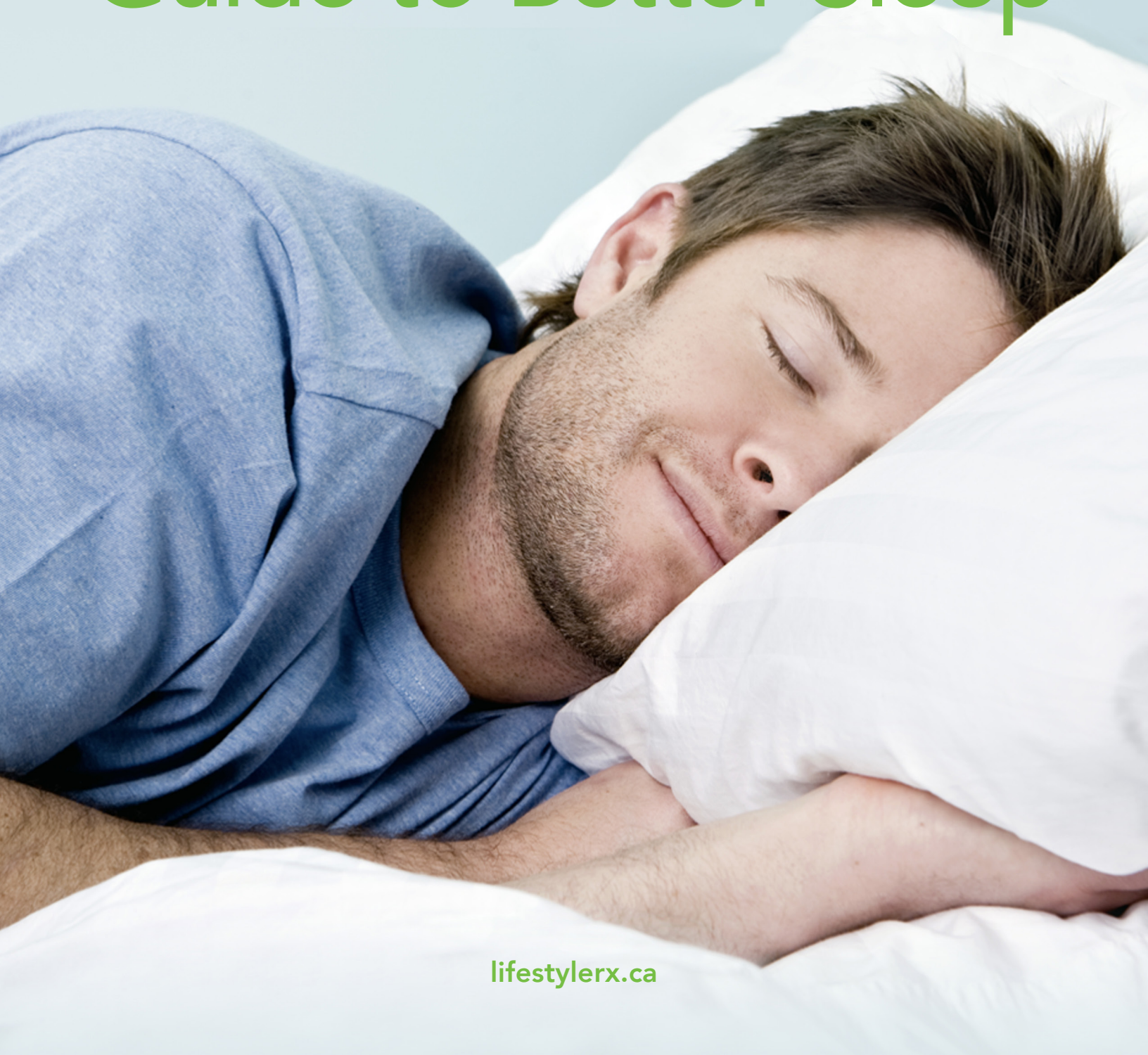


SLEEPSounder Guide to Better Sleep



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1 The Importance of Sleep

Of all the things we do, nothing preoccupies us more than sleep. We spend roughly a third of our lives sleeping. We know it is essential—without sleep, we die. Yet until most recently, sleep has been a mystery.

