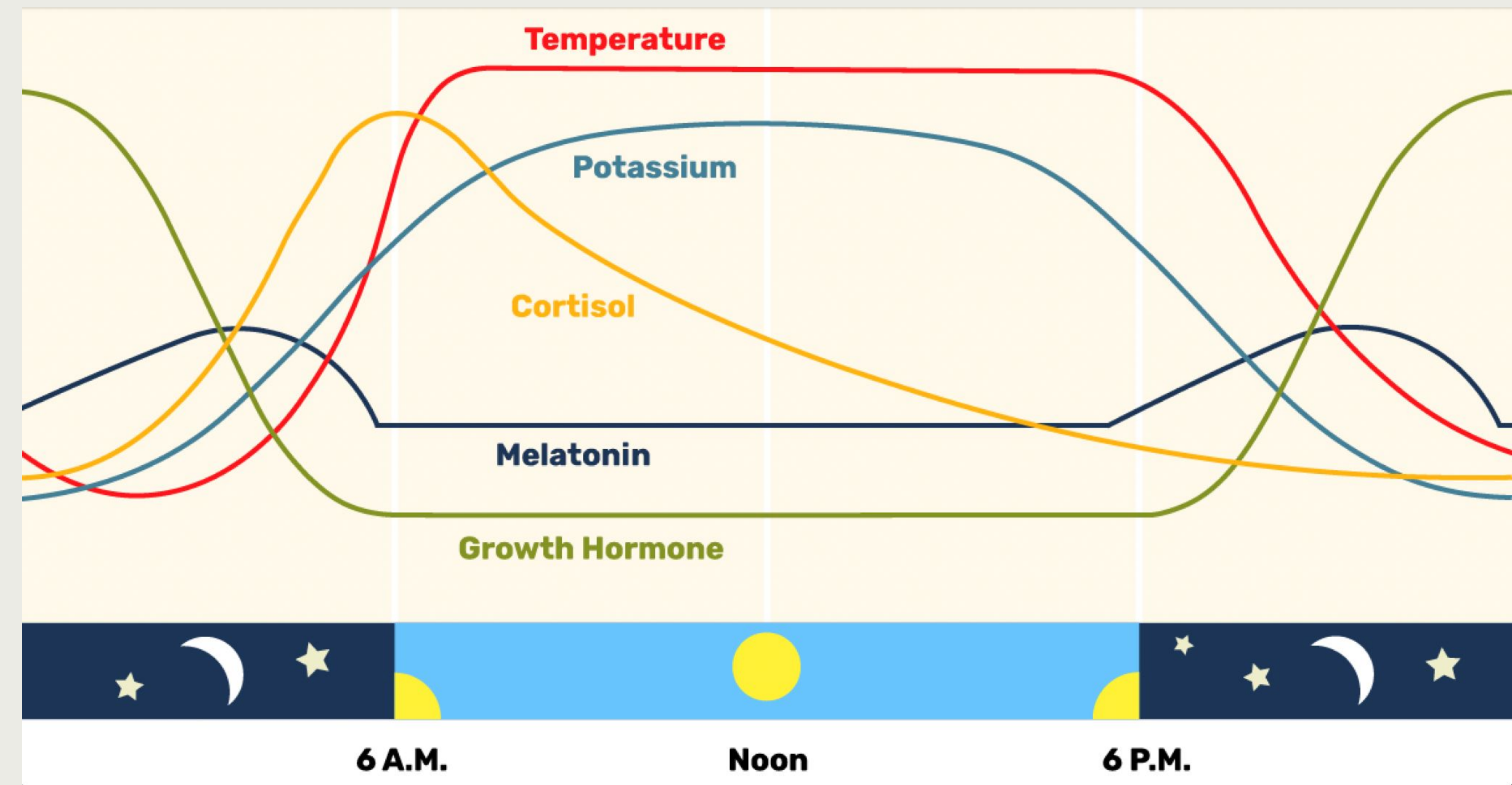


Circadian Rhythm

Circadian Rhythm:

