

Why We Sleep Summary – Matthew Walker

16 MINUTE READ

[Why We Sleep](#) (2017)

Unlocking the Power of Sleep and Dreams

by [Matthew Walker](#)

Why We Sleep is a fascinating and accessible guide to what sleep is, why sleep matters and how to optimise your sleep habits to live longer, feel happier and set your life up for success - by sleep scientist and best-selling author, Matthew Walker. ([368 pages](#))

[Paperback](#) | [Ebook](#) | [Audiobook](#)

Note: This **Why We Sleep summary** is part of an ongoing project to summarise the [Best Health Books](#) and [Best Self Help Books](#) of all time.

Contents

1. Why We Sleep Review
2. Why We Sleep Summary
5. What Makes Us Sleepy?
6. Why Is Sleep So Important?
7. How Does Sleep Change With Age?
8. How Much Sleep Do I Need? (Quantity)
9. How Can I Sleep Better? (Quality)
10. But What If I'm STILL Struggling With Sleep?
11. Why We Sleep Contents
12. Best Why We Sleep Quotes
13. Why We Sleep PDF Summary
14. Read More: 5 Books Like Why We Sleep

15. Wish There Was a Faster/Easier Way?

Why We Sleep Review

It's not easy to turn a book of science into a compelling page-turner, but that is exactly what Matthew Walker achieves with his excellent [Why We Sleep](#).

Is Walker sometimes guilty of inconsistent footnoting, misquotations and switching between fact and hypothesis without always alerting the reader?

Yes, he is. (For more, see this excellent article by [Alexey Guzey](#).)

But does his exuberance come from the right place? Does he keep his enthusiasm mostly in check? And does he succeed in educating us about a topic that is poorly understood and causes untold needless suffering every year?

Yes, he does.

And for that, I can forgive Walker his errors.

Want a quick preview or recap of his main arguments?

Check out my *Why We Sleep* summary below...

P.s., I've heard a rumour that a second edition of *Why We Sleep* may be planned and will update this *Why We Sleep* summary accordingly if and when that happens.

Why We Sleep Summary

This *Why We Sleep* summary breaks down into 8 key questions:

- **What Is Sleep?**

- **Why Do We Dream?**
- **What Makes Us Sleepy?**
- **Why Is Sleep So Important?**
- **How Does Sleep Change With Age?**
- **How Much Sleep Do I Need? (Quantity)**
- **How Can I Sleep Better? (Quality)**
- **But What If I'm STILL Struggling With Sleep?**

Click on a link above to jump ahead or read on below...

What Is Sleep?

Sleep is a state externally characterised by:

- A stereotypical position (e.g., lying down);
- Lowered muscle tone;
- No overt communication or responsiveness;
- Being easily reversible; and
- Sticks to a reliable, timed pattern.

And internally (at least in humans) by:

- Loss of external awareness;
- Sensory blackout (directed by [the thalamus](#), the brain's sensory gate); and
- Time distortion (loss of conscious sense of time).

Despite this loss of awareness, sleep is **NOT** simply an absence of wakefulness.

Sleep is made up of three different, deliberate, metabolically-active states:

- **Light NREM** (stages 1 & 2) sleep;
- **Deep NREM** (stages 3 & 4) sleep; and

- **REM** sleep.

Light and deep NREM (non-rapid eye movement) sleep are characterised by:

- **Eye movements:** None;
- **Muscle tension:** Some (less than waking); and
- **Brain waves:** Deep, slow, and synchronised (rippling from front to back of brain).

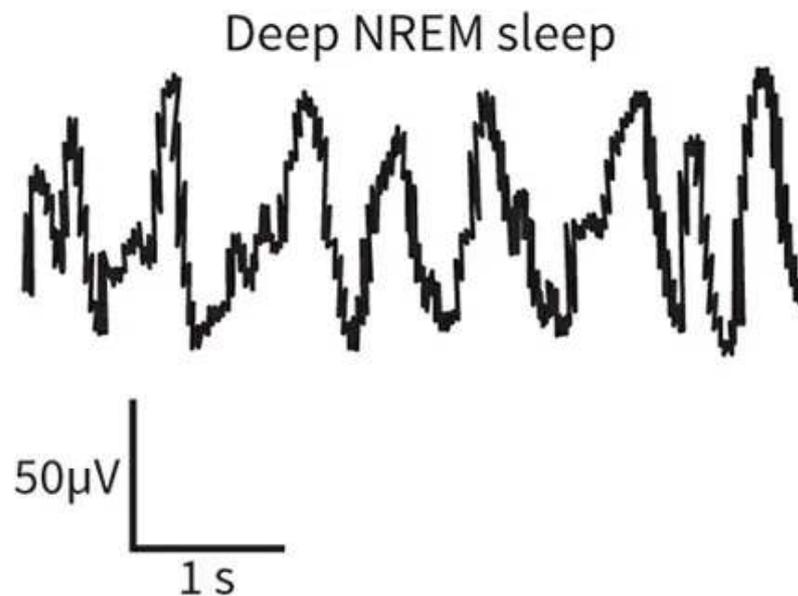


Figure 9: The Brainwaves of Wake and Sleep

Source: [Why We Sleep](#), Matthew Walker

NREM sleep has 4 stages, characterised by increasing difficulty of waking someone up:

- Stages 1 (lightest) & 2 are **light NREM sleep**; and
- Stages 3 & 4 (deepest) are **deep NREM sleep**.

Additional bursts of brain activity, called **sleep spindles**, also occur during **NREM**.

Sleep spindles are important in memory consolidation and play other

roles, like blocking external noises (sensory gating).

They are richest in the last 2 hours of an 8-hour sleep and in parts of the brain that have worked hardest with learning during the preceding day.

REM (rapid eye movement) sleep is characterised by:

- **Eye movements:** Rapid, back and forth, left to right movement;
- **Muscle tension:** None (complete paralysis);
- **Brain waves:** Shallow, rapid and chaotic (similar to when awake)

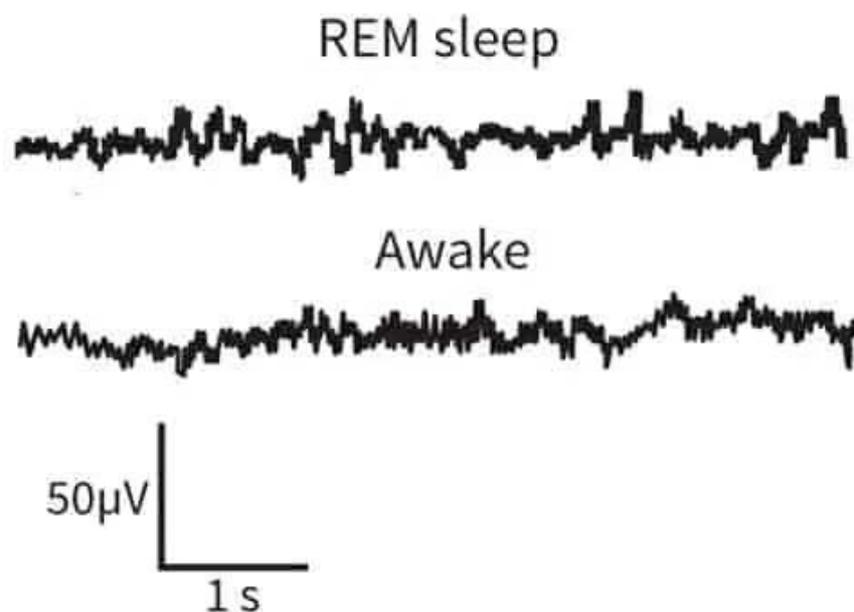


Figure 9: The Brainwaves of Wake and Sleep

Source: [Why We Sleep](#), Matthew Walker

REM sleep is the sleep state in which we dream.