Sleep emerges very early in evolution, with something resembling sleep preserved amongst virtually every animal. As nervous systems and brains became more complex, sleep developed more complexity.

Linked to the 24-hour light-dark cycle, humans wake at first light and go to sleep when dark. Along with sleep, much of our physiology is dependent on this circadian rhythm. 30-40% of our genes are either turned on or off by the presence or absence of light.

So we have evolved to eat and be active during the day and to rest and digest at nighttime.

But what exactly does sleep do?

Increasing evidence points to the importance of sleep for brain maintenance. Our brains need downtime to clear the metabolic waste from the activity of thinking. During the day, our brains are highly active, with high metabolic

AMAZING BREAKTHROUGH!



Scientists have discovered a revolutionary new treatment that makes you live longer. It enhances your memory and makes you more creative. It makes you look more attractive. It keeps you slim and lowers food cravings. It protects you from cancer and dementia. It wards off colds and the flu. It lowers your risk of heart attacks and stroke, not to mention diabetes. You'll even feel happier, less depressed, and less anxious.

Are you interested?

Walker, Matthew. *Why We Sleep: Unlocking the Power of Sleep and Dreams*

demand. As the day progresses, metabolic waste increases and needs to be cleared for the brain to function optimally. When we sleep, glymphatic channels open in our brains, cerebrospinal fluid circulates, removing the accumulated metabolic waste.

While this is happening, our neurons reshape themselves—building new synaptic connections and pruning old ones. Memories are consolidated from short-term storage in our hippocampus to long-term memory in our cortex. We learn new things at night when we sleep, and we forget things that are no longer important (like the number of the hotel room we just checked out of). Through our dreams, we also make new connections between different memories.

Without sleep, these memory consolidations do not occur, and learning, memory, and psychological health all suffer.

Without sleep, metabolic waste is not cleared, increasing the risk of dementia.

Of course, the adverse effects of the lack of sleep go well beyond brain health:

- Lack of sleep is a risk factor for obesity, insulin resistance and diabetes, along with increased heart disease and stroke.
- Lack of sleep affects the immune system, increasing inflammation while decreasing immune function. Sleep deprivation increases susceptibility to colds, flu and common infections.
- This decrease in immune function likely plays a role in the association between lack of sleep and cancer.
- Accidents and workplace errors are more common among people with sleep disorders.
- Sleeping < 6 hours per night is associated with increase all-cause mortality.
- People who lack sleep report that their quality of life suffers from lack of energy, drowsiness and unplanned naps.

So while we may not fully understand all the effects of sleep, these associations remind us of sleep's vital nature.

Sleep architecture

When we sleep, our brains run through a predictable cycle of sleep stages:

Light sleep:

Stage 1 - transition from wakefulness to sleep
Stage 2 - body temperature drops, heart rate slows, sleep spindles appear

Deep sleep:

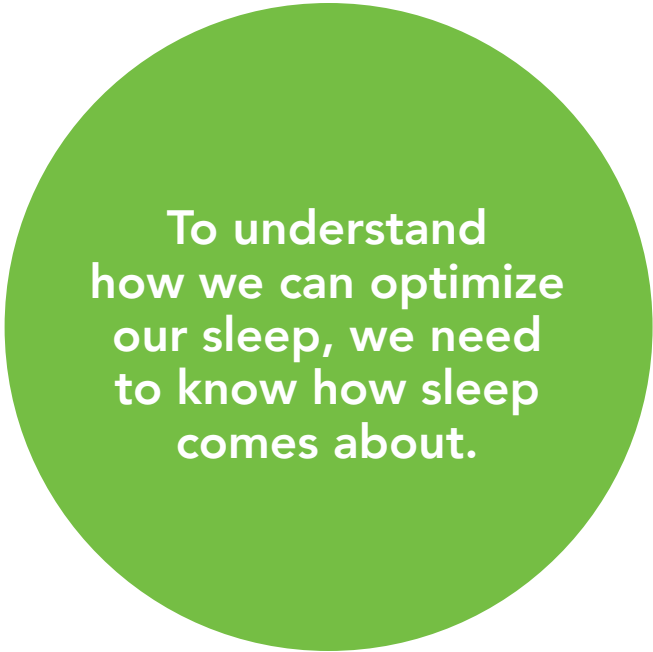
Stage 3 - muscles relax, blood pressure decreases, breathing slows
Stage 4 - deepest sleep

REM (Rapid Eye Movement Sleep) - dreaming

Each cycle takes approximately 90 minutes to complete. In the first part of the night, we get more deep sleep; in the second part, more REM.