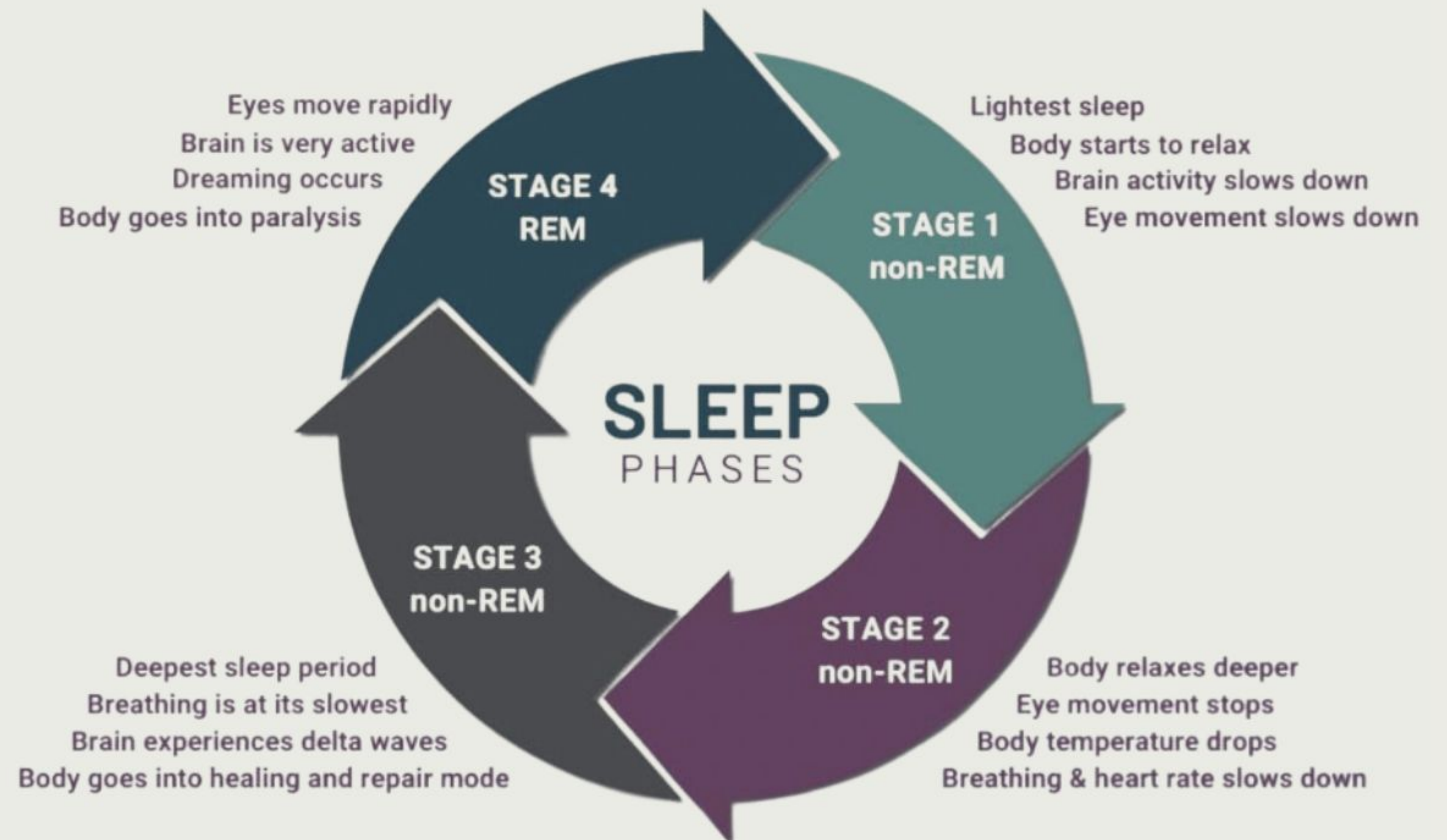
- Internal 24-hour clock that creates a cycling day-night rhythm
 - Communicates with every region of the brain and all organs
 - Controls when to be awake and when to be asleep
 - Other internal regulations
- **Adenosine** (sleep pressure): progressively builds the desire to rest throughout the day
 - During sleep it is cleared to let us wake up feeling refreshed and alert

Consistency is key to successful sleep!



