THE FIELD GUIDE TO THE FEW THINGS THAT MATTER

Sleep. Eat. Exercise.

Most health advice is noise. This is the short list that matters.

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MANUSCRIPT · FOR CLINICAL REVIEW

Not for circulation · July 2026

SOURCED AND GRADED · LIFESTYLE FIRST · HYPE EXAMINED

Five minutes

You don’t have time to read a book about your health. This is a short one.

Your own health has quietly become the thing you never get to. You know the basics. Sleep more, eat better, and exercise more. The noise is louder than it was. Everyone has a view on cold plunges, peptides, and a shelf of supplements to go with it. Nobody tells you which part matters. So, I looked through the research, pulled out the short list of things that change outcomes, examined the hype, and cut whatever did not survive the evidence. What is left is short on purpose. Four promises this book keeps:

- **No miracle supplement**
- **No glucose panic**
- **No anti-aging pill**
- **No 30-day fix**

Who this is for. Time-deprived individuals who kept asking the same handful of things. What is the real stuff in all the noise? Where should they start? What can they trust? And what should they get right before trying the newest wellness product or service? The answers turned out to be dull. Get up at the same time. Eat enough protein. Lift something twice a week. Walk more than you do.

Why believe any of it? Because of the method behind it. Almost every claim is traced to a study and carries a grade for how good that study is. Where the evidence is thin I say so, and where it is strong I say that too.

Where I sit, and where that might show. I work in wellness, so I sell into the same space this book covers. Read all of it knowing that. I grade supplement categories on the evidence like everything else, and I grade most of them down, including the ones I work in. The place my interest is most likely to show is sleep: it goes first here and gets as much room as any, partly because of the evidence and partly because it is what I know best.

And where it will be wrong. Some of what is here will not survive. Studies conflict, good ones get overturned by better ones, and a finding that looks solid at one sample size can shrink or vanish at a larger one. That is how the method works, and it is what separates it from the marketing this book exists to filter. Treat what follows as the best current reading and expect parts of it to age.

I am not a doctor, and this is general information rather than medical advice. The book flags the warning signs I think matter most. It does not cover every reason to get checked, so if something worries you, get it looked at.

> **IN SHORT**
>
> I would rather you check this against the sources than take my word for any of it.

What I am asking you for

This is a manuscript sent out for review, not a finished book. The clinicians and researchers who mark it will be named on this page in the edition that publishes. That is what the space is for.

What I have already done. Every claim in here was traced back to a primary source, and every source was checked at the journal for existence and year before the claim was graded. That catches invented citations and misremembered numbers. It caught several of mine, and each was fixed before this draft left my hands.

What that cannot catch, and why I am writing to you. A study read correctly and applied to the wrong question. The citation checks out, the number is right, and the conclusion is wrong anyway. I cannot find that from the inside, because the person who made the error is the person checking for it. It is the error that survives longest in a book like this, and it is what I am asking you to look for.

Where I would rather you spent the time

Look here	Because
The medicine and condition pages, from page 68	Twenty-four cases where this book tells a reader that something needs adjusting, including intervals, thresholds and one instruction to stop a drug. A wrong line here does more damage than anywhere else in the book.
The warning signs, page 67	What is missing, and what should not be on it. I split it into same-day and book-an-appointment; tell me if I have put anything in the wrong half.
The grades, page 8, and the source list from page 78	I assigned every tier myself. I am most interested in where you think I have been generous, and in any study I have read more confidently than it deserves.
Anywhere I call something convention	Wherever a number is a working rule rather than a trial result, the book says so on the page: the half-hour wind-down, the three-hour alcohol gap, the 80/20 easy-hard split, the two-day recovery gap, the annual panel, the magnesium dose and timing, and others. Those are the lines I am least sure of. If a trial exists and I have missed it, that is the single most useful thing you can send.

What being named will and will not mean. It is not an endorsement of every line. I expect disagreement, and where it is about evidence rather than emphasis, the page will change, and you will still be listed. If you would rather read it without being named, say so, and I will leave you off.

> **HOW TO SEND IT**
>
> Send the page number, the sentence, and the source you think I got wrong, to review@sleepeatexercisebook.com.