This pattern is likely related to the consolidation of memory in the first part of the night and new insights and creative connections in the second half.

Even from this brief review, you can see the peril in cutting short your sleep. Losing 90 minutes of sleep may cut out a complete sleep cycle and, with it, the loss of learning and creativity.



To understand
how we can optimize
our sleep, we need
to know how sleep
comes about.

Sleep and arousal are closely tied to the light-dark cycle. In the early morning, just before dawn, our brains send signals to our adrenal glands to release cortisol.

Cortisol, often referred to as our “stress hormone,” is really our “get up and go” hormone. It mobilizes energy and activates our brains and bodies to be alert for the day ahead. As the day runs its course, cortisol levels decrease until they are barely detectable in the evening before bedtime.

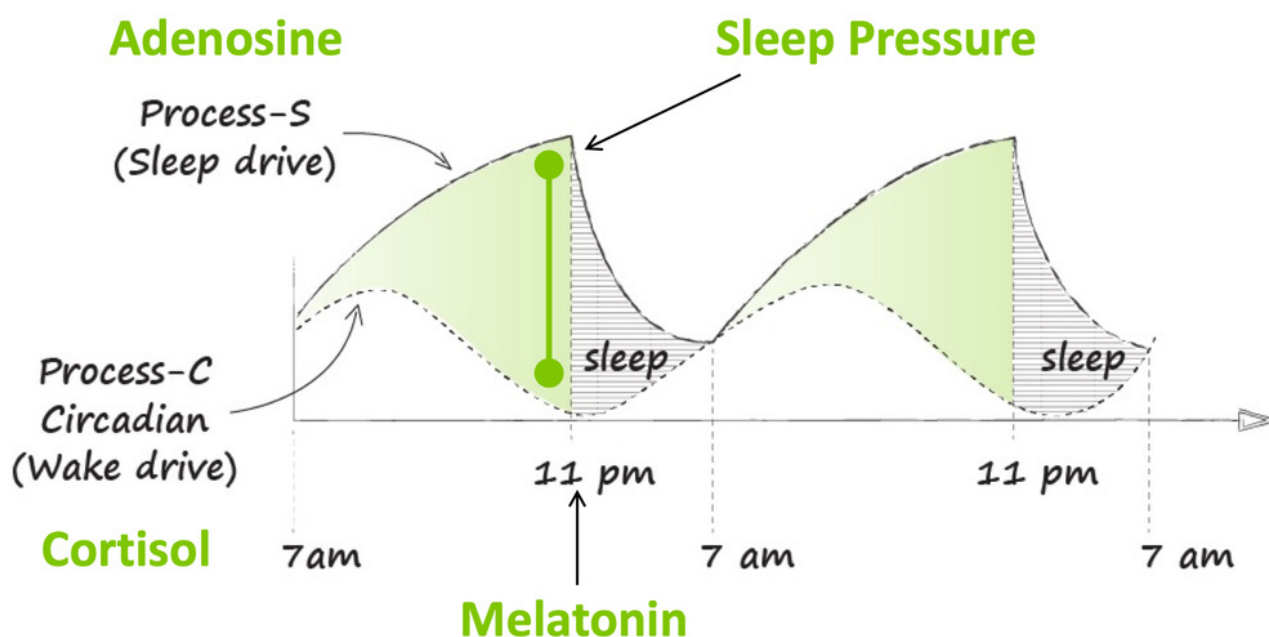
As we are active, metabolites of brain activity accumulate, most notably adenosine. The subjective feeling of fatigue correlates closely with adenosine levels. In fact, caffeine blocks adenosine receptors and makes us feel more energetic by blocking the fatigue signal.

The gap between the increasing levels of adenosine and the decreasing cortisol concentration has been referred to as sleep pressure. Throughout the evening, this sleep

pressure builds until darkness hits and the pineal gland in the brain release melatonin, triggering sleep.