Humans cycle between NREM and REM states every 90 minutes during sleep:

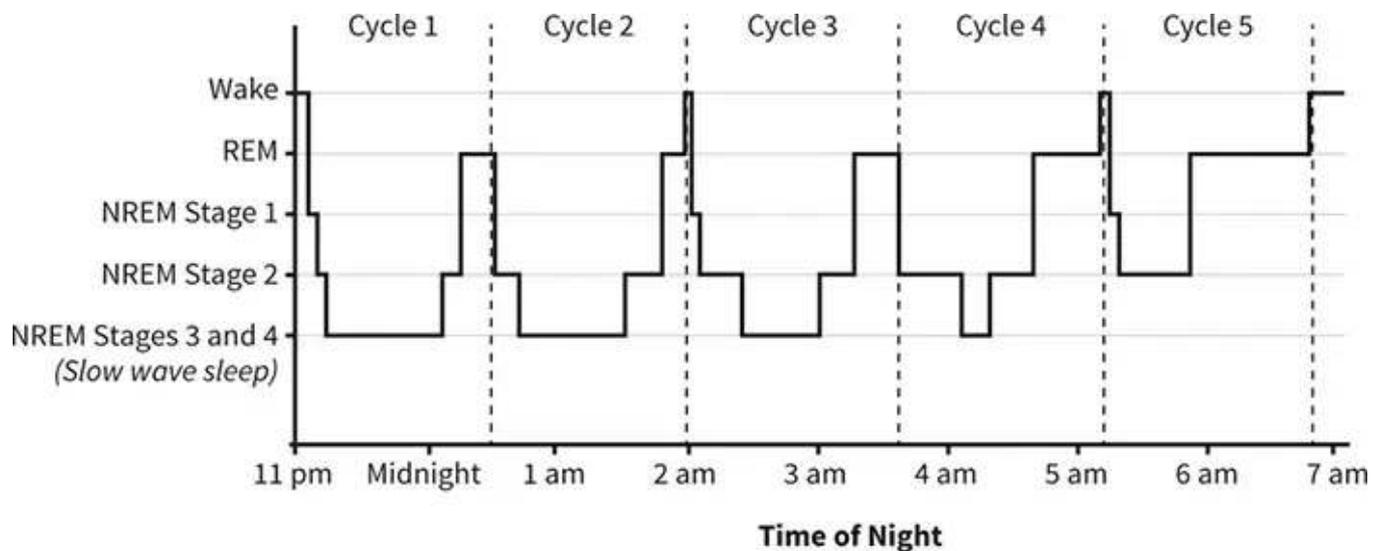


Figure 8: The Architecture of Sleep

Source: [Why We Sleep](#), Matthew Walker

But the distribution of light **NREM**, deep **REM** and **REM** is not equal:

- The ratio of **NREM** to **REM** in adult humans is ~80/20; but
- Deep **NREM** is more prevalent at the start of the night; and
- Light **NREM** and **REM** are more prevalent at the end of the night.

We'll discuss the functions and benefits of each sleep state later.

For now, though, let's talk about...

Why Do We Dream?

We know a lot about HOW we dream.

We know that dreaming takes place during REM sleep.

We know that when we begin dreaming, 4 main areas of the brain become active:

1. **Visuospatial areas** – Areas that deal with vision;
2. **Motor areas** – Areas that deal with movement;

3. **The Hippocampus** – Short-term and spatial memory areas; and
4. **Emotional centres** – The amygdala and cingulate cortex.

And we know that at the same time, the prefrontal cortex (rational thought) gets deactivated.

But it's the question of **WHY** we dream that has most interested philosophers and scientists for thousands of years.

The answer?

Dreams are **NOT** psychological manifestations of repressed desires. Theories (including 19th Century Freudian and Jungian ones) of [dream analysis](#) are *"nonscientific and hold no repeatable, reliable, or systematic power for decoding dreams."*

Dreams are also not purely autobiographical replays of events from the last 24 hours of our waking lives.

Instead, dreams play an important role in each of the main functions of REM sleep:

1. **As overnight therapy** – Taking *"the painful sting out of difficult, even traumatic, emotional episodes you have experienced during the day, offering emotional resolution when you awake the next morning"*;
2. **For decoding emotional experiences** – Acting like a tuning fork that helps us recalibrate the brain's emotional compass (which helps us e.g., recognise important emotional cues in other people's facial expressions); and
3. **As ideasthesia** – Inspiring creativity and promoting problem-solving by integrating new memories with old ones, building connections between previously unconnected ideas and extracting abstract, general rules.

Note: There is hard (MRI-based) scientific evidence for the ability of some people to consciously control the contents of their dreams ([lucid dreaming](#)). There is, as yet, no evidence if or to what extent such interference in the natural process of dreaming is harmful or beneficial.

What Makes Us Sleepy?

Two main processes regulate when and how sleepy we feel:

1. **Process C** – Our circadian rhythm, or the wake drive.
2. **Process S** – Homeostasis, or the sleep drive.

Let's break them down...

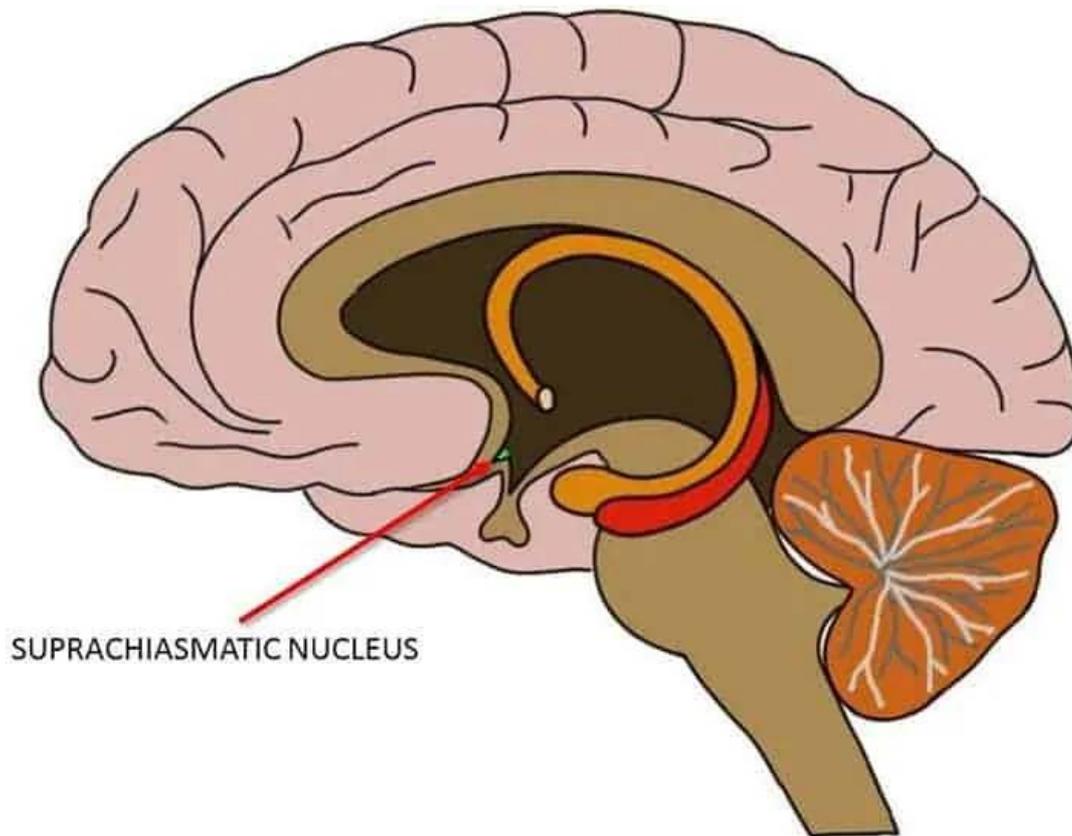
1. Process C – Our circadian rhythm, or the wake drive.

