A Whole Health Guide to Circadian Health

Supplement Disclaimer

For all supplements mentioned in this document: These statements have not been evaluated by the FDA. These products are not intended to diagnose, treat, cure, or prevent any disease.

Medical Disclaimer

This guide is for educational purposes only and is not intended to diagnose, treat, or prescribe. All material provided does not substitute medical, psychological, or nutritional advice and/or services. The company does not accept responsibility for any action taken based on the contents of this document.

Last updated on October 7, 2025

Empowerment & Knowledge

What You Need to Know About Circadian Health

The circadian rhythm is a 24-hour internal clock that regulates the sleep-wake cycle and many other biological functions. You are likely familiar with the circadian rhythm because we have a natural tendency to be awake during the day and asleep during the night.

The master clock, or the suprachiasmatic nucleus (SCN), drives the circadian rhythm. It responds to light changes as perceived by the eye's retina, helping us align to light and dark cycles over the course of a day [1]. Though the SCN is found in the hypothalamus, there are peripheral clocks all over the human body that are synchronized with one another and drive daily rhythms [2].

How does the circadian rhythm work?

The circadian rhythm synchronizes with external environmental cues, or zeitgebers, [3]. Light is the dominant zeitgeber; as mentioned, it is a signal to the SCN [4]. The perception of light stimulates the SCN to tell the body it's time to be awake. On the contrary, when darkness is perceived at night, a hormone known as melatonin is produced by the pineal gland in the brain and signals that it's time to sleep [5].

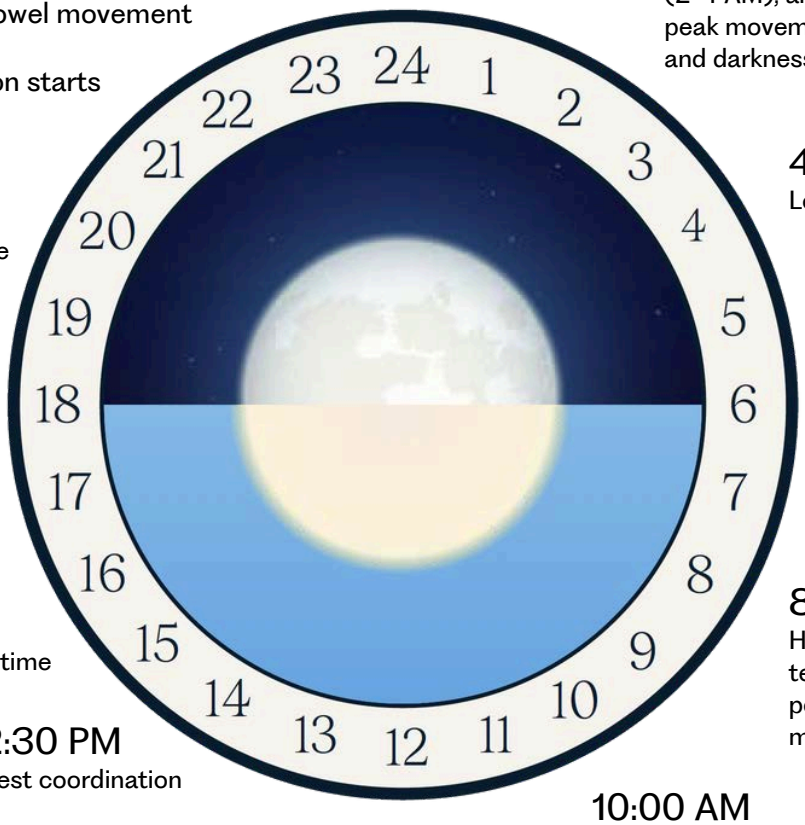
Though light is the dominant zeitgeber, eating, physical activity, and even social activity also act as cues for the circadian rhythm. The peripheral clocks entrain to these nonphotic (non-light) cues in addition to the SCN [6].

With the ability to respond to external cues, the circadian rhythm allows us to readjust daily to align with our environment [2].

However, modern living presents its own challenges. Though the circadian rhythm responds to lightness and darkness, humans introduce their own sources of light, sometimes at inopportune times. Light disrupts normal melatonin production, which can disrupt the circadian rhythm if it occurs at an inappropriate time [5]. For example, late-night cell phone use can affect the circadian rhythm and make it more difficult to fall asleep.

When the brain and peripheral clocks are not synchronized to the 24-hour light/dark cycle, we may experience discomfort, such as poor sleep or jet lag. When desynchronization is long-term, there may be more systemic effects on the body. This is because the circadian rhythm regulates many body systems, such as the endocrine, metabolism, and central nervous systems [7].

Here are some of the times the body is primed for key activities.



10:00 PM
Lowest potential for a bowel movement

9:00 PM
Melatonin secretion starts

7:00 PM
Highest body temperature

6:30 PM
Highest blood pressure

5:00 PM
Greatest cardiovascular efficiency

3:30 PM
Fastest reaction time

2:30 PM
Best coordination

2:00 AM
Deepest sleep, melatonin peaks (2-4 AM), antioxidant enzymes peak movement (with dim light and darkness)

4:00 AM
Lowest body temperature

6:45 AM
Sharpest blood pressure rise

8:00 AM
Highest secretion of testosterone, highest potential for a bowel movement

10:00 AM
Greatest alertness

Adapted from: A scenario of unhealthy life cycle: The role of circadian rhythms in health by Chandramouli, M., Basavanna, V., and Ningaiah S., Aging Medicine, 2024. Originally published under a Creative Commons Attribution 4.0 International License. Source: PMC article PMC11077335. Changes were made.