How this sleep symphony of hormones plays out determines whether you have a good night of sleep or whether you lie in bed sleepless.

Aligning your behaviours with your sleep hormones is the best way to ensure that you get a good night's sleep and all the benefits that accrue from it.





2 How To Improve Your Sleep

Lack of sleep has become an epidemic in our society and is increasingly common as we age.

There are many causes for poor sleep, some of which need medical assessment, but mostly our ability to sleep well is within our control.

Here is a safe and proven framework for sleep. If you are not sleeping well after implementing this, a visit with your physician is warranted.

Getting a good night's sleep is a challenge faced by many.

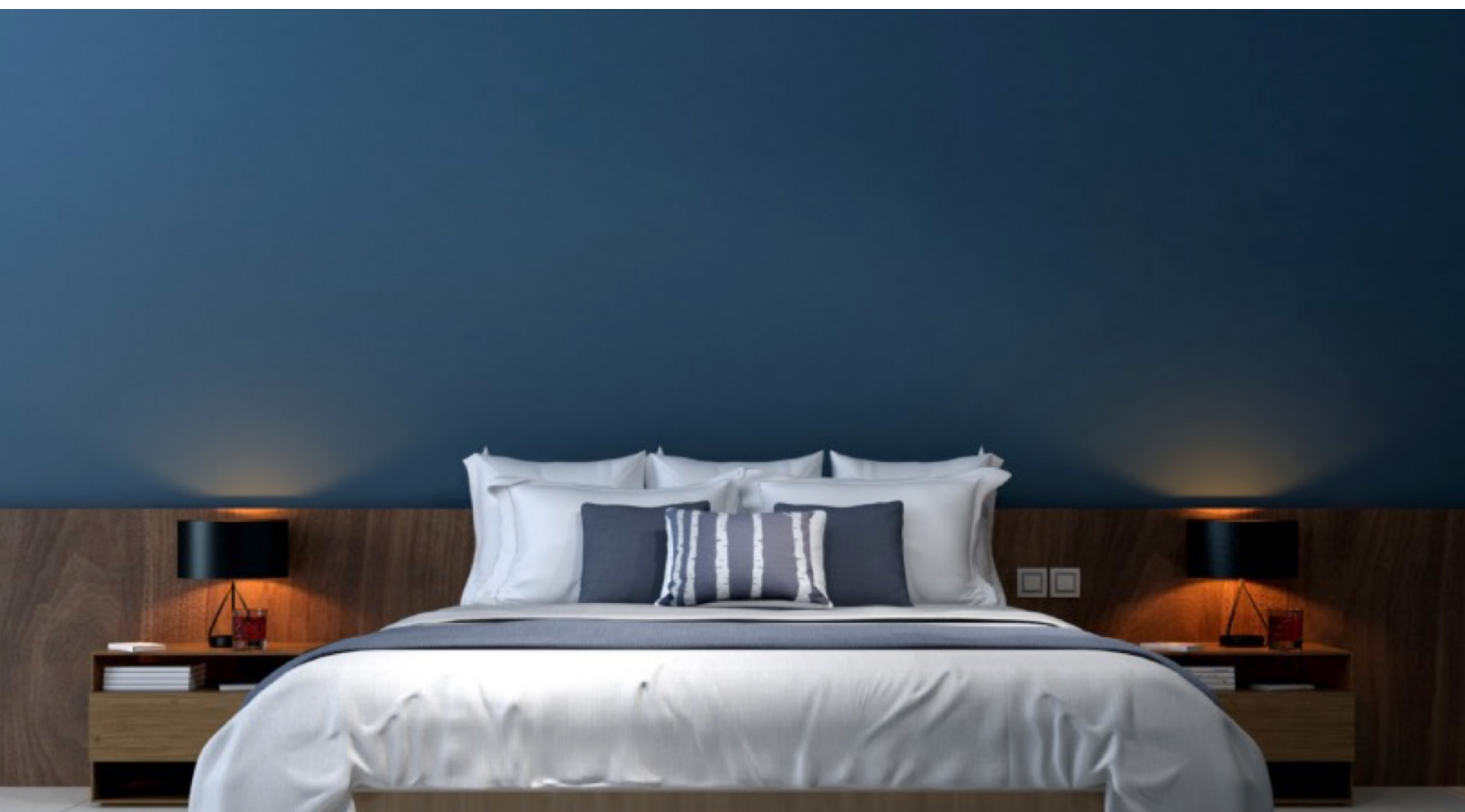
A good night's sleep is all about optimizing your behaviours and environment to fit your body's natural rhythm.

