

## *Webinar 5 Handout:* **SLEEP & WEIGHT GAIN**

By now you get it: there is so much more to living a Nutritious Life than just the foods that you eat, and there are many factors at play that tie into weight maintenance. A solid sleep routine is one of those factors. We know that people who sleep more tend to maintain a lower weight. Of course, you can't snack into the night if you hit the hay early - duh! But more complex than that, we know that hormones that regulate weight and appetite are affected by sleep. Proper sleep is also critical for stress management and will help make daily exercise more focused and efficient, both of which have positive effects on diet and weight. How much you sleep and the quality of your sleep will affect nearly every aspect of your daily functioning, so it's important to get the shut eye you need every single night.

### **Bedtime Basics: What Happens During Sleep**

You may think of sleep as a time for your body to completely shut down, but in fact, there's a lot going on in there when you sleep! Our brains are very active during sleep and what goes on while we are getting our zzz's affects our daily functioning as well as body weight management.

There are five phases of sleep that repeat over and over in a cycle throughout the night. Stage 1 is the light sleep that we can drift in and out of. In stage 2, eye movement stops and brain waves slow down, but there are also occasional bursts of rapid waves called *sleep spindles*. Both stage 1 and stage 2 are called light sleep—often, when we wake up, we aren't even sure we've been asleep. In stages 3 and 4, which is deep sleep, brain waves slow even further, our eyes don't move, and there's no muscle activity. When we wake up from this kind of sleep, we're groggy and out of it. These four stages are called NREM, or non-rapid eye movement sleep. Though we're not quite sure why we go through these stages, one possibility is that it's a time for glycogen stores (energy) to be replenished in the brain because our bodies have a much lower metabolic demand during sleep.

About 70 to 90 minutes after we fall asleep, we slip into REM sleep. This is when most dreams occur. Our breathing becomes rapid, irregular, and shallow. Eyes jerk around and heart rate and blood pressure go up. An average complete sleep cycle takes 90 to 110 minutes. The first sleep cycle each night contains shorter REM periods and long periods of deep sleep. As the night goes on, REM sleep periods get longer, while deep sleep decreases. By morning, people spend nearly all their sleep time in stages 1, 2, and REM.

While our brain is doing all this, other body systems have their own agenda. During sleep, our bodies crank out lots of hormones, including growth hormones and other hormones that fight off infections and boost the immune system. And of course, that's when our skin repairs itself, too—it's not called beauty sleep for nothing!

## **How Sleep Affects Weight**

The average amount of sleep you get each night is strongly linked to your weight. Experts estimate that compared to getting the recommended 7 to 8 hours of sleep per night, the risk of developing obesity rises 23 percent with just 6 hours of sleep per night, 50 percent with only 5 hours per night, and 73 percent with 4 hours per night. An early study in this field showed that partial sleep deprivation messes up levels of the hormones that regulate hunger, causing an increase in appetite and specific cravings for calorie-dense, high-carbohydrate foods. Researchers found that when participants slept only 4 hours per night for 2 nights, leptin --the hormone that tells your body to stop eating--dropped 18 percent. And levels of ghrelin-- the hormone that says "eat more"--jumped 28 percent. This shows that the body's hormonal response to being tired is to tell you to eat more. Keep in mind this happened after just took 2 *nights* of sleep deprivation...just imagine what happens after weeks and weeks of missing sleep. The combination of these hormonal responses may cause weight gain when you aren't getting adequate amounts of shut eye. One study found losing as little as 30 minutes of sleep per day can lead to weight gain.

Some researchers believe that America's rising obesity rates may be closely linked to falling sleep levels. In the last 40 years, U.S. adults have cut their average sleep time by nearly 2 hours. In 1960, adults slept an average of 8.5 hours a night. By 2002, that had fallen to less than 7 hours a night. The CDC reports at least 30% of adults in the U.S. get less than six hours of sleep per night. As sleep times fall, average weights rise. In 1960 only one out of four adults was overweight and about one out of nine was considered obese. Today, two out of three adults are overweight and nearly one out of three is obese.

Evidence for the link between weight gain and sleep just keeps piling up. One study looked at 245 overweight women and found that sleeping 7 hours or more per night increased the likelihood that the women would lose weight, and keep it off, by 33 percent. A different sleep analysis followed more than 68,000 women for 16 years and found that those sleeping 7 hours or less gained more weight, and were more likely to be obese. And yet another study found that sleep-deprived women on average eat 329 more calories per day than when they are well rested. Considering that an average woman—that's about 5 feet 4 inches—with a relatively sedentary job needs to typically eat

somewhere between 1,200 and 1,400 calories a day to maintain her weight, 329 extra is more than most women can afford. Plus, people tend to reach for the junkiest types of foods when they're suffering from lack of sleep.