What is circadian health?

Circadian health refers to the ability of circadian clocks to "entrain" or synchronize to zeitgebers and establish a stable rhythm with the light/dark cycle or their external environment [8].

Synchronizing to the environment is essential because it allows the body to support the efficiency of various organ systems, which may be more "active" or have different roles at certain times of day or night [9]. For example, insulin increases in the late afternoon to help you turn food into energy [10]. Even the skin has circadian rhythms, being more permeable in the evening and having more blood flow in the late afternoon and night [11].

Physiological processes like metabolism can be compared to chores. The SCN is the timekeeper of chores, and it tells our cells when it's time to complete them. When we follow a natural rhythm, the body's systems can synchronize and complete their chores with more efficiency.

On the other hand, consider if you were to clean your house and try to do your chores, such as vacuuming, mopping, and dusting, all simultaneously. You might find that some areas were ignored or left incomplete and in disarray. This is one way to visualize how altered circadian rhythms can negatively affect the natural flow of your body, and it explains how maintaining a healthy circadian rhythm supports overall health.

Indeed, the circadian rhythm may affect [12]:

Cognitive health

Mood

Metabolic health

Cardiovascular health

Maintenance of healthy blood pressure

Common signs and symptoms of circadian misalignment

When experiencing changes to the circadian rhythm, the signs and symptoms include, but are not limited to [13]:

- Excessive daytime sleepiness
- Difficulty falling or staying asleep
- Difficulty waking in the morning
- Sleeping very late into the day
- Tiredness
- Mood changes
- Gastrointestinal discomfort
- Changes in sexual health
- Weight changes
- Poor focus and memory [14]

What contributes to changes in the circadian rhythm?

- Artificial light at night (e.g., cell phones, television, light pollution) [15]
- Late-night eating or "eating jetlag" [16]
- Late afternoon or night exercise [17]
- Jet lag from traveling
- Social jet lag or separate sleeping patterns on weekdays and weekends [18]
- Shift work
- Air pollution [19]
- Traumatic stress [20]

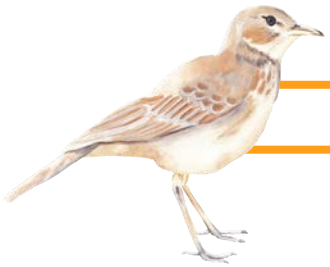
What's your chronotype?

You may identify with being a morning or evening person. Chronotype refers to individual variation in, and preference for, the timing of the sleep-wake cycle [21].

There are three main chronotypes:

- Morning chronotype or "lark"
- Intermediate chronotype (neutral/no preference for morning or evening)
- Evening chronotype or "night owl"

Morning and evening chronotypes may also be classified as definite or extreme. In other words, we might call these people extreme morning or extreme evening—they naturally wake very early or go to sleep very late, respectively. Genetics partially influences chronotype, though it can also be modified by age, sex, and zeitgebers. While children, young adults, and older people tend to have a morning chronotype, adolescents shift more toward an evening chronotype [22].



Larks vs. Owls [21]

Lark (Morning Chronotype)	Owl (Evening Chronotype)
Prefers to go to sleep and wake up early	Prefers to stay up late and wake up later
Mental performance is best in the early part of the day	Mental performance is best before sleeping
School and work schedules are more adaptive to this chronotype	May have greater sleep debt and more morning sleepiness

Not everyone can be expected to live the same way, especially those with extreme chronotypes. You should consider how zeitgebers influence your circadian rhythm, but it can also be helpful to live in alignment with your chronotype when possible.

What can you do?

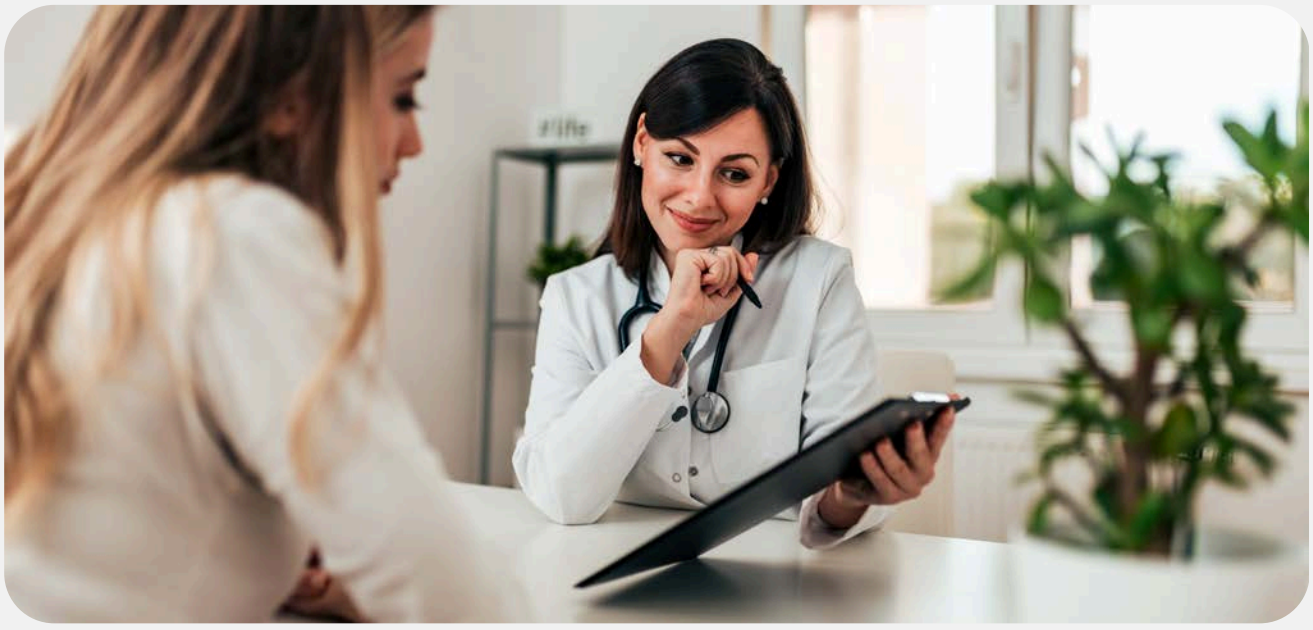
Bringing rhythms into your daily life can support your circadian health. Adhering to a consistent sleep-wake routine when possible, seeking safe sun exposure during the day, limiting artificial light at night, and even keeping a sleep journal to identify patterns can all help establish circadian health. More strategies will be discussed in this guide.