As humans, we have evolved to be awake when it is light and to sleep when dark. Supporting this circadian rhythm is a cascade of different hormones that signal the body to be alert or sleepy. Our days start with a morning burst of our 'get up and go' hormone cortisol, signalling that it is time to greet the day. Over the course of the day, our cortisol wanes until in the evening levels are close to zero. In parallel, adenosine levels build up, signalling fatigue. Adenosine is a by-product of energy expenditure—the more active we are, the greater our adenosine levels. Finally, when dark, our brains release melatonin signalling it is time to sleep.

Aligning our behaviours to our body's hormonal symphony is relatively straight-forward:

First, avoid substances that will alter hormones and affect your sleep:

- Alcohol - As a general rule, you should stop all drinking when you aren't sleeping well. Once your sleep is restful again, you can resume light (one drink per day) alcohol intake.
- Caffeine - if you aren't sleeping, stop all caffeine. Once your sleep has been restored, it's OK to have some caffeine but stop after 12 p.m.
- Some medications - check with your doctor whether any of your medications/supplements (or the time you take them) could be affecting your sleep.



Next, optimize your daytime activities:

- Be active during the day as this will drive up adenosine, telling your body it needs rest.
- Get some exercise, but finish at least three hours before bedtime.
- Eat more during the day, avoiding heavy meals late in the evening. Don't eat anything within two hours of bedtime.
- Get some natural light during the day and avoid bright lights in the evening.

Next, optimize your environment for sleep:

- Keep your bedroom dark - blackout curtains, eyeshades.
- Keep your bedroom quiet - "white noise" can help—humidifiers, fans or "white noise machines."
- Keep your bedroom cool.
- Create a comfortable sleep environment - invest in your bed, your sheets, your pillow.
- Keep your electronics out of the bedroom.
- Your bed is only for sleeping (once you have re-established your sleep, you can try reading in bed again).

Finally, optimize your sleep ritual:

- Two hours before bedtime, shut down the screens - TVs, computers and phones. The blue light from these devices will suppress your body's release of melatonin, and the content (especially the news) will often get your mind racing.
- Sixty minutes before your bedtime, begin a process to relax - reading, light yoga, meditation followed by a sauna or hot bath. This ritual will help you wind down from the day, quiet your mind and set your body up for a great sleep.
- Have fun with this - your sleep ritual should be a joy. Think of the rituals we create for our children—playtime after dinner, followed by a bath, a good read in bed and a loving tuck-in. We should all treat ourselves to such a nightly send-off.

Most often, adopting this framework is all it takes to restore sleep.

What do you do if this doesn't work?

If you have

- Eliminated substances that harm your sleep
- Optimized your daytime activities
- Optimized your sleep environment, and
- Optimize your sleep ritual

...and you still cannot sleep—it is time for...

Sleep Restructuring

- Go to bed at the same time every night.
- Get up at the same time every morning
- Since you are having trouble sleeping—do not nap.
- Plan for a set amount of sleeping:
- Calculate the total amount you are currently sleeping (albeit broken) and use this to set your new sleep hours.
- So if you are sleeping six hours in a broken fashion, set your wake-up time precisely six hours after the time that you go to bed.
- Then go to bed and wake up at the set times—no exceptions—even if you have had three hours of sleep, you need to get up and start your day. You will be tired during the day but resist all urges to nap; come bedtime, that fatigue will help you get to sleep.
- Once you sleep soundly through that six hours, add 15 minutes to your sleep (go to bed 15 minutes earlier or set the alarm for 15 minutes later).
- When you find that you are sleeping through the night and waking refreshed, your sleep has been restructured. Generally, the total amount of sleep needed will be between seven and eight hours per night. Resist the urge to stay in bed longer than the sleep you require, as this morning-time slumber may result in your sleep deteriorating again.

