Dynamic Chiropractic

PRACTICE PEARLS

The Top Biohack: Sleep Health

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Author's Note: This is the second article in a recurring series on my own biohacking journey, what I've learned and brought to my patients, and how you can become a "biohack doctor" yourself. The following tips are not just for your patients; they apply to *you*, too. We have to set the example.

Quality sleep is positioned as my top biohack because sleep is a performance enhancer. Improving sleep enhances other therapies (i.e., diet, exercise, etc.), and is a remedy for back pain and muscle tension. Regular sleep impacts almost all chronic diseases – type 2 diabetes, heart disease, cancer, and neurocognitive disorders.

Consistent quality sleep improves your ability to learn new motor skills; promotes skin health and a youthful appearance; controls optimal insulin and other hormone secretions; and encourages healthy cell division.

At night, melatonin (helps regulate wake and sleep cycles) is released, and insulin-producing cells shut down. So, if you eat something sugary late at night, your body's insulin response is not as effective. I tell patients *do not* eat anything three hours before bed. That late-night (usually a dessert) snack can lead to a blood-sugar spike and then a crash that triggers the release of adrenaline, which keeps you awake at three a.m.

Poor sleep can contribute to obesity. For my overweight patients (and the ones most often inflamed), sleep loss could be contributing to an inability to lose weight. If patients get less than six hours of sleep, ghrelin increases, making you feel hungry.

Who can control a ghrelin rush? I try to use diets and supplements that flip switches and turn down the ghrelin, reduce the food cravings, stop the late-night eating, and allow the body to focus on sleep (and normal hormone production) instead of digesting food.

Optimizing the Master Clock

The master clock in the brain is called the suprachiasmatic nucleus or SCN. It regulates our circadian rhythm. Light regulates the master clock. The light passes through the pupil and ganglion cells relay the information to the SCN. When light passing through the pupils is inhibited, the SCN sends a signal to release melatonin. The levels of melatonin remain stable throughout the night until interrupted by the light of the morning.

When you feel tired at night is determined in part by when you are in the presence of sunlight in the morning. To keep the biological clock on a cycle, the brain needs input of sunlight through the eyes to reset itself each day. The tip here is to get natural light within one hour of being awake.

The Stages of Sleep

The entire sleep cycle takes about 90 minutes and is then repeated. A 90-minute cycle is: light

sleep (lasts about 20 minutes), deep sleep and rapid eye movement (REM) sleep. Your eyes move under your eyelids in REM sleep. Unless you are measuring your sleep, you do not know how much of each stage you are getting.

Deep sleep is where it's at for immune system repair, increasing blood supply to muscles, tissue growth and repair, and energy restoration. Hormones such as growth hormone (essential for growth, development, muscle) are released; as well as other hormones like leptin and ghrelin that keep your appetite in check, regulate fat storage and send signals to your brain when your stomach is full. Ultraviolet damage is also repaired during deep sleep.

Sleep allows our memory to improve. What's important to understand here is that deep Delta-wave sleep promotes the consolidation of long-term memories for motor skills, facts and figures, and complex thought. If you are spending money on yourself or your child for a tutoring session (math, SAT prep, golf, tennis, soccer, swim lessons, etc.), and they don't sleep well, you are throwing money away!

I recently heard a theory that REM sleep may be the visual center's way of keeping the eyes and vision active so other senses cannot take over (steal) that "real estate" in the brain while our eyes are closed and vision is "off." When one considers neuroplasticity concepts, that makes sense to me.

One of the most important things that happens during sleep has to do with the *glymphatics* that remove soluble amyloid beta from the brain interstitium. This may make it easier for the brain cerebrospinal fluid (like lymphatic fluids) to flush out its many crevices.

During sleep, proteins that could build up and become responsible for Alzheimer's disease and other neurological disorders are removed more efficiently from the brain than during waking hours. In this way, toxins and other waste products are washed out. FYI, sleeping on your side improves glymphatic clearance compared to sleeping on the stomach or back.

How Much Sleep Do We Need?

- A newborn baby might sleep 20 hours a day.
- By age 4, the average is 12 hours a day.
- By age 10, the average falls to 10 hours a day.
- Most adult people seem to need six to nine hours of sleep a night.
- After age 18, these are guidelines; everyone needs to figure out the ideal amount for themselves.
- Naps: Because of the sleep cycle, recommend less than 30 minutes or a full 90 minutes.

Personal Biohacks to Improve Sleep

Through my sleep tracking device, I found out I was below the optimal amount of REM (for adults 1.5 hours; anywhere from 5-50 percent of total sleep) and deep sleep (anywhere from 0-35 percent of your total sleep; about 1-1.5 hours). My personal biohacks to improve my sleep have been the following:

- The biggest change for me is stop eating dinner too late. I do well if I stop eating three hours before bedtime. My body isn't as busy digesting during the night. Recommend this to any patient with sleep and/or digestive issues.
- Don't drink caffeine after 3 p.m.
- No alcohol consumption. If I have a glass of wine, I can expect to wake up around 2-3 a.m. I ask myself, *Is it worth it?*
- Turn off the TV, computer and cell phone at least two hours before bed so your brain has

time to wind down.
- After dinner, I take my dog on a walk and hang out with my wife.
- I made some light adjustments around the bedroom. (Get your cell phone out of the bedroom!) I turned my clock light face away. I can't sleep with an eye mask, but if you need one, use it!
- My calming activity is reading or breathing and meditating. Some patients can do gentle stretching or take a bath an hour before bed.
- Go to sleep and wake up at the same time, even on weekends, so your body gets used to a regular sleeping pattern. Get early-morning light stimulation to reset the clock.
- I like my pillow and the way it supports my neck. Make sure your patients feel the same about their pillows.
- I got a new mattress, and the head of the bed elevates about 6 degrees, which is comfortable and about the magic number for good sleep hygiene.
- Some patients come in with serious sleep issues like insomnia. I do find improving diet (e.g., eating more whole foods, decreasing caffeine), and lifestyle (stopping overloading your calendar, which could potentially be disrupting diurnal cortisol rhythm) helps.

Nutritional Support for Sleep

My natural remedy and nutritional support list includes these recommendations (keep in mind it's very individual, so don't just blanket apply it to every one of your patients):

- Melatonin (1 mg per tablet; recommended dosage is 1-3 tablets, one hour before bedtime)
- Valerian
- Kava
- Licorice and/or Rehmannia root
- St. John's wort (1.8 g)
- Casein tryptic hydrolysate (enzymatically isolated decapeptide from whey milk that has natural, benzodiazepine-like properties)
- Passionflower extract (sedative and anxiolytic properties; similar mechanism of action as benzodiazepines)
- 5-HTP (the precursor for serotonin)
- Theanine and specific B vitamins to support balanced levels of GABA, serotonin, and dopamine, all of which are involved in regulating sleep
- DHA to support balanced levels of dopamine, GABA and norepinephrine, which are important for cognitive function including memory formation and information consolidation during specific cycles of sleep
- Lavender scent or oils

Resources

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