You should visit your healthcare provider for an evaluation if you have any aspects of your health that you suspect may involve your circadian rhythm. They can assess the severity of your symptoms and discuss the wide array of options you have. Every person has beliefs about life, health, and medicine, so finding a practitioner aligned with those values is imperative.

It's necessary to note that some health conditions or medications can mimic circadian misalignment.

For example:

- Changes in thyroid health may contribute to fatigue, weight gain, gastrointestinal discomfort, and changes in sexual function.



Hormones

Key Communicators In The Body

How does the body communicate within?

All information in the body is received through two types of messengers – neurotransmitters and hormones. Neurotransmitters help cells communicate through the nervous system, but hormones help communicate cell-to-cell or from one cell through the bloodstream to another cell. These hormonal messengers exhibit diurnal fluctuations aligned with the circadian rhythm, which drives essential physiological functions throughout the day and night.

How do hormones align with the circadian rhythm?

Hormones like melatonin and cortisol are most often associated with the circadian rhythm. These hormones fluctuate throughout the day and night, helping us feel awake in the morning and promoting sleep at night.

Melatonin is perhaps the most well-known hormone associated with the circadian rhythm. As you now know, melatonin is produced by the pineal gland in response to darkness. Its levels peak in the middle of the night and decline as morning approaches.

Despite its association with nighttime, melatonin is not necessarily a "sleep hormone," and it doesn't necessarily help you sleep because of a sedating effect. Instead, melatonin signals darkness, and in humans, darkness means it's time to go to sleep [23]. By doing so, melatonin acts as a "chronobiotic," which means it influences and synchronizes the clocks throughout the body [24]. As such, fluctuating melatonin levels play an essential role in the circadian rhythm.

Other hormones, such as insulin and testosterone, also exhibit daily fluctuations with the circadian rhythm [25, 26].

Daily rhythms of hormones

Hormones undergo daily fluctuations that set the stage for physiological processes to occur at optimal times throughout the day and night. For example, insulin reaches its highest level around 5:00 pm, which is consistent with food intake and the need to store nutrients during the day. However, insulin reaches its lowest level around 4:00 am, and at this time, the body is not primed for food intake [10].

Peak times for hormones:

- Cortisol: 7:00-8:00 AM
- Testosterone (males): 7:00 AM
- TSH: 1:00—2:00 AM
- Ghrelin: 2:00—4:30 am (fed state) or 1:00 PM (fasted state)
- Leptin: 1:00 AM
- Insulin: 5:00 PM
- Melatonin: 2:00-4:00 AM [28]

When someone is experiencing changes to their circadian rhythm, they may experience changes in hormone levels that affect their health. For example, changes to the circadian rhythm have been shown to negatively affect leptin levels, a hormone that regulates appetite [28].

With the above mentioned example in mind, you can see that the circadian rhythm plays an essential role in hormone balance, which refers to streamlined communication throughout the endocrine system, or the glands in the body that produce hormones.

Given the circadian influence on hormones and physiological processes throughout the entire body, it could be argued that one cannot balance hormones without considering the circadian rhythm, which essentially sets the tempo for the entire body.

The Way to Feel "At Home" in Your Body: Four Steps to a Healthy Circadian Rhythm

To get your body's communication on track and have seamless signals and ready responses from the endocrine system and beyond, we need to look at four different processes happening simultaneously in your body. When these four aspects are taken care of, you can support circadian health and feel more "at home" in your body.

If you can remember the H.O.M.E. acronym, you'll easily recall how to get back to circadian health.

Harmonization

You may be familiar with the idea of your endocrine system as an orchestra. The endocrine glands, like the pituitary and thyroid glands, make the "music" within, communicating signals back and forth, turning on and turning off during the perfect beat and rhythm. Of course, the whole body seeks harmony, and you can consider the different organ systems and even peripheral clocks as part of this orchestra.

Now, consider the conductor of this orchestra as your circadian rhythm, and more specifically, the SCN. The conductor coordinates the rhythms of the orchestra, including the endocrine glands, organ systems, and peripheral clocks. The conductor ensures that each instrument in the orchestra is synchronized so they can make beautiful music rather than noise. Without the conductor, the orchestra will lack harmony.