As we mentioned above, people who are sleep deprived have higher levels of ghrelin and lower levels of leptin, which promotes feelings of hunger. There are other consequences too. Studies have shown lack of sleep can lead to increases in cortisol (the stress hormone) and inflammation. Sleep deprivation can also lead to decreases in thyroid-stimulating hormone, which helps control metabolism, and can adversely affect glucose tolerance, which increases blood sugar and risk for type 2 diabetes. Plus, sleep deprivation can wreak havoc in your brain, making it harder to think clearly and possibly leading to mood swings.

It's obvious that sleep and weight go hand-in-hand, and weight loss may actually help you sleep more deeply. That's because people who are overweight or obese have a higher incidence of something called sleep apnea. This disorder—most commonly found in men until age 50, when it turns into an equal opportunity health risk—is tricky to diagnose, because so many people have it and don't realize it. Sleep apnea causes people to sleep fitfully and wake up frequently during the night, so they're not really sleeping deeply. While an estimated 70 percent of obese people have it, there are many other risk factors. For example, Chinese women and African American women are more at risk.

## Sleep Hygiene Handbook

I love the term “sleep hygiene” because I believe there should be a systematic, pristine approach to bedtime, just like there is to washing your hands or brushing your teeth. And while I'm not saying I don't push it sometimes, especially when I am on a tight deadline, I do try to follow these basic “hygiene” rules. Sleep specialists have shown time after time that these steps make it easier to fall asleep, stay asleep, and get the best quality sleep you possibly can.

- **Banish all your electronics from the bedroom.** Finding it a struggle to give up that phone? Allow yourself to check it before bedtime, then carefully put it to bed, too—away from your bedroom. Far too many of us are guilty of scrolling through our Instagram feed while laying in bed, when we should be shutting down for the night. I know it sounds silly, but some people say it actually helps to say, “Goodnight, phone! See you in the morning!” Same goes for the TV. Exposure to “blue” light from phones and TVs affects levels of

melatonin, the hormone that puts us to sleep. When this becomes habit, your whole circadian rhythm gets off track making you more prone to long term sleep disorder.

- **Try and go to bed at the same time each evening**, and get up about the same time in the morning—even on weekends and yes, even on vacations. As nice as it feels to sleep in sometimes, it only makes it more difficult to maintain your bedtime discipline. Research shows sleep loss is cumulative and skimping on hours during the week builds up your sleep debt, even if you try and make up for it on the weekend.
- **Get moving!** Exercise and activity mean that when you fall asleep, you'll sleep more soundly, getting the high-quality rest you deserve.
- **Get outdoors, whenever you can.** Regular exposure to the sun or bright lights, especially in the late afternoon, keeps your circadian rhythms in tune.
- **Keep the temperature in your bedroom comfortable**, and consider wearing socks to bed if your feet are often cold.
- **Practice 8-count breathing.** Making mindfulness meditation part of your bedtime ritual will help you relax, and make the transition from busy-brain to sleepy-head almost effortless. Breathe in for a count of 8 and out for a count of 8, for 8 minutes.
- **Pamper yourself.** Maybe it's a cup of tea, a rich hand cream, a spritz of an essential oil on your pillow—a kind, gentle gesture toward yourself will help you remember you're about to enter your dreams. That's the ultimate “me” space!

## Foods That Promote Sleep

- **Almonds and cashews** contain magnesium, which is a natural sedative.
- **Apricots** are chock full of vitamin C and beta-carotene, which can help relieve stress. Vitamin C-rich foods have been shown to help your body recover faster from stress, and fewer rattled nerves may mean a more mellow slumber.
- **Asparagus** is high in folate, which is essential for a healthy cardiovascular system and has a proven effect against anxiety.
- **Bananas** are a dietary source of melatonin, a sleep hormone, as well as potassium, which helps normalize heartbeat.

- **Chamomile tea** is an age-old remedy for soothing yourself to sleep. Research has even shown that chamomile tea consumed regularly may be as effective as sleep meds.
- **Cheese**, particularly swiss or cheddar, is a good source of tryptophan. Tryptophan is an amino acid that encourages the release of melatonin, which has been shown to help people fall asleep faster. Other good sources of tryptophan include turkey, beans, milk, nuts, eggs and fish.
- **Nutmeg** can ease anxiety, which may prevent a restful sleep.
- **Tart cherries** are another dietary source of melatonin.

## Foods That Inhibit Sleep

- **High fat meals** have been shown to cause disturbances in the sleep/wake cycle and disrupt the body's natural circadian rhythm. This may make it more difficult to fall asleep.
- **Added sugars** affect blood sugar levels, giving you a short burst of energy, before a large drop. As blood sugar levels fall, sleep can be disrupted in the middle of the night.
- **Caffeine** can cause insomnia and restlessness. Try to avoid soda, coffee, tea and chocolate 7 hours before bedtime.
- **Alcohol** may seem to help you fall asleep, but the effect can wear off and cause you to have a less restful night of sleep.
- **Large meals** late in the evening can also affect how you sleep. Digestion slows when you're laying down and you may feel uncomfortable when trying to go to bed.