3 When Things Go Wrong With Sleep

When you have tried everything to improve your sleep, but you are still not sleeping, it is time to dig deeper and determine if there is something else going on.

By far, the most common sleep disorder is obstructive sleep apnea.

It is estimated that up to 30% of Canadians suffer from it, yet only 6.4% have recognized the diagnosis.



What is Obstructive Sleep Apnea?

Sleep apnea is a serious condition in which a person's breathing is repeatedly interrupted during the night. During normal sleep, air moves in an unobstructed, regular rhythm through the upper airway, the throat into and out of the lungs. With obstructive sleep apnea (OSA), airway blockages, usually from soft tissue collapse, prevent the normal regular breathing rhythm.

What are the symptoms?

The main symptoms of OSA are

- loud snoring,
- fatigue, and
- daytime sleepiness.

However, some people have no symptoms or may not recognize that they have symptoms.

Other symptoms may include one or more of the following:

- Restless sleep
- Awakening with choking, gasping, or smothering
- Morning headaches, dry mouth, or sore throat
- Waking up to urinate more than once per night
- Feeling unrested and groggy in the morning—"brain fog."
- Fatigue, low energy, memory challenges with difficulty concentrating


The key to addressing sleep apnea is to recognize it—start with our downloadable checklist—if you score as high risk, talk to your doctor about getting a sleep assessment.

(For more on Sleep Apnea - check out our previous post: [**Sleep Apnea—what you need to know**](#)).

Other significant sleep disorders will get picked up through this review process.

Excessive daytime sleepiness due to narcolepsy or other central types of hypersomnolence will be considered before or after sleep apnea is ruled out, depending on your history.

Sleep-walking or excessive movements in bed, restless leg syndrome or other disorders are best managed with a referral to a sleep specialist.



The LifestyleRx
SLEEPSounder
approach leverages
a check-list system.

Start by assessing your current sleep habits—we refer to this as sleep hygiene. In all cases, improving these will be part of the solution for your concerns.

At the same time, screen yourself for obstructive sleep apnea—if you score anything other than Low—bring the checklist to your physician to review. They will determine the next steps—either a referral for a Home Sleep Apnea Test or a consultation with a sleep specialist.



PHOTO BY KINGA CICHEWICZ ON UNSPLASH

SLEEP Sounder

Putting It All Together

When it comes to your sleep, answer these four questions:

- Do I have trouble falling asleep?
- Do I have trouble staying asleep?
- Do I feel rested when I awake?
- Do I fall asleep easily during the day (when I shouldn't)?

If your answers are yes to 1 and 2 and no to 3 and 4—you do not have a sleep issue.

You may be able to improve your sleep quality by following the recommendations in 'How to Improve Your Sleep'...but feel fortunate and turn your efforts to one of the other pillars.

You will notice that none of the questions here talk of time asleep or amount of deep sleep, REM, or any of the sleep scores you can derive from the variety of sleep trackers.

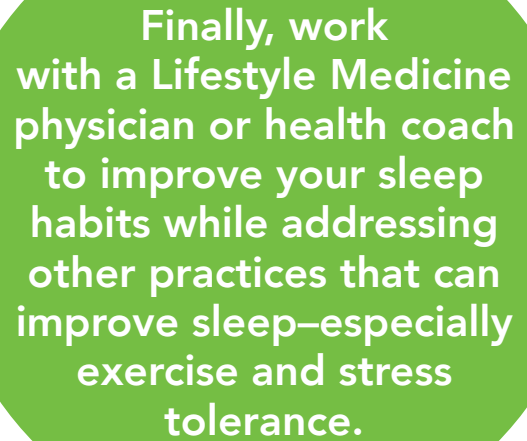
If you sleep soundly and full of energy, you do not need to track your sleep.

Even if you track your sleep—your answer to these questions is more important than any metric derived from a sleep tracker.

If your answers are not optimal, you will want to improve your sleep habits while assessing yourself for sleep apnea or other sleep disorders.

Use the **LifestyleRx Sleep Checklist** to assess your Sleep Hygiene and screen yourself for Sleep Apnea.

Using a sleep tracker in this context can be very helpful to understand what actions you are taking that help or hinder your ability to sleep.