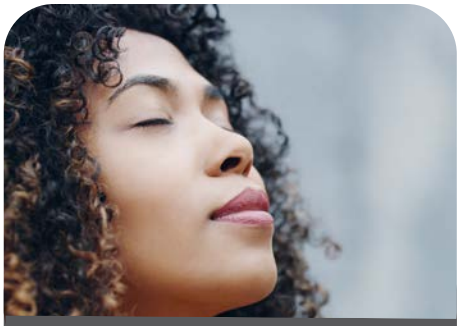
Harmonization for your circadian rhythm happens in several ways. To the best of our ability, we need to align our zeitgebers, or time cues, with the natural flow of the day or we won't be harmonized with the environment around us. Remember that there are many opportunities to align with zeitgebers, such as light, eating, physical activity, and social activities, as they are integral parts of our days. When we set the stage for harmonization with the environment, the circadian rhythm can better support health.

Staying up late, sleeping in, artificial light at night, late-night eating, and exercising late in the day are all examples of ways we might interfere with harmonization.

In this guide, we will help you get ideas to make this shift. Sometimes you may need to work with a healthcare professional to guide you in making these changes "stick." It takes time, attention, and focus to adjust your circadian rhythm. However, it's well worth it, because if you don't address the overall health of the circadian rhythm regularly, the symphony inside will be a cacophony of noise.

Optimization

Optimization for your circadian rhythm means living in alignment with the environment around you to the best of your ability. An all-or-nothing approach is usually not beneficial when it comes to making changes for your health, which certainly applies to circadian health. Though you don't always have complete control over work, eating, or even sleep schedules, you can do your best within your circumstances. Optimizing your lifestyle to support your circadian rhythm sets the stage for balanced hormones, which promotes healthy reproductive function, improved energy levels, and metabolic health.



In this guide, we provide you with tips to optimize your food intake, exercise, work schedule, and social interactions to best support your circadian health.

Metabolism

Living in alignment with your circadian rhythm promotes proper metabolism and metabolic health. To best support your metabolism, try to eat in alignment with the light-dark cycle, as this is when the body is primed to digest and metabolize food. Late-night eating may contribute to changes in the circadian rhythm. However, certain individuals, such as infants and shift workers, may need to eat at other times of the day or night.

In this guide, we provide you with strategies to optimize your diet and nutrition for circadian health.

Elimination

The body eliminates melatonin through the urine [29]. However, what you might consider with elimination is its synchronization to the circadian rhythm. The body naturally feels the need to urinate and have bowel movements during the daytime with decreased occurrence during the night [30]. Additionally, the circadian rhythm may affect gut motility, or the way the gut moves food contents, possibly contributing to discomfort [31]. On the other hand, frequent urination during the night because of late-night liquids can be disruptive to sleep and the circadian rhythm.

Supporting elimination goes both ways for circadian health. Limiting liquids in the evenings to reduce nighttime awakenings and making time to have bowel movements, especially in the morning, can support your circadian rhythm. On the other hand, supporting your circadian rhythm promotes healthy elimination.

In this guide, we provide you with strategies to support a healthy circadian rhythm that promotes healthy digestion and elimination.

Melatonin Supplements and Circadian Health

As you now know, pineal melatonin production at night helps synchronize the circadian rhythm so that you sleep at the right time of day. The pineal gland produces melatonin in response to darkness, which means sleeping in a dark room and limiting artificial light at night is of utmost importance for supporting your own melatonin production [5].

Nonetheless, some individuals, such as those experiencing changes to their circadian rhythm, having trouble sleeping, or experiencing naturally declining melatonin levels due to age, may benefit from supplemental melatonin to support normal sleep and circadian health.

Melatonin supplements can also help support the circadian rhythm when someone is experiencing jet lag, and it has a variety of other roles as an antioxidant [5].

However, not just any melatonin will do. There is considerable variability between supplements. Supplemental melatonin may be synthetic, animal-based, or plant-based. Compared to synthetic melatonin, plant-based phytomelatonin, and specifically HerbatoninPRO™, has been shown to have stronger antioxidant potential [5]. HerbatoninPRO™ is derived from rice, alfalfa, and chlorella, but it supplies bioidentical melatonin and small amounts of phytochemicals from the plant matrix.

Melatonin supplements can also vary in doses from 0.2 mg to 200 mg. Notably, the physiological dose of melatonin, or the amount aligned with the body's natural production, is 0.3–1.0 mg. Though higher doses can be used, such as in jet lag, it is often recommended to start with the lowest effective dose [5].

Even though melatonin is a naturally occurring substance, it may be contraindicated with certain medications or health conditions. Therefore, it's important to discuss melatonin supplements with your healthcare provider before beginning them.

Diet & Nutrition

Eating habits are another rhythm in our daily lives that impacts circadian health. Similarly to light, food intake is a zeitgeber or time cue for the circadian rhythm. When eating times are irregular or nutrition is unbalanced, circadian disruptions can occur and impact physiological processes, such as metabolism. Circadian disruption can also negatively influence eating habits and food choices [32]. Indeed, the relationship between nutrition and circadian health goes both ways.

What is chrononutrition?

Remember that the body relies on rhythms to work efficiently. Chrononutrition describes a way of eating that aligns with the circadian rhythm and emphasizes meal timing, frequency, and regularity [33]. A loss of rhythm in eating habits may affect metabolic health [34].