Stages of Sleep

- 1. Awake/Non-REM Stage 1:** time spent in bed while falling asleep; ~5-10 min.
- 2. Light Sleep (NREM - Stage 1 + 2 Sleep):** muscles relax, respiration slows, heart rate decreases, body temperature drops.
- 3. Deep Sleep (NREM - Stage 3 + 4 Sleep):** blood pressure drops, body promotes muscle growth and repair (blood flow increases to muscles, growth hormone is released, tissue growth and cell repair occurs), brain flushes waste (glymphatic pathway).
- 4. REM Sleep (Stage 4 + R):** respiration increases, heart rate increases, temp regulation is switched off, vivid dreams occur, body becomes immobile, brain is most active, benefits for memory, learning, and problem solving.

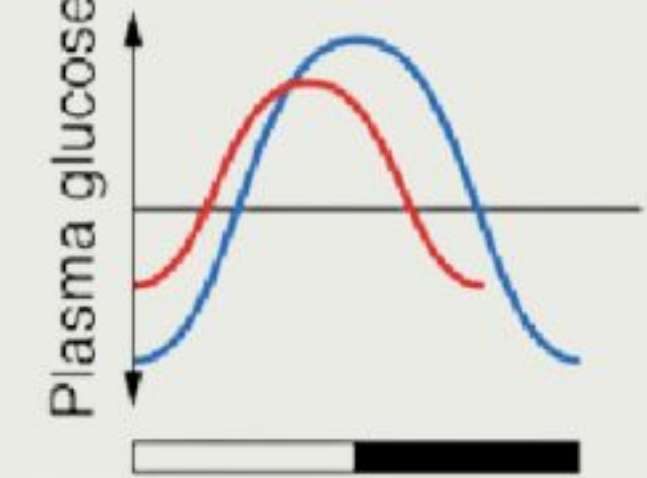
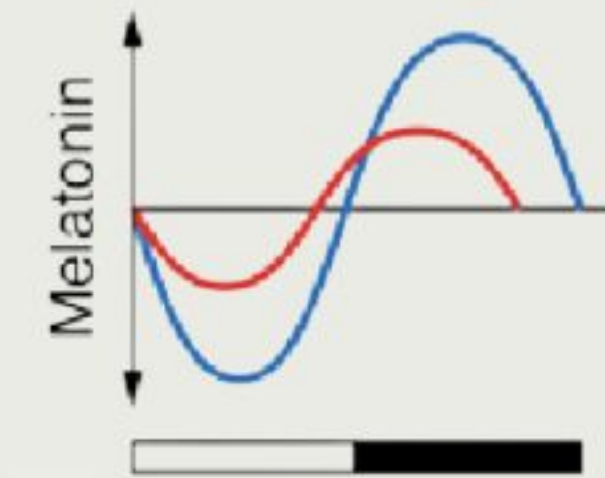
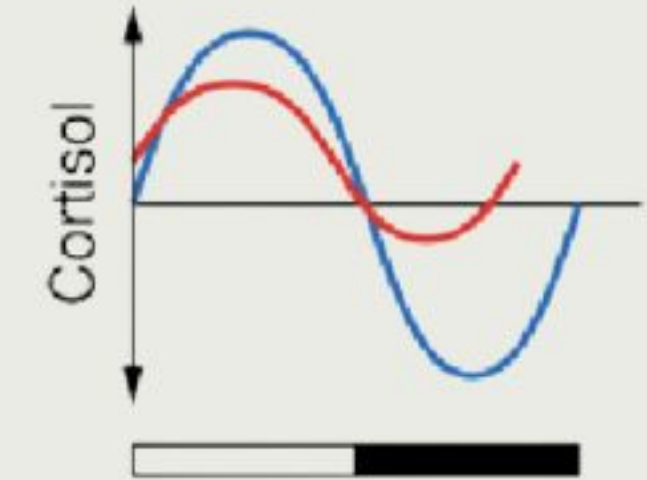
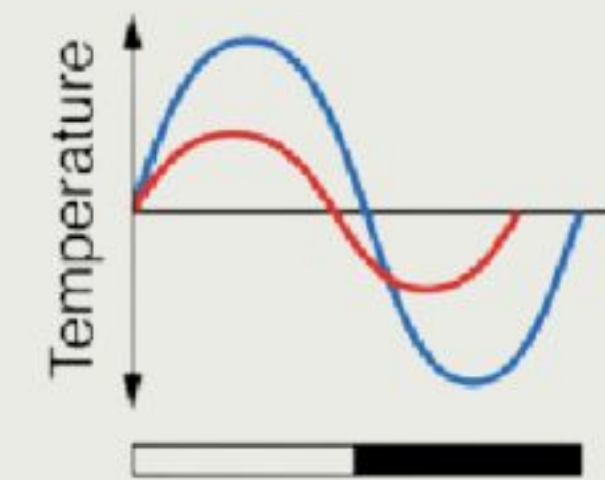
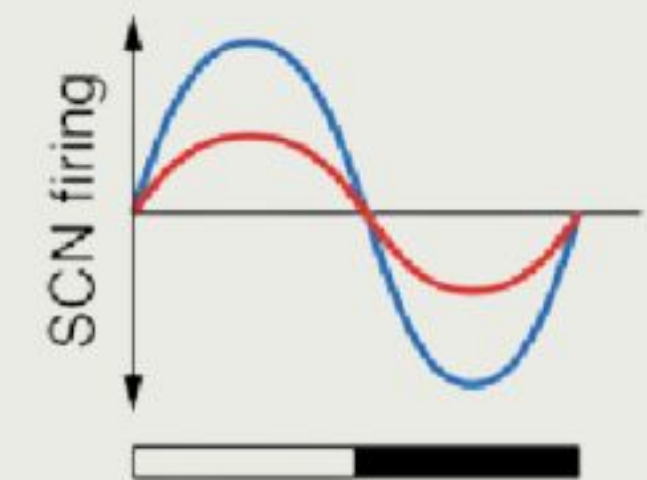
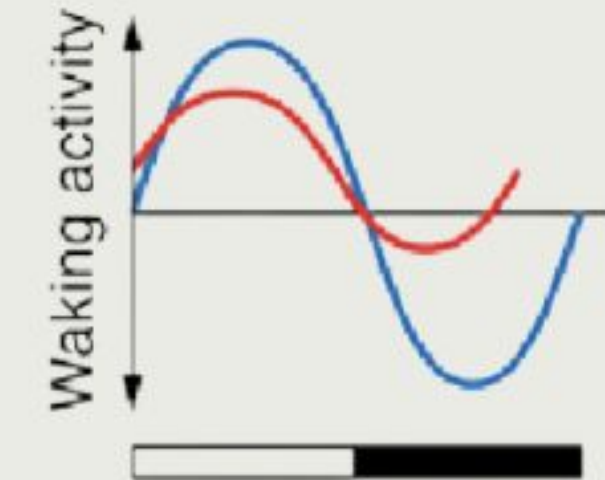


How Much Sleep & Why?