FRONT MATTER · CONTENTS

What is in here

Eighty-three pages, and you are not meant to read them in order. Set up the basics once, then use the situations when life lands on you. If something is worrying you, start on page 67.

FOUR WAYS IN

If you are not sure what is wrong: page 7. If you only do one thing: page 9. If you are worried: page 67. If you take a regular medicine, or you are pregnant: page 68.

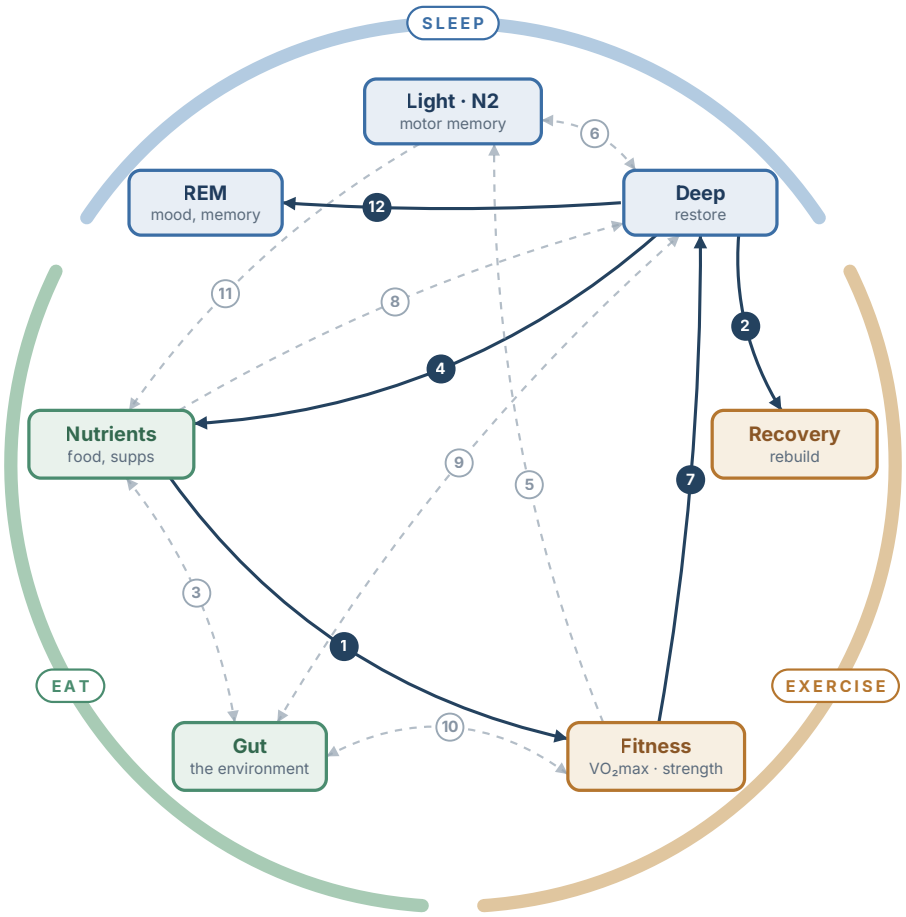
Three pillars, one system

Sleep, eat, and exercise, wired into one loop.

SLEEP · THE MULTIPLIER
Fix this first; it is the multiplier on the other two.

EAT · THE FUEL
Food first: protein and plants, unrefined by default.

EXERCISE · THE ENGINE
Train to last: strength, an easy base, banked by recovery.



The twelve pathways: what connects, and how well it is shown

ESTABLISHED · SOLID LINES

1. Protein becomes muscle, with training
2. Deep sleep and the overnight growth-hormone pulse reinforce each other
4. Sleep steadies next-day appetite
7. Training deepens slow-wave sleep, by minutes
12. REM sits behind deep sleep, so cutting the end of a night takes REM first

EMERGING · DASHED LINES

3. Food shapes the gut: fiber and fermented foods
5. The day's practice is filed in light sleep
6. Deep and light sleep couple to consolidate memory
8. Better diet quality is associated with more deep sleep
9. Sleep and the gut track together
10. Exercise and the gut track together
11. Light sleep supports next-day glucose control