Though everyone has different dietary needs, following the principles of chrononutrition would mean:

Eating during daylight hours

Avoiding late-night eating

Eating larger meals at breakfast and lunch compared to dinner

Another issue for circadian health is "eating jetlag," which describes the variability in eating times between workdays and free days. For example, one might eat breakfast at 7 am on workdays but 10 am on free days, which may create misalignment in the circadian rhythm. Night owls tend to show the most variability in meal timing on workdays vs. free days [35].

Though we cannot expect ourselves to adhere to a strict schedule at all times, creating consistency with mealtimes between work and free days can help support circadian health.

Fasting and Circadian Health

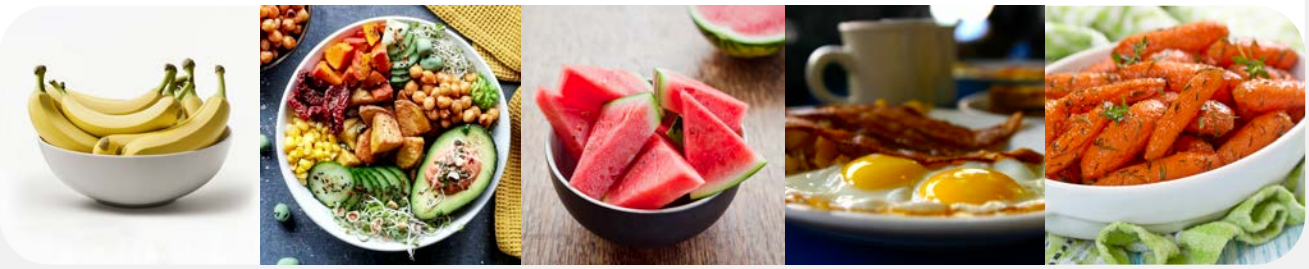
Fasting may evoke images of extreme amounts of time without eating. Yet, fasting to some extent every day is natural. Consider how you naturally eat during the daytime, but waking up to eat a meal in the middle of the night would be very unusual.

Because food is a zeitgeber, eating late at night can cause misalignment between your SCN and peripheral clocks [36]. When you consider the careful synchronization of physiological processes in the body, it makes sense why late-night eating could be problematic. For example, at night, melatonin may impair the secretion of insulin, an important hormone for metabolism [37]. The body is not primed to eat in the middle of the night, and its response to food will not be optimal.

Fasting does not have to be a hard and fast rule of when to eat and when not to eat. Instead, simply aligning mealtimes with daylight hours, to the best of your ability, can support the circadian rhythm. In fact, fasting may improve the expression of circadian genes, metabolic health, cognitive function, and aging. As a rule, fasting for 12 or more hours per night and eating breakfast within 1-2 hours of waking is often recommended [38].

Many people struggle with late-night eating, which may be due to artificial light at night and its tendency to extend the "active" phase [39]. It may help to dim the lights in the evening to better support the circadian rhythm and everything, including food intake, that aligns with it.

Though fasting has health benefits, it may not be appropriate for certain individuals, such as pregnant women, children, and those with health conditions. Therefore, it's important to discuss fasting with your healthcare provider before beginning.



What are chronobiotics?

Chronobiotics are substances that influence and synchronize the clocks throughout the body. They are able to shift the phase of and re-establish the circadian rhythm. Melatonin is a chronobiotic produced by the body that has already been discussed. Though the amount is relatively low, melatonin is also found in many plants, including fruits, vegetables, grains, nuts, and seeds [39].

Other plant compounds called polyphenols can adjust the circadian rhythm by affecting circadian or "clock" genes, which regulate the circadian rhythm throughout the body [40]. These health-promoting polyphenols can be found in cacao, citrus fruits, green tea, grapes, peanuts, berries, and soy [40-43]. Simply eating a colorful diet is an easy and fun way to include a variety of polyphenols in your diet.

Some chronobiotics, such as caffeine, might have negative effects depending on when it is consumed. Evening caffeine consumption can disrupt circadian timing and may cause you to sleep later and wake up later [44].

The time it takes to eliminate caffeine from the body is highly variable between individuals. To avoid sleep disruptions, it is often recommended to stop consuming caffeine, such as from coffee, 9 hours before bed. Larger amounts of caffeine, such as from sports nutrition supplements or energy drinks, should be discontinued even sooner [45].

BEST PRACTICES FOR DIET & NUTRITION

Three principles of chrononutrition

1. Eat during daylight hours and fast during dark hours.
2. Maintain regular mealtimes. For example: breakfast at 7 am, lunch at 12 pm, dinner at 6 pm every day, though times may slightly vary by season.
3. Consume more calories earlier in the day vs. most calories at dinner.

What to include in a nutritious diet

Diet quality, not just meal timing, can impact the circadian rhythm. Some evidence suggests that a Western diet, which emphasizes ultra-processed foods and foods that are low in fiber and high in fat, can disrupt the circadian rhythm, possibly because of its negative effects on the gut microbiome [46]. Therefore, it's worthwhile to consider what you are eating, too.

Drink Water

Proper hydration aids in delivering nutrients, regulates body temperature, improves mood and concentration, increases/maintains energy, lubricants joints, and supports healthy detoxification. It is also critical to support regular bowel movements, urination, and sweating — our three routes of eliminating waste from our bodies. Water intake may need to be adjusted based on physical activity, sauna use, and time of day — to name a few. Paying attention to late-night water consumption is pertinent to avoid interruption to sleep.

Do you find water boring?

Add fruits like oranges, lemons, limes, and grapefruit, herbs like mint, cilantro, and rosemary, or vegetables like cucumbers. Get creative and combine some of these fruits, herbs, and vegetables, such as cucumber & mint or grapefruit & rosemary. Making ice cubes from the above mentioned options can be a fun way to drink more water, too!