The first process that regulates sleepiness is a biological clock; our circadian rhythm.

The length of our circadian rhythms varies between individuals but runs, on average, slightly longer than 24 hours.

To help them keep time, our circadian rhythms are constantly recalibrated by “zeitgebers” (German: “time givers”) like light, activity, temperature and food.

Our circadian rhythm is managed by the [suprachiasmatic](#) (soo-pra-kai-as-MAT-ik) nucleus (SCN), located in the [hypothalamus](#), in the brain:



Source: [Neuroscientifically Challenged](#)

The SCN regulates many processes in the body, including body temperature:

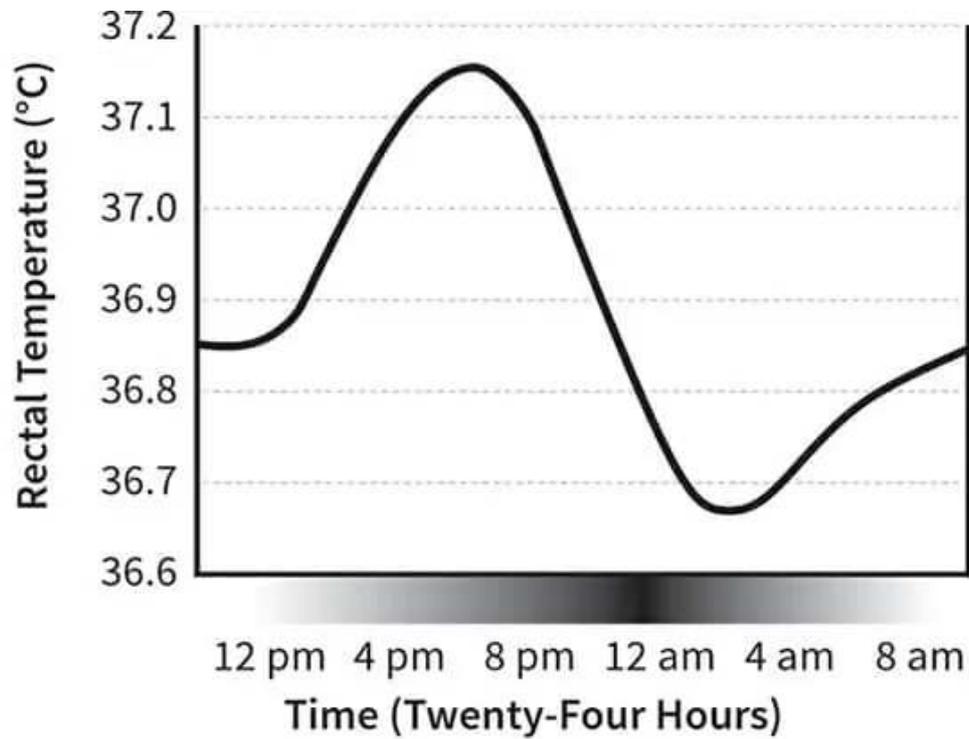


Figure 1: Typical Twenty-Four-Hour Circadian Rhythm (Core Body Temperature)

Source: [Why We Sleep](#), Matthew Walker

And the release of the sleep-wake cycle regulating hormone Melatonin:

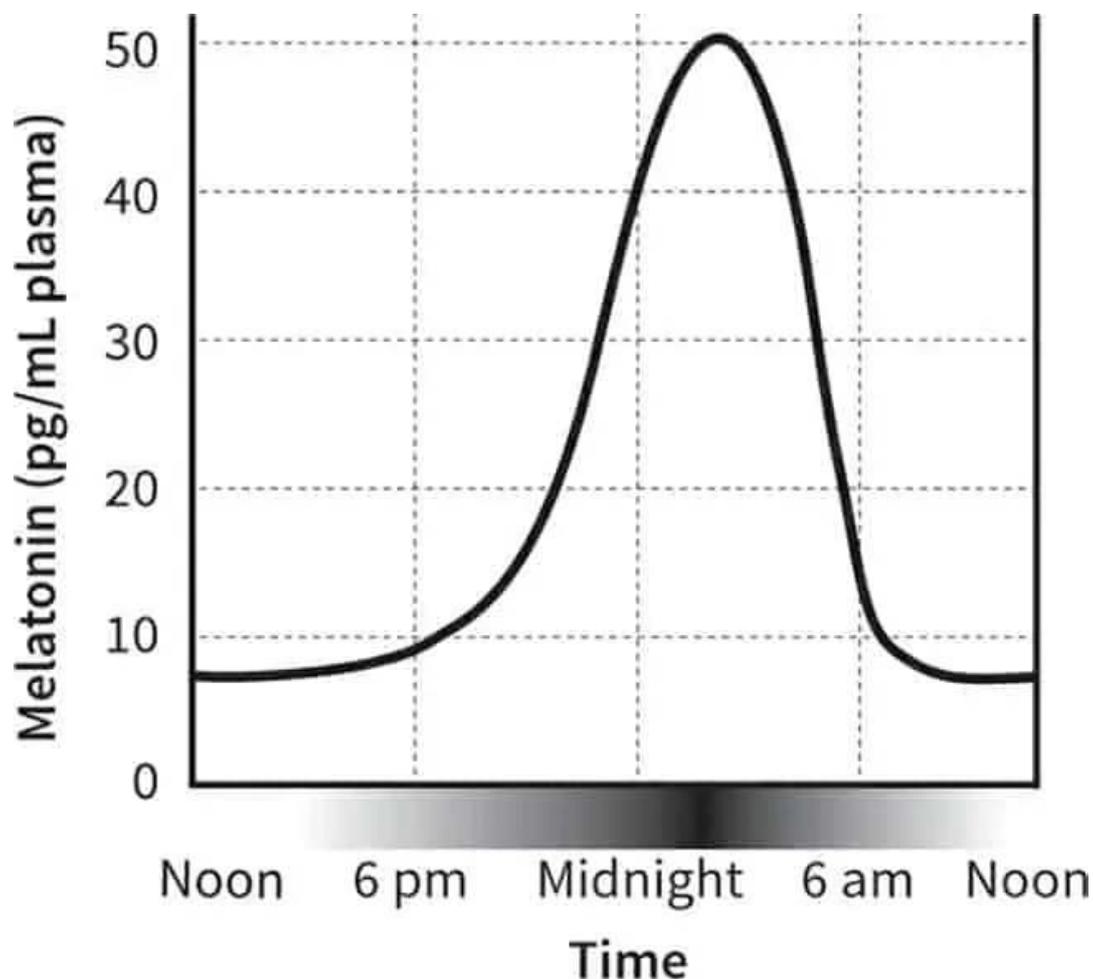


Figure 2: The Cycle of Melatonin

Source: [Why We Sleep](#), Matthew Walker

Our circadian rhythm can adjust over time (e.g., when recovering from [jet lag](#)) but that adjustment is limited to ~1 hour per day.