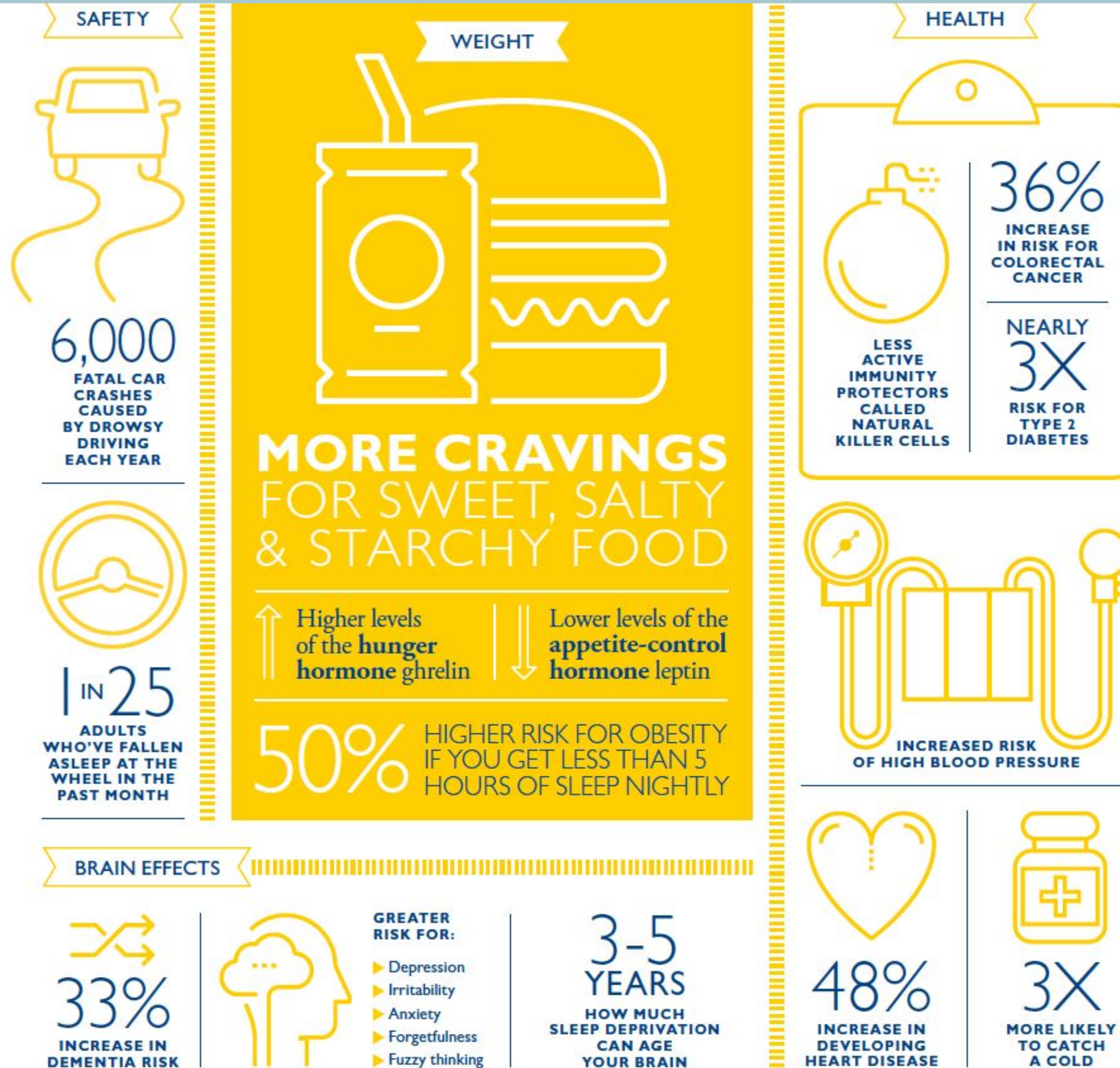
Average of 7-9 Hours of Sleep

- Better blood sugar management
- Regulates hunger/appetite
- Balance sex hormones
- Improves mood, immune system, mental health, cognitive function, performance and metabolic resilience