Additionally, if you drink water but still don't feel hydrated, you may consider mineralizing your water using Sole (pronounced sol-'ay) — a super-saturated Himalayan crystal salt solution. One study demonstrated that mineralized water increased hydration indicators by 10% and effectively stabilized pH [47].

Dietary Protein

Protein is essential for hormone production, healing and repair, and increasing satiety or feelings of fullness. Most protein sources also provide tryptophan, an amino acid used to synthesize melatonin [48]. Daily protein requirements vary depending on age and activity. Working with your healthcare provider to determine your personal intake is recommended.

- Animal-based options, such as:
  - Wild-caught fish (sardines, salmon, tuna)
  - Pasture-raised poultry (chicken, turkey)
  - Grass-fed meat (beef, bison, buffalo, lamb)
  - Pasture-raised eggs


- Plant-based options, such as:
  - Organic beans and legumes
  - Tofu, tempeh
  - Whole grains
  - Nuts, seeds


Fruits and Vegetables

Aiming to "eat the rainbow" is a fun way to include more fruits and vegetables in your diet. Eat one serving of each color of the rainbow daily.


Remember that colorful fruits and vegetables contain polyphenols that can support the circadian rhythm.

Fats and Oils

Fats and oils are essential for helping the body absorb fat-soluble vitamins, and many offer antioxidants to support your health.

Include healthy fats, such as:

- Oils: Extra virgin olive oil, flaxseed, pumpkin seed, avocado, and sesame
- Avocado
- Clarified butter/ghee
- Olives
- Nuts: Almonds, cashews, and peanuts
- Seeds: Flaxseeds, chia seeds, sesame seeds, and pumpkin seeds

Whole Grains

Whole grains provide fiber and polyphenols.

Include whole grains, such as:

- Brown rice
- Oats
- Millet
- Buckwheat
- Quinoa

Note: Choose gluten-free options as needed or as directed by your healthcare provider.

REDUCE OR AVOID

- Suspected or known food triggers, such as:
  - Dairy products (e.g., milk, cheese, yogurt)
  - Corn
  - Gluten (e.g., barley, rye, wheat, spelt)
  - Peanuts
  - Caffeine (e.g., coffee, tea, supplements)

Note: Work with your healthcare provider to determine whether you have any food allergies, sensitivities, or intolerances through laboratory testing or elimination from the diet.

- Processed/refined carbohydrates, which may affect the normal regulation of blood sugar and disrupt sleep:
  - Chips
  - Crackers
  - Breads, especially white bread
  - Fruit juice
  - Pancakes and waffles
  - Pastas
  - Ready-to-eat cereal
  - Soft drinks
  - White sugar and other refined sweeteners
  - White flour
- Artificial sweeteners (Equal, Sweet-N-Low, Splenda) [49]
- Grilled foods
- Alcohol
  - Consuming alcohol can disrupt sleep.

INCREASE YOUR INTAKE OF KEY NUTRIENTS

Key nutrients for melatonin production

The key nutrients below play a role in melatonin synthesis and can be found in a wide variety of nutritious foods [48, 50–53].

Tryptophan
- Meat, dairy, nuts, seeds, legumes, oats, buckwheat, tofu

Folate
- Dark leafy greens, asparagus, brussels sprouts, peas, avocado

Vitamin B3
- Meat, brown rice, peanuts, potatoes, sunflower seeds, pumpkin seeds

Vitamin B6
- Chickpeas, potatoes, bananas, animal proteins

Vitamin B12
- Meat, dairy products, fortified products like nutritional yeast and nut milk

DHA
- Cold-water fatty fish, such as salmon, mackerel, anchovies, sardines, and herring.

An easy way to remember the most beneficial fish to eat is the acronym SMASH:

Sardines **M**ackerel **A**nchovies **S**almon **H**erring

Zinc
- Shellfish, oats, pumpkin seeds, lentils, brown rice

Magnesium
- Pumpkin seeds, chia seeds, almonds, cashews, spinach, edamame, brown rice

Iron
- Beans, lentils, chickpeas, spinach, tofu, red meat

Calcium
- Dairy products, tofu, edamame, spinach, kale, chia seeds, beans

Vitamin C
- Peppers, citrus fruits, kiwi, strawberries, broccoli, melon, tomatoes

Key nutrients for eye health

Lutein and zeaxanthin are color pigments from plants that deposit in the eye. They may offer protection against oxidative damage from electronic screen use and filter blue light in the eye [54]. Though more evidence is needed, lutein and zeaxanthin may improve both sleep disturbances and eye health. Luckily, they are found in several common foods [55].

- Lutein: Spinach, kale, asparagus, broccoli, parsley, pistachios, corn, eggs
- Zeaxanthin: Orange peppers, corn, eggs

Exercise & Movement

Similar to light and food intake, exercise is another zeitgeber that acts as a time cue for the circadian rhythm. The relationship between exercise and the circadian rhythm goes both ways as they influence one another. This information might help you decide when you exercise for your best performance or to create changes in your circadian rhythm.

When should you exercise?

In general, exercising too late in the evening may cause a natural shift in the circadian rhythm, making it harder to fall asleep [56]. However, chronotype can also affect the circadian rhythm's response to exercise timing.

For the night owl, for example, morning and evening exercise may cause a phase advance, meaning bedtime and wake-up time shifts to an earlier time [57]. Night owls also tend to be more sensitive to exercise timing and experience more negative emotions when exercising in the morning [56].