Note: Walker suggests that the timing of peak wakefulness as driven by our circadian rhythm varies genetically among individuals with:

- 40% of the population being morning [chronotypes](#);
- 30% of the population being evening chronotypes; and
- 30% of the population somewhere in-between.

But he doesn't state the size of the effect or give footnotes to back up this claim.

2. Process S – Homeostasis, or the sleep drive.

As well as the circadian rhythm, all cells in the body release a compound called adenosine (as a byproduct of [cellular respiration](#)).

While awake, adenosine levels build up faster than they can be broken down (like lactic acid in anaerobic exercise).

The elevated adenosine interacts with receptors that make us increasingly drowsy.

The effect peaks after 12 – 16 hours of wakefulness, creating a strong urge to sleep.

During sleep, adenosine production decreases and the body is able to bring adenosine levels back down to levels more conducive to wakefulness.

Process C and **Process S** are independent, but their effects support each other to help regulate sleep.

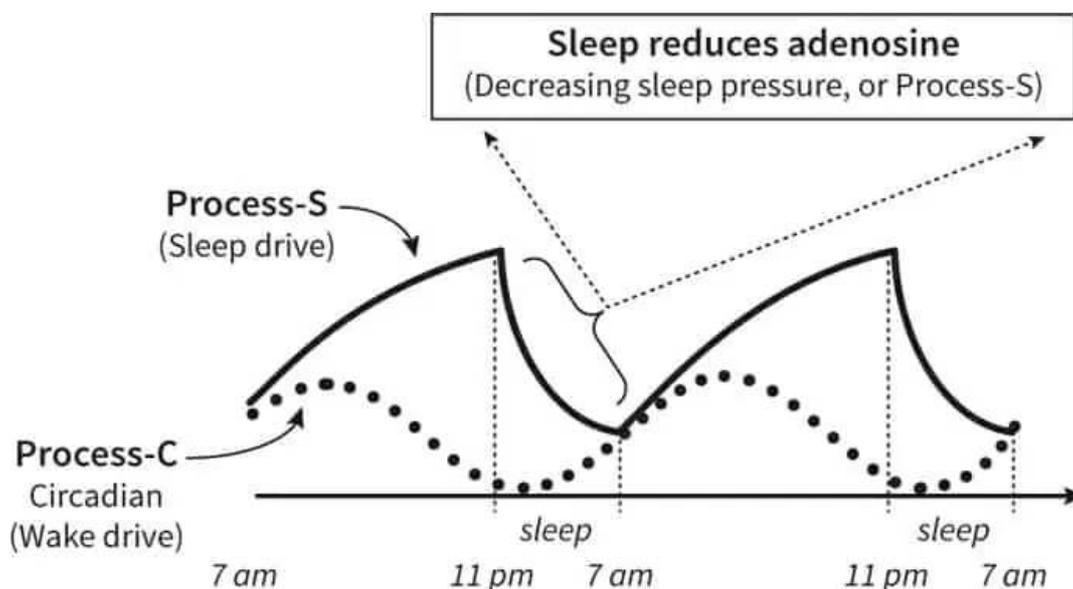


Figure 4: The Two Factors Regulating Sleep and Wakefulness

Source: [Why We Sleep](#), Matthew Walker

The Sleep Switch

There is a powerful sleep-wake switch in the brain, regulated by the chemical orexin.

When we are awake, the hypothalamus (which contains the SCN) releases orexin, which tells the brain stem we are awake.

The brainstem stimulates the thalamus (the brain area above the hypothalamus), which opens the sensory gate between the brain and the outside world.

When we fall asleep, the hypothalamus stops releasing orexin, which powers down the brain stem, which closes off the sensory gate.

It is the malfunctioning of this pathway that causes the sleep disorder, narcolepsy.

The body goes to a lot of effort to make sure we sleep, which begs the question...

Why Is Sleep So Important?

Getting enough sleep/not being sleep deprived:

Health & Vitality:

- Helps you live longer (protects DNA);
- Reduces cravings (e.g., food, alcohol, drugs);
- Protects you from colds and the flu (boosts immune system);
- Protects you from obesity and diabetes (improves metabolism);
- Protects you from cancer (boosts cancer-fighting immune cells);
- Lowers risk of hypertension, heart attack and stroke;

- Increases release of growth hormones;
- Significantly reduces the risk of athletic injury;
- Restores athletic strength and endurance;
- Decreases sensitivity to pain;

Note: For more statistics and details on the effects of sleep deprivation on physical health, see chapter 8 [in the book](#).

Thoughts & Emotions:

- **NREM:** Protects you from Alzheimer's¹;
- Improves emotional resilience and stability²;
- Lowers risk of anxiety and depression³;
- Lowers risk of bipolar episodes³;
- Lowers risk of suicide³;

Note 1: Glial cells shrink ~60% during NREM allowing cerebrospinal fluid to flush out toxic debris like amyloid proteins, tau proteins and other molecules.

Note 2: Sleep deprivation hampers the prefrontal cortex (reasoning) from inhibiting responses in the amygdala (fear, anger) and striatum (impulsivity, reward), increasing the extremity of both negative and positive emotional responses.

Note 3: Though 1 night of sleep deprivation can improve depression in 30-40% of sufferers, the effect goes away after sleep and the 60-70% who don't improve will actually get worse.

Growth & Learning:

- **NREM:** Restores the brain's capacity to absorb facts (declarative memory);
- **NREM:** Selectively strengthens (consolidates) existing declarative memory;

- **NREM:** Repairs and recovers declarative memories;
- **Stage 2 NREM:** Refines and maintains non-declarative (e.g., motor) memory;
- **REM:** Promotes complex memory assimilation and integration;
- **REM:** Improves abstract problem solving and boosts creativity;
- May play a critical role in recovery after brain damage (e.g., from stroke);

Note: Walker dives more deeply into sleep and memory. For more on e.g., the role of sleep spindles in declarative memory transfer between the “short-term” hippocampus and the “long-term” neocortex or the role of sleep in non-declarative memory consolidation, see chapter 6 [in the book](#).

Note: Pulling an all-nighter decreases the brain’s ability to learn new facts by as much as 40% and any facts learned are forgotten more quickly.