*Amount of sleep and timing of sleep changes throughout our lifespan



Consequence of Poor Sleep

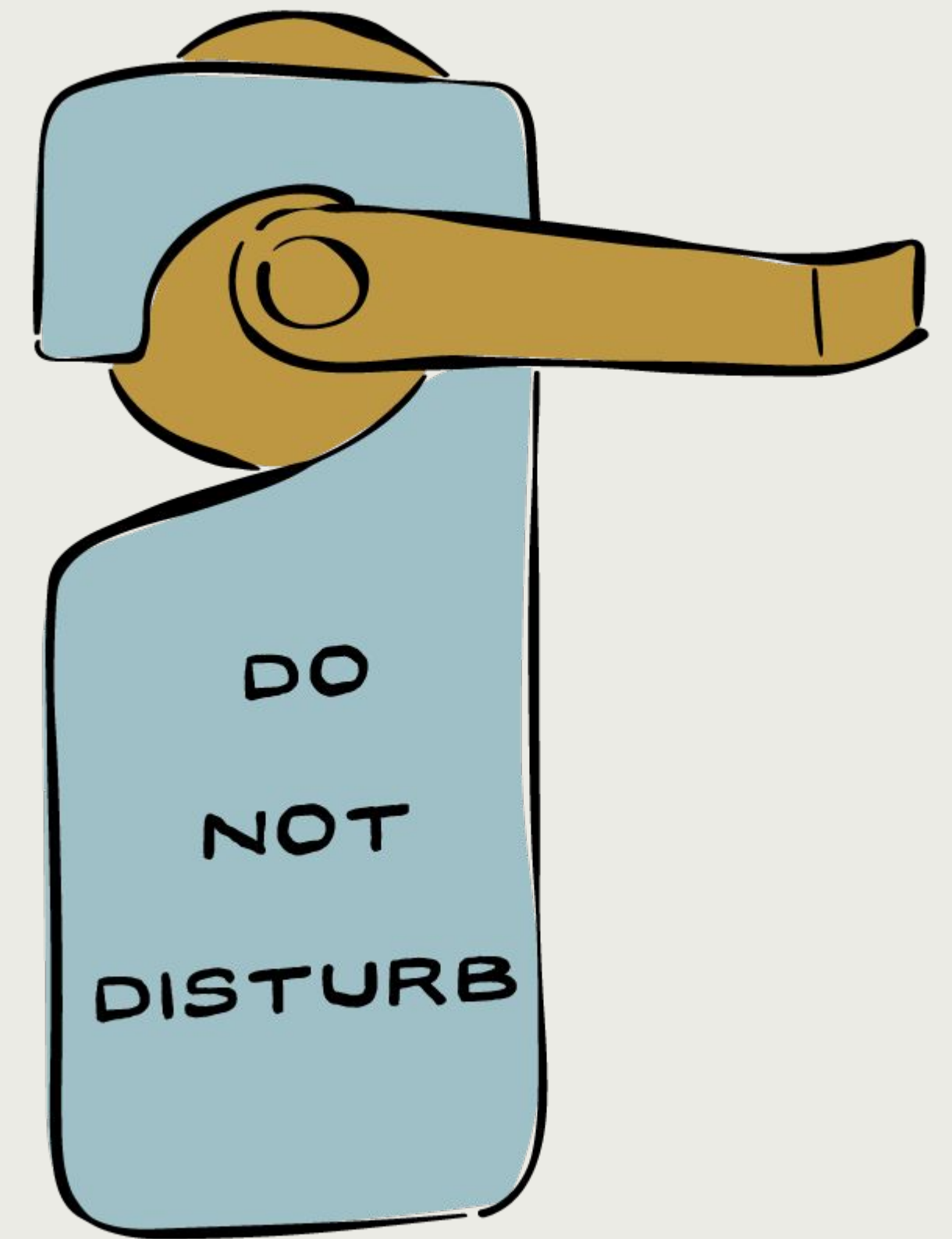


Factors That Impact Sleep

Caffeine	<ul style="list-style-type: none">● 5-6 hour half-life (varies by individual)<ul style="list-style-type: none">○ Subtract 10-12 hours from ideal bedtime = time to stop caffeine intake● Binds to adenosine, blocking the buildup of “sleepiness” creating a false wakeful feeling.● Sneaky Sources: dark chocolate, sodas, mocktails
Alcohol	<ul style="list-style-type: none">● Sedative effect: sedation is not sleep● Decreases sleep quality● Prevents body from entering REM sleep as frequently and as long as it should<ul style="list-style-type: none">○ REM regulates: emotions, hormones, cognition, memory, learning
Nutrition	<ul style="list-style-type: none">● Meal timing● Balancing blood sugar● Standard American Diet (SAD) increases risk for OSA and other sleep disorders
Exercise	<ul style="list-style-type: none">● Increase in overall activity supports better sleep● Sleep quality, duration, and improve sleep latency● Adequate sleep will inversely assist in better physical performance
Other	<ul style="list-style-type: none">● Light, mood, medication, stress, chronic conditions● Supplements: magnesium, valerian, melatonin, etc.

How to Improve Sleep

1. **Consistent** sleep and wake times
2. Create a **wind down routine**
3. Optimize **room environment**
4. Limit/avoid **alcohol**
5. Get natural **light**: first thing in the morning & midday. Avoid overhead light at end of the day
6. **Move** your body in *any* way throughout the day
7. Get off your **phone**/screens



Resources

- Podcast: [Master Your Sleep - Huberman Lab](#)
- Book: [The Circadian Code - Sachin Panda, MD](#)
- Video: [Yoga Nidra \(Non-Sleep Deep Rest\) - Kelly Boys](#)
- Video: [Masterclass: Matthew Walker](#)