Morning larks also experience phase advances with morning exercise, but evening exercise may cause a phase delay, making it harder to fall asleep [57].

It's a good idea to consider when you feel best exercising and any desired effect you wish to have on your circadian rhythm. For example, if you are a morning lark who exercises late in the day and struggles to fall asleep, you may consider moving your exercise to an earlier time.

> Watch for sports nutrition supplements that contain caffeine as consuming these too late in the day can shift the circadian rhythm, making it harder to fall asleep.

The circadian rhythm can also influence exercise performance. Exercise performance tends to be better in the afternoon when physiological, metabolic, and psychological rhythms are synchronized and at their peak. It's suggested that the best time for exercise, according to circadian rhythms, is 4:30 - 6:30 pm. Aligned with this time frame, it's suggested that muscle repair is enhanced between 2:00 - 6:00 pm. On the other hand, morning exercise may be more fatiguing [58].

Though certain times may be more optimal to exercise compared to others, it's ideal to exercise when it is most convenient for you, which will help you develop a sustainable exercise routine to support your health. If you notice that exercise in the late afternoon or evening makes it more difficult to fall asleep, it may be worth finding an earlier time.

SOME TIPS TO HELP YOU MOVE MORE

Do what you enjoy! For some, this may mean going to the gym and hitting the elliptical and weights. For others, it can be the pool, and still others, the dance floor.

Add some resistance activities — consider squats, lunges, push-ups, using resistance bands, weights, and/or body weight to give your large muscle groups some additional attention.

The pool is a great place to combine aerobics with the natural resistance the water provides and is ideal for older populations as well as some disabled persons.

Find a buddy or group to exercise with or to participate in classes or activities. Consider joining a hiking group, dance class, yoga studio, Pilates class, or soccer team, or taking lessons in golf, tennis, and many other sports.

Consider when you feel best exercising and schedule a time with yourself for exercise. Hire a personal trainer to keep you accountable. Is there a gym on the way to/from work to make it easier to stick with?

Remember to support your exercise with proper nutrition, which will give you the energy you need to perform, recover, and feel great while moving.

Seek assistance from a trained professional to create the ideal exercise routine. With their support, you can ensure exercise meets your preferences, time schedule, and addresses any health or joint concerns (e.g., weak back or knees).

Lifestyle & Environment

Without a doubt, lifestyle and environment play critical roles in circadian health. As you have learned, light is the dominant zeitgeber. We can help support a healthy circadian rhythm by seeking light in the morning and limiting it in the evening.

Of course, our environment determines the light we see, whether it's indoor lighting, the sun, or even light pollution. Other factors, such as work schedules and sleep hygiene, can impact circadian health, too.

Optimizing light for circadian health

If you think about life before electricity, humans naturally aligned their lives with the sun's rising and setting. Today, indoor lighting can extend the active phase of the day and reduce the strength of the natural cycle between light and dark [8]. The strength is further reduced if we don't spend time outside during the day. In short, humans today tend to brighten their nights and darken their days. More recently, it has been said that humans have a "darkness deficiency," which refers to the lack of darkness people are getting in the nighttime hours.



Here are some tips for improving light:

- Seek light in the morning, whether the sun or artificial light.
- Get outside during the day for safe sunlight.
- Dim lights two hours before bed.
- Use an eye mask at night for lights you cannot dim (e.g., streetlights).
- If waking at night to use the restroom, avoid turning on lights unless it is unsafe to do so.

Living in alignment with the environment in certain seasons may be more difficult when the days are naturally shorter. In this case, indoor lighting is, of course, helpful to extend the active phase of the day. Just remember to be mindful of light as you wind down in preparation for sleep.

Addressing work schedules for circadian health

Work schedules also influence the circadian rhythm, and chronotype can influence how well you cope with a particular work schedule. In fact, the typical workday is more suited for the morning lark, who naturally wakes up early and is more productive in the morning. The best case scenario is that we can choose a work schedule that best aligns with our chronotype and productivity [59]. Unfortunately, aligning a work schedule with your chronotype isn't always possible, and you may need to find support in other ways.

Here are some tips for optimizing your work schedule:

- When possible, align your work schedule with your chronotype.
- Avoid social and eating jet lag by maintaining consistency on work and free days.
- Leverage zeitgebers (e.g., light, eating, and exercise) to help align yourself with a work schedule.

Shift work and circadian health

Shift workers have non-standard hours and often must remain awake at night. Shift work schedules can cause circadian misalignment and may affect metabolic health, cardiovascular health, digestive health, and menstrual health [60].

Here are some tips for shift workers:

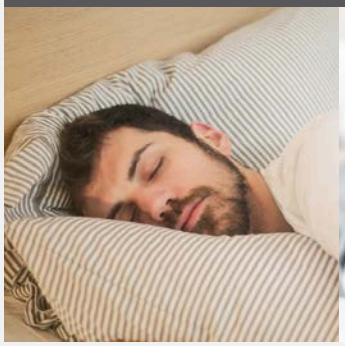
- When possible, align your shift with your chronotype (e.g., an extreme night owl will likely fare better during night shifts than a morning lark).
- If you are planning to sleep after a shift, be mindful of caffeine consumption.
- Consider using melatonin on free days to support healthy sleep.
- Do not use melatonin supplements for night shifts, as it may impact your work.