Family & Friends:

- Improves safety (e.g., while driving);
- **REM:** Improves emotional/allocentric thinking;

Note: Walker talks at length about the underreported import of drowsy driving. Short story: if you feel drowsy, get off the road, nap 20-30 minutes, wait 20-30 minutes, then, if you must, have a coffee and start driving again.

Just remember: When you’re tired, you’re bad at predicting how tired you are which is just one reason drowsy drivers are often more dangerous on the road than drunk drivers. For more, see chapter 7 [in the book](#).

Love & Partnership:

- Makes others rate you as more physically attractive;
- improves libido (increases testosterone);
- Increases sperm count;

- Increases ovular fertility;

Productivity & Performance:

- Reduces drowsiness;
- Improves concentration;

Business & Career:

- Improves complex reasoning; and
- Improves rational decision making.

And these benefits ripple out across the whole of society.

So, sleep is critical.

But before we talk about how much you need and how to sleep well, let's review...

How Does Sleep Change With Age?

Our sleep preferences and ability to sleep change dramatically throughout life.

Before birth:

- **Pre week 23:** Sleep-like state, much of which resembles REM.
- **Post week 23:** Brain centres wired up for NREM and REM. Foetus spends 6h in NREM, 6h in REM (but without paralysis, hence kicking) and 12h in an intermediary (neither clearly REM nor NREM) state.
- **Final trimester:** First glimmers of true wakefulness (2 – 3 hours per day).
- **Last two weeks:** REM up to 9h per day as synaptogenesis (brain development) starts to peak.
- **Last week:** REM up to 12h per day.

Note: Maternal drinking disrupts foetal REM. Heavy drinking has been linked to increases in neuropsychiatric illness. But even 2 glasses of wine is enough to significantly disrupt foetal REM and breathing while alcohol is in the mother's system.

Infanthood:

- **First 3-4 months:** Highly polyphasic (lots of short naps) as SCN develops.
- **At 6 months:** An infant sleeps ~14 hours per day with a 50/50 NREM to REM ratio.
- **4 months – 1 year:** Sleep gets less polyphasic as circadian rhythm strengthens.

Childhood:

- **1 year – 4 years:** Sleep tends to natural biphasic (night + afternoon nap) pattern.
- **At 5 years:** A child sleeps for 11 hours with a 70/30 NREM to REM ratio.
- **Late childhood:** Sleep trained into modern monophasic (night only) sleep pattern.
- **During childhood:** Circadian rhythm tends to peak early in the day (sleep signals peak ~9 PM).

Adolescence:

- **Pre-puberty:** NREM peaks as brain maturation (pruning) kicks in.
- **During puberty:** Circadian rhythm gets later (2-3 hours after a normal adult).

Late teen/adulthood:

- **Late teen/adulthood:** People sleep for ~8 hours with an 80/20 NREM to REM ratio.

- **Young/middle adulthood:** Circadian rhythm gets earlier again (sleep signals vary by individual).

Midlife and old age:

Older adults do **NOT** need less sleep than younger adults.

And yet, as we get older:

- **NREM declines** – We get less deep sleep (-60-70% by mid-40s and -70-80% by mid-80s vs. young teenage years);
- **Sleep gets fragmented** – Caused by disease, medication, bladder weakness; and
- **Sleep timing gets disrupted** – Circadian rhythm gets weaker and shifts earlier.

Failing to adapt causes sleep efficiency (time asleep/time in bed) to decrease dramatically (~70-80% by mid-80s vs. 95% in teens).

Causing a decline in both quantity and quality of sleep.

Which may be a significant contributor to age-related health issues.

In fact, Walker goes as far as asserting that poor sleep may be one of the most under-appreciated factors in cognitive and medical ill-health in the elderly.

How Much Sleep Do I Need? (Quantity)

To get the full benefits of sleep, you need enough of it to:

1. Give each sleep state time and space to work; and
2. Bring your adenosine levels back down to a workable level.

How much sleep is that?

You'd need a lab to get an accurate answer since sleep requirements vary between and within individuals based on genetics, activity levels, sleep efficiency, age etc...

But as a rough guideline:

- Walker gives himself an 8-hour sleep opportunity (time in bed) every night;
- And the CDC suggests spending at least 7 – 9 hours in bed every night.

Note: A very rare group of individuals (you are more likely to be struck by lightning) can get away with less than 5 or 6 hours of sleep. Though the exact mechanism is not yet understood, it seems to be linked to a sub-variant of gene BHLHE41.

As an optional bonus (not a substitute), you might also take a 30-60 minute nap in the early afternoon.

Note: There is evidence to suggest humans are naturally biphasic (night plus early afternoon nap, not two night time sleep phases – this was a 17/18th Century fad). And daytime naps contain sufficient sleep spindles to offer significant memory improvement as well as boosting perceived energy and reducing muscle fatigue.

How do you know if you need more sleep than you're getting?

The human brain is very bad at estimating how sleep deprived it is.

So here are two questions you can ask to check if you're sleep deprived:

- **Could I fall back to sleep at 10 or 11 AM?** If so, you probably need more sleep.
- **Can I function optimally without caffeine before noon?** If not,

you're probably medicating sleep deprivation and need more sleep.

Still not sure if you're sleep deprived?

Here are a few more bonus questions to double-check your suspicions:

- **If you didn't set an alarm clock, would you sleep past that time?**
- **Do you find yourself reading and re-reading the same sentences?**
- **Do you often forget what colour the last few lights were when driving?**

If you answered yes to any of these questions then you may want to stop for a nap and/or review your ongoing sleep habits.

Note: It's important to make sure you don't cut sleep short as doing so may cause you to miss out on the richest period of late-stage light NREM sleep spindle activity that is essential to memory consolidation.

If you need an alarm to wake up, consider going to bed earlier!

Is it true that too much sleep leads to an early death?

Most things that are good for you – eating food, drinking water, breathing oxygen, sleeping – will kill you if you take them to ridiculous extremes.

But Walker suggests that studies which show that as little as 9-hours of sleep are linked to increased mortality may be misleading since it's very unclear if it's lots of sleep that causes the cited causes of death (esp. infection and immune-activating cancers) or whether it's the conditions which cause the body to try and heal itself with more sleep.

One thing we do know, however, is that quantity is not the only important factor in getting enough sleep. It's also essential to think about...

How Can I Sleep Better? (Quality)

When it comes to getting enough NREM and REM, quality of sleep is as important as quantity of sleep opportunity.

The body uses several internal and external signals (see zeitgebers in "*What is sleep?*") to help us transition into healthy, high-quality sleep.

When these signals are disrupted, the result is lower sleep efficiency and (often) sleep deprivation.

Some disruptions are natural (e.g., age-related physiological changes, nursing children).

Others come from or have been made worse by, our modern lifestyles.

Among them are 5 main offenders, including:

1. **Electric (especially LED) light** – Disrupts SCN calibration of our circadian rhythm;
2. **Regularised temperature** – As above, temperature (especially night-time cooling) is a powerful circadian zeitgeber;
3. **Caffeine** – Blocks adenosine detection, masking fatigue and disrupting sleep;
4. **Alcohol** – Acts as a sedative but disrupts REM and fragments sleep; and
5. **A legacy of punching time cards** – Cuts sleep short, killing late-stage sleep.