Finally, work
with a Lifestyle Medicine
physician or health coach
to improve your sleep
habits while addressing
other practices that can
improve sleep—especially
exercise and stress
tolerance.

SLEEP HYGIENE CHECKLIST

| | |
|-------------|--|
| Timing | wake-up time = same time everyday |
| | bedtime = same time every night |
| Before | night-time ritual |
| | relaxation exercises |
| Environment | stretching/yoga |
| | bedroom is dark |
| | bedroom is quiet |
| | bedroom is cool |
| | bed only used for sleeping or sex |
| | no screens in the bedroom |
| | no phone or computer within 2 hrs of bedtime |
| Daytime | no stressful conversations in bed |
| | bed is really comfortable |
| | pillow is really comfortable |
| | sheets are really comfortable |
| | exercise during the day |
| | no exercise within 3 hours of bedtime |
| | time outside in real daylight |
| Food/Drink | no napping |
| | fully hydrated during the day |
| | no heavy evening meals |
| | no eating within 2 hours of bedtime |
| | minimal water within an hour of bedtime |
| | no caffeine after 1 PM |
| | minimal alcohol |

OBSTRUCTIVE SLEEP APNEA SCREENING

| | |
|--|--|
| | Do you Snore Loudly (loud enough to be heard through closed doors or your bed-partner elbows you for snoring at night)? |
| | Do you often feel Tired, Fatigued, or Sleepy during the daytime (such as falling asleep during driving or talking to someone)? |
| | Has anyone Observed you Stop Breathing or Choking/Gasping during your sleep ? |
| | Do you have high blood pressure, or are you being treated for high blood pressure? |
| | Is your BMI (Body Mass Index) greater than 35 kg/m2? |
| | Are you older than 50 years? |
| | Is your neck size (shirt collar - measured around Adams apple) greater than 16 inches/40cm? |
| | Are you male? |
| | TOTAL |

FOR GENERAL POPULATION

OSA - Low Risk: Yes to 0 - 2 questions
 OSA - Intermediate Risk: Yes to 3 - 4 questions
 OSA - High Risk: Yes to 5 - 8 questions
 or Yes to 2 or more of 4 STOP questions + male gender
 or Yes to 2 or more of 4 STOP questions + BMI > 35kg/m2
 or Yes to 2 or more of 4 STOP questions + neck circumference 16 inches/40cm

Form University Health Network

Modified from Chung F et al. Anesthesiology 2008; 108: 812-821, Chung F et al Br J Anaesth 2012; 108: 768-775, Chung F et al J Clin Sleep Med Sept 2014.





JOIN OUR **FREE** 12 WEEKS TO Take Control of Your Diabetes Program

Learn the 4+2 Diabetes Reversal Strategy—a comprehensive, evidence-based approach to diabetes reversal. **FREE** with provincial health coverage in BC, Alberta and Ontario.

HOW IT WORKS

Our 12-Week Program

✓ Fully Covered in BC, AB, and ON

Our program is 100% virtual. You can access sessions and materials from the comfort of your home.



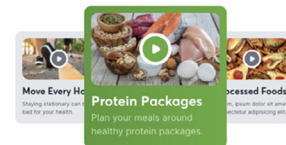
Virtual Physician Visits

Consultations with our physicians are done by video call, and can be completed from any computer, tablet, or phone.



12 Virtual Group Sessions

In groups of 15-30, you will attend weekly virtual sessions with a physician where you can ask questions and hear about the successes and challenges of others.



Videos & Weekly Lessons

Watch videos explaining core concepts, print out reference guides and cheatsheets, and complete ongoing learning exercises.

How often do you sleep 7-8 hours?

☐ Every day

☐ Most days

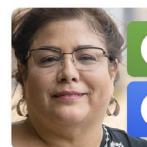
☐ 3-4 nights per week


☐ Less than 3 nights per week

8.9
SLEEP SCORE

Self-Assessments & Exercises

Answer questions and complete exercises to show where you're doing well and where you need to focus.

 **REPORT**
Insulin Resistance

 **REPORT**
Pancreatic Function

Personal Health Reports

Different people are, well, different. Understand what your lab results and other markers show about your current health and diabetic reversal path.

For more info, please visit lifestylerrx.ca