- Weables: Oura Ring, Whoop, Apple Watch
- Apps: [SleepCycle](#), [Timeshifter](#), [Nature's Space](#)

Natural Sleep Remedies

- Light in morning: natural light within 30 minutes of waking for 10-30 minutes.
 - Light box if you live in an area not so sunny
 - Getting enough light during the day to enhance the natural production of sleep hormone when it is dark at night
- Black out curtains, lights off of devices around the room, electrical tape on device on/off lights
- Limit screen time before bed: blue light has been seen to deplete melatonin and keep us up. Blue blockers after 7pm to protect light exposure from screens.
 - Avoid bright light (all colors) from 10pm-4am
- Creating a calming bedroom environment: having black-out curtains, unplugging technology that emits an on/off light, good bedding, aromatics, no TV on, proper cool room temperature (between 60 to 68 degrees F).
- If you sleep warm, take a hot shower before bed, use breathable sheets and pajamas, consider [a cooling mattress](#).
- Food or alcohol before bed has been seen to decrease sleep quality, and time to bed.
 - Aim to limit food intake 1.5-2 hours prior to going to bed. Avoid alcohol all together.
- Natural sleep assistants: [Valerian Root tea](#) or [Chamomile tea](#).
- Limiting caffeine intake to the morning.
- Attempt a calming activity before bed like reading, stretching, and/or breathwork. Learn to destress with science supported breathing protocols, hypnosis (physiological sigh), non-rest deep sleep/[yoga nidra](#).
- Weighted Eye Mask: [NodPod](#), [Manta](#)
- Weighted Blanket: [Bearaby](#)
- White noises machine/Stand alone alarm clock: [Hatch](#)
- Phone Home: [Rachel Saunders](#) or [KBox](#)
- Essential Oils: lavender, eucalyptus
- Bath with [Epsom salts](#) (transdermal ability to absorb Mag bi-glycinate)



Let's chat!