To maximise sleep quality, Walker makes 12 suggestions:

1. **Stick to a sleep schedule** – Go to bed and wake up at the same time every day.
2. **Exercise daily** – At least 30 minutes but not within 2 – 3 hours of sleep.

3. **Avoid caffeine¹ and nicotine** – Stimulants disrupt your sleep.
4. **Avoid alcohol² before bed** – Alcohol impairs REM and fragments sleep.
5. **Avoid large, late night meals and drinks** – They can disturb and disrupt sleep.
6. **Avoid medications that disrupt sleep** – Check for alternatives.
7. **Avoid naps/dozing after 3 PM** – They make it harder to fall asleep later.
8. **Relax before bed³** – Make time to wind down before sleep.
9. **Take a hot bath** – The post-bath drop in body temperature can help you feel sleepy.
10. **Create a dark, cool, comfortable, gadget-free space** – Make sleep as easy as possible and reduce exposure to (especially LED) light⁴.
11. **Get 30 mins of sunlight per day** – Natural light regulates your circadian rhythm.
12. **Don't lie in bed awake** – If you can't sleep after 20 minutes, don't lie in bed panicking, do something calming (like reading a book) until you feel sleepy.

Note 1: It takes 30 minutes for caffeine to take effect but 5-7 hours to process 50% of the caffeine in our system. Genetics play a role (some people have a fast-acting enzyme). As does age (older people metabolise caffeine slower). And it's worth noting that decaffeinated coffee still contains 15 – 30% of the caffeine in a regular cup of coffee.

Note 2: Even a small quantity of alcohol (~3 units) consumed 3 nights after learning was shown to severely disrupt REM and cause partial amnesia of up to 40% of newly learned facts vs. a control group.

Note 3: For more on this, you may enjoy this article on how to [master your morning routine](#) (**Hint:** It begins with a solid evening routine.)

Note 4: If you must use screens later in the evening, Walker suggests installing software/activating features that de-saturate blue LED light on

all your devices.

But What If I'm STILL Struggling With Sleep?

If you're still struggling to sleep, despite following the recommendations above, it could be that you're suffering from a sleep disorder like:

- [Insomnia](#) – Inadequate ability to sleep despite sufficient opportunity;
- [Sleep apnea](#) – Breathing difficulties that disrupt sleep;
- [Somnambulism](#) – Physical activity during NREM stage sleep;
- [Narcolepsy](#) – Sudden daytime sleepiness, sleep paralysis and cataplexy; or even
- [Fatal familial insomnia](#) – A very rare and incurable genetic form of insomnia.

Note: I'll cover insomnia below. For the other disorders, see chapter 12 [in the book](#).

Insomnia is the most common sleep disorder, affecting 1 in 9 people (though twice as common in women as in men).

It is clinically characterised by:

- Dissatisfaction with sleep quantity or quality;
- Suffering significant distress or daytime impairment;
- Takes place at least 3 nights per week for at least 3 months; and
- Does not have any coexisting, causative mental/medical conditions.

Is most commonly triggered by emotional distress and anxiety that keeps the body in a sleep-inhibiting fight-or-flight mode.

And comes in two forms:

- **Onset insomnia** – Trouble getting to sleep; and
- **Maintenance insomnia** – Trouble staying asleep.

Of which you may suffer from one, the other or both.

If you suffer (or suspect you suffer) from any sleeping disorder (including insomnia)...

DO NOT resort straight to sleeping pills (even light use) since they:

- Sedate you without promoting natural sleep;
- Encourage over-caffeinating to combat next-day grogginess;
- Can worsen forgetfulness and impair motor skills;
- Can lead to rebound insomnia which triggers dependence; and
- Are strongly correlated with increased cancer and mortality rates.

Note: For more on this, see chapter 14 [in the book](#).

Instead, seek sleep-specialised medical help ASAP and explore treatments like **CBT-I** (Cognitive behavioural therapy for insomnia) which have been shown to be more effective (though less profitable for drug companies) in combating sleep deprivation.

Your sleep is too important not to fix.

P.s., Chapters 15 and 16 of *Why We Sleep* contain Walker's thoughts on why solving sleep deprivation is of critical (and under-recognised) importance for society as a whole. He also discusses how governments and organisations could take steps to help. Though interesting, they're not immediately, individually practical so I've omitted them from this summary. To learn more, see [the original book](#).

Why We Sleep Contents

Why We Sleep breaks down into 4 parts and 17 chapters:

Part 1 – This Thing Called Sleep

1. To Sleep...
2. Caffeine, Jet Lag, and Melatonin: Losing and Gaining Control of Your Sleep Rhythm
3. Defining and Generating Sleep: Time Dilation and What We Learned from a Baby in 1952
4. Ape Beds, Dinosaurs, and Napping with Half a Brain: Who Sleeps, How Do We Sleep, and How Much?
5. Changes in Sleep Across the Life Span

Part 2 Why Should You Sleep?

Your Mother and Shakespeare Knew: The Benefits of Sleep for the Brain

6. Too Extreme for the Guinness Book of World Records: Sleep Deprivation and the Brain
7. Cancer, Heart Attacks, and a Shorter Life: Sleep Deprivation and the Body

Part 3 – How and Why We Dream

9. Routinely Psychotic: REM-Sleep Dreaming
10. Dreaming as Overnight Therapy
11. Dream Creativity and Dream Control

Part 4 – From Sleeping Pills to Society Transformed

12. Things That Go Bump in the Night: Sleep Disorders and Death Caused by No Sleep
13. iPads, Factory Whistles, and Nightcaps: What's Stopping You from Sleeping?
14. Hurting and Helping Your Sleep: Pills vs. Therapy
15. Sleep and Society: What Medicine and Education Are Doing Wrong; What Google and NASA Are Doing Right
16. A New Vision for Sleep in the Twenty-First Century

17. Conclusion: To Sleep or Not to Sleep

Source: Why We Sleep, Penguin Books Ltd. Kindle Edition.

Best Why We Sleep Quotes

These Why We Sleep quotes come from **The Art of Living**'s ever-growing central library of thoughts, anecdotes, notes, and [inspirational quotes](#).

"The best bridge between despair and hope is a good night's sleep."

- [Matthew Walker](#), Why We Sleep

"Practice does not make perfect. It is practice, followed by a night of sleep, that leads to perfection."

- [Matthew Walker](#), Why We Sleep

"Inadequate sleep—even moderate reductions for just one week—disrupts blood sugar levels so profoundly that you would be classified as pre-diabetic."

- [Matthew Walker](#), Why We Sleep

"Humans are not sleeping the way nature intended. The number of sleep bouts, the duration of sleep, and when sleep occurs has all been comprehensively distorted by modernity."

- [Matthew Walker](#), Why We Sleep

"After thirty years of intensive research, we can now answer many of the questions posed earlier. The recycle rate of a human being is around sixteen hours. After sixteen hours of being awake, the brain begins to fail. Humans need more than seven hours of sleep each night to maintain cognitive performance. After ten days of just seven hours of sleep, the brain is as dysfunctional as it would be after

going without sleep for twenty-four hours. Three full nights of recovery sleep (i.e., more nights than a weekend) are insufficient to restore performance back to normal levels after a week of short sleeping. Finally, the human mind cannot accurately sense how sleep-deprived it is when sleep-deprived."