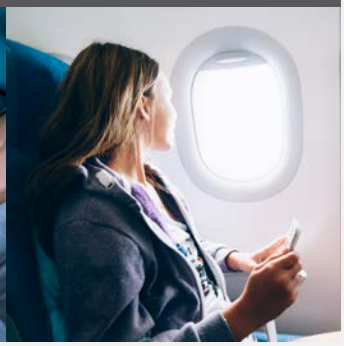
Night owls are typically more tolerant of shift work as they have later and often more flexible bedtimes. In fact, matching night shift work to chronotype has produced healthier melatonin rhythms and improved sleep, which may translate into better overall health [61]. Note that recommendations may differ between permanent shift work and rotating shift work.

HERE ARE SOME TIPS FOR OPTIMIZING SLEEP HYGIENE

- Dim lights two hours before bed to support melatonin production.
- Reduce screen time before bed and use blue-light-blocking glasses when necessary.
- Sleep in a very dark, cool room.
- Stick to a regular sleep-wake routine, even on weekends, to reduce social jet lag.
- Avoid stimulating activities before bed (e.g., work emails, difficult conversations, or scary movies).
- Use melatonin supplements as necessary, and when safe to do so, to support the circadian rhythm.
- If switching time zones, plan to have 1 day of adjustment for every 1 hour time zone change. Consider using melatonin to help shift the circadian rhythm.

Many factors affect circadian health. Our goal is to help you improve circadian health with a "Whole Health" approach. This approach allows you to make changes in many areas of your life, from diet to exercise and even your work schedule. If you are uncertain about certain areas of your health, working with a health professional who can customize a plan to meet your individual needs is best.

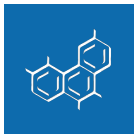


Summary

Empowerment & Knowledge

- Light is the main cue to your circadian rhythm.
- Your circadian disruption can impact your physical health.
- Your chronotype explains your preference for the timing of your circadian rhythm.
- Speak to your healthcare provider about the symptoms you are experiencing.
- Remember, only a doctor can provide you with a medical diagnosis.



Hormones

- Melatonin is the main hormone associated with the circadian rhythm, and it is released by the pineal gland in response to darkness.
- Many hormones fluctuate with the circadian rhythm and help your body complete tasks at optimal times.
- Melatonin supplements may help support the circadian rhythm, but they may not be appropriate for everyone. Speak with your healthcare provider before beginning melatonin supplementation.

Diet & Nutrition

- Food is a cue for the circadian rhythm, and fasting during dark hours can support circadian health.
- Choose a dietary pattern that fits your food preferences, lifestyle, and beliefs.
- "Eat the rainbow" with foods from every color daily.
- Reduce or eliminate food triggers.
- Chrononutrition describes eating in alignment with the circadian rhythm, emphasizing meal timing, frequency, and regularity.
- Focus on key nutrients for melatonin production like tryptophan, B-complex vitamins, and DHA, an omega-3 fatty acid.

Exercise & Movement

- Consider how the circadian rhythm might impact your exercise performance.
- Consider how your chronotype might impact your ideal exercise time.
- Exercise performance tends to be best in the afternoon, but it's important to choose a time that works best for you and is easy to maintain.
- Select activities you enjoy doing.
- Work with a personal trainer to develop a workout program that fits your needs and preferences.

Lifestyle & Environment

- Living in alignment with the environment around you supports the circadian rhythm and can help you sleep better. Having sufficient darkness at night and seeking safe sunlight during the day is a primary way to do this.
- Shift workers are prone to changes in the circadian rhythm, but some individuals, such as night owls, may be better suited for it.
- To support healthy sleep, dim lights for two hours before bed to support melatonin production and avoid artificial light at night (e.g., cell phones, bathroom lights).

References

1. PMID: 31536270
2. PMID: 34083887
3. PMID: 30365354
4. PMID: 31534436
5. PMID: 36235587
6. PMID: 33804974
7. PMID: 36771440
8. PMID: 35670313
9. PMID: 38725697
10. PMID: 24863387
11. PMID: 37954446
12. PMID: 34596053
13. PMID: 23099133
14. PMID: 31613456
15. PMID: 35162871
16. PMID: 32998085
17. PMID: 37886134
18. PMID: 37221400
19. PMID: 33241196
20. PMID: 33408808
21. PMID: 36033630
22. PMID: 33804974
23. PMID: 34225973
24. PMID: 36267165
25. PMID: 32954405
26. PMID: 19088162
27. PMID: 31841296
28. PMID: 36280789
29. PMID: 28503116
30. PMID: 37711458
31. PMID: 32134798
32. PMID: 36501133
33. PMID: 36768893
34. PMID: 36645134
35. PMID: 31817568
36. PMID: 38413565
37. PMID: 31901302
38. PMID: 37722875
39. PMID: 38586455
40. PMID: 38648895
41. PMID: 32801469
42. PMID: 28412321
43. PMID: 37231216
44. PMID: 26378246
45. PMID: 36870101
46. PMID: 38788974
47. B., H., Water and Salt-The Essence of Life. 2007: Stenhouse Publishers.
48. PMID: 35087957
49. PMID: 27189909
50. PMID: 22826693
51. PMID: 34918026
52. PMID: 30772815
53. PMID: 36674498
54. PMID: 40135032
55. PMID: 28208784
56. PMID: 36833520
57. PMID: 31895695
58. PMID: 34060402
59. PMID: 25772446
60. PMID: 34969316
61. PMID: 31142495

Symphony

NATURAL HEALTH

A Whole Health Guide to Circadian Health