- [Matthew Walker](#), Why We Sleep

"The shorter your sleep, the shorter your life. The leading causes of disease and death in developed nations—diseases that are crippling health-care systems, such as heart disease, obesity, dementia, diabetes, and cancer—all have recognized causal links to a lack of sleep."

- [Matthew Walker](#), Why We Sleep

"Sleep is the single most effective thing we can do to reset our brain and body health each day - Mother Nature's best effort yet at contra-death."

- [Matthew Walker](#), Why We Sleep

"Routinely sleeping less than six or seven hours a night demolishes your immune system, more than doubling your risk of cancer."

- [Matthew Walker](#), Why We Sleep

"It is disquieting to learn that vehicular accidents caused by drowsy driving exceed those caused by alcohol and drugs combined."

- [Matthew Walker](#), Why We Sleep

"Caffeine has an average half-life of five to seven hours. Let's say that you have a cup of coffee after your evening dinner, around 7:30 p.m. This means that by 1:30 a.m., 50 percent of that caffeine may

still be active and circulating throughout your brain tissue. In other words, by 1:30 a.m., you're only halfway to completing the job of cleansing your brain of the caffeine you drank after dinner."

- [Matthew Walker](#), Why We Sleep

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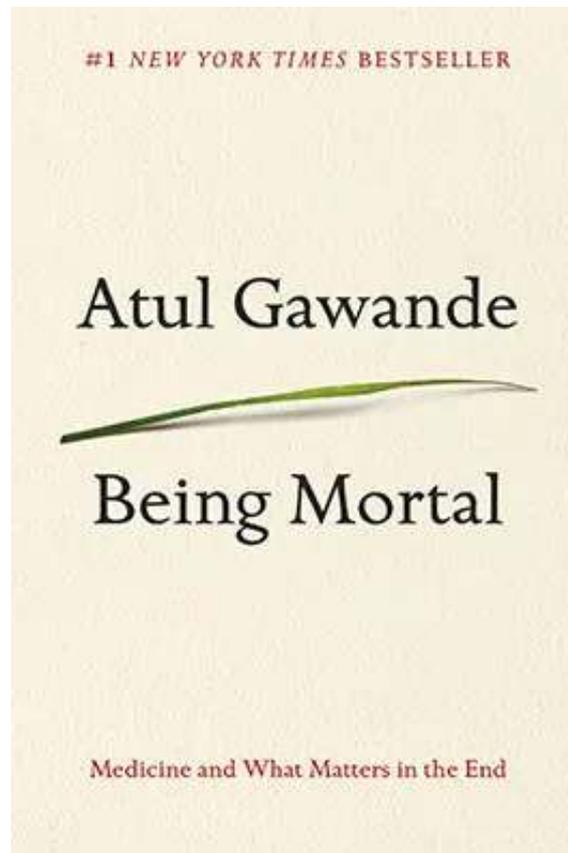
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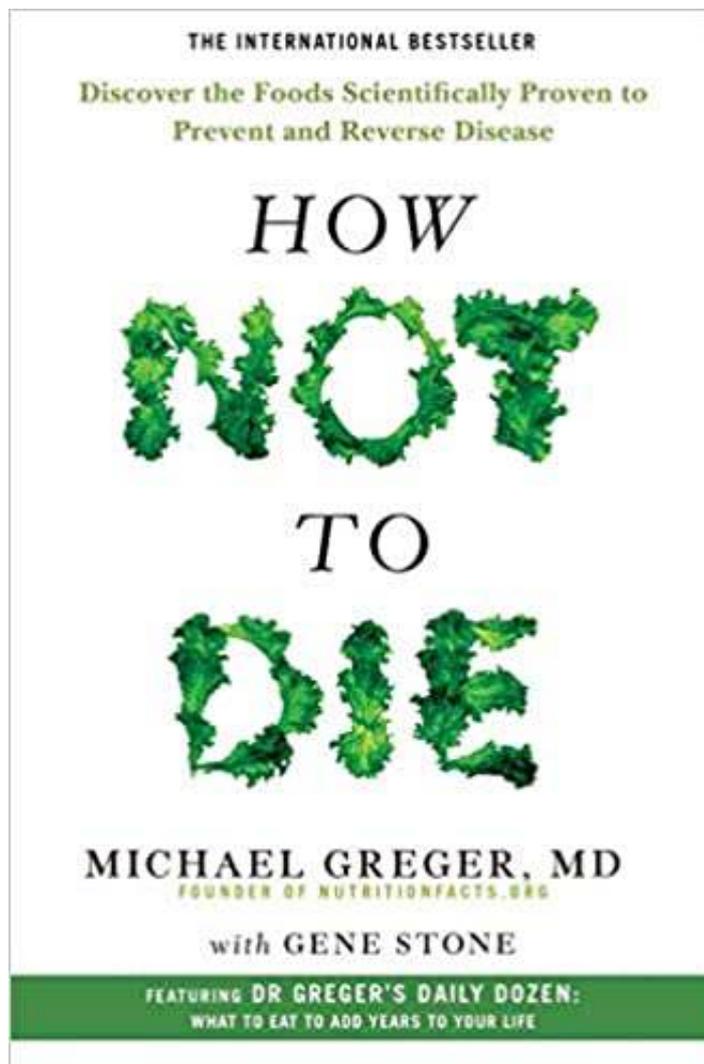


1. [Being Mortal](#) - [Atul Gawande](#) ([FREE Summary](#))

Medicine and What Matters in the End

Being Mortal is an uncomfortable yet enlightening exploration of how treating terminal disease (especially linked to ageing) as a purely extend-life-at-all-costs medical problem is destroying the final moments of our lives - by surgeon and best selling author, Atul Gawande.

Published 2014 // 282 pages // Rated 4.4 over 155,700 reviews [on Goodreads](#)

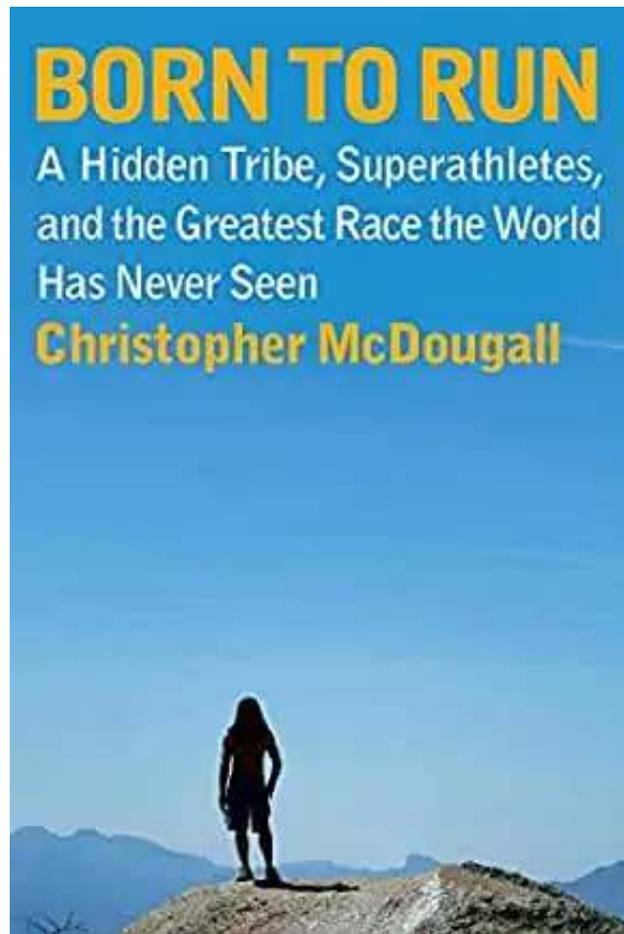


2. [How Not to Die](#) - [Michael Greger](#) ([FREE Summary](#))

Discover the Foods Scientifically Proven to Prevent and Reverse Disease

How Not to Die is a deeply researched and compelling primer on the promise and importance of whole food plant-based nutrition in preventing and reversing disease - by medical doctor and nutrition expert, Michael Greger.

Published 2015 // 576 pages // Rated 4.4 over 31,000 reviews [on Goodreads](#)

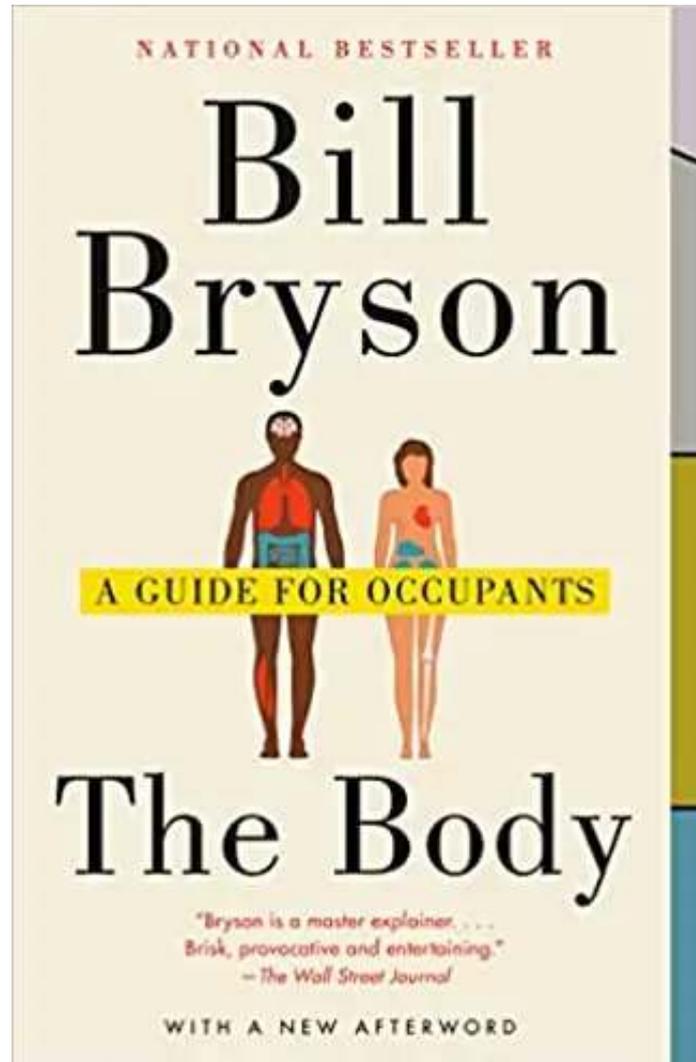


3. [Born to Run](#) - [Christopher McDougall](#) ([FREE Summary](#))

A Hidden Tribe, Superathletes, and the Greatest Race the World Has Never Seen

Born to Run takes takes running back to its roots in this critically acclaimed analysis of evolution, injury and recovery that is filled with compelling insights, great story telling and practical tips - by best-selling author and journalist, Christopher McDougall.

Published 2009 // 287 pages // Rated 4.3 over 186,300 reviews [on Goodreads](#)

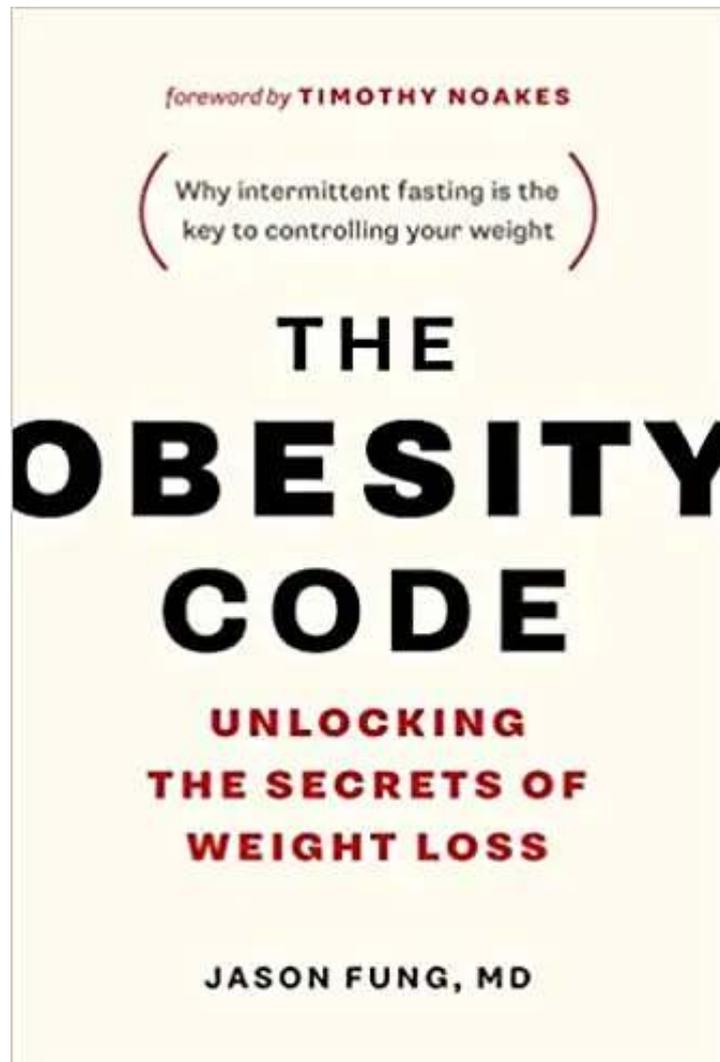


4. [The Body](#) - [Bill Bryson](#) ([FREE Summary](#))

A Guide for Occupants

The Body is a fantastically-written and awe-inspiring 23-chapter tour through the 30 trillion cells that (literally) make you who you are - by best-selling author, Bill Bryson.

Published 2019 // 450 pages // Rated 4.3 over 58,200 reviews [on Goodreads](#)



5. [The Obesity Code](#) - [Jason Fung](#) ([FREE Summary](#))

Unlocking the Secrets of Weight Loss

The Obesity Code gives an amazing look at how the body uses food to create the perfect conditions for obesity and how to disrupt the cycle to create a healthier future - by kidney disease specialist, best-selling author and MD, Jason Fung.

Published 2016 // 328 pages // Rated 4.4 over 24,200 reviews [on Goodreads](#)

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I founded **TAoL** to discover and share the best wisdom on how to live long and prosper. Before that I studied Psychology, Philosophy & Physiology at Oxford and consulted at McKinsey. **Still curious?** [Learn more](#) or [take my FREE productivity quiz](#).