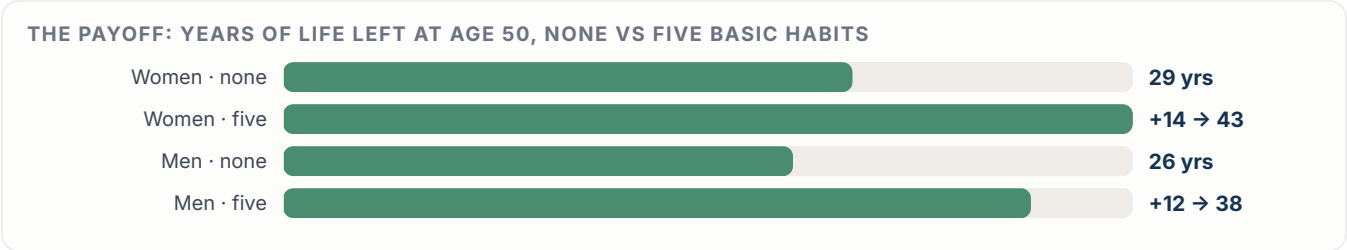
IN SHORT

A line is drawn only where a body of evidence connects two parts. Five of the twelve rest on experimental or settled evidence and are drawn solid, and the other seven are associations, drawn dashed.

The whole book, on one page

Do these three first, and in this order, before anything else in the book.

- [ ] **Sleep.** Same wake time, morning light, last caffeine early, a real wind-down. Fix this first, because it multiplies everything else.
- [ ] **Eat.** Build meals on protein and plants. Close the fiber, protein and micronutrient gaps with food first. Cut ultra-processed food and liquid sugar.
- [ ] **Exercise.** Strength twice a week, an easy aerobic base most days, one short hard (VO_2max) session weekly.



Where that number comes from. Li and colleagues followed around 123,000 people in two long-running US cohorts for up to three decades, and the question was simple. How much life expectancy comes with five plain habits held together? Five habits: never smoking, a healthy weight, 30 minutes of daily activity, moderate alcohol, and a better-than-average diet. Smoking sits outside this book, weight shows up here as an outcome, and sleep is not one of the five. Smoking alone carries much of the gap. At age 50, women with all five had roughly 14 more years of life expectancy than women with none, and men roughly 12 (**Li 2018**). Observational, so it is an association and not a promise. People who keep five habits differ in other ways too.

What that means for how you read this book. None of the five is exotic, and none of them is on a supplement shelf. Stack them and you get the gain, and no single item does it on its own. Sleep, eat, and exercise are one system, so modest gains across all three do more than one perfect pillar. Note the honest wording on two of them. The alcohol category was defined as moderate drinking, 5 to 15 g a day for women and 5 to 30 for men, so abstainers did not score it. That is the same design problem Zhao 2023 identifies, sitting inside the score. Read the 14 years as an upper bound. And “healthy weight” is an outcome of the other four rather than a separate lever.

> **IN SHORT**
>
> The 14 years takes all five habits at once, and never smoking carries much of the gap. It is an upper bound on what the three pillars here can buy.

Underneath: track a few numbers from blood and wrist, read the trend, and earn any extra before you buy it. **When life hits:** open Start from what you notice, page 7. **When to get help:** some warning lights mean see a professional rather than optimize harder: chronic insomnia, suspected burnout or depression, and abnormal blood work.

Sources: five habits and lifespan, Li Circulation 2018; modest combined gains, Koemel 2026 (eClinicalMedicine, UK Biobank, n=59,078).

Start from what you notice

Set up the basics once. After that, this is the map. You do not have to know what is wrong to use it: find the line that sounds like your week and go to the page. More than one often applies, and where the moves overlap you only do it once. Some things are not routine problems at all. Those are on page 67. If you take a regular medicine, or you are pregnant, or you have a diagnosed condition, the pages from 68 list the twenty-four cases where something here needs adjusting before you use it.

What you notice	Where to go
I lie awake at 2am with my head running	Situation 1, page 53
I sleep enough hours and still wake up tired	Page 67. Read that first
I crash every afternoon	Situation 3, page 55
Work has taken over and sleep went first	Situation 2, page 54
I have let everything slide and want to start again	Situation 4, page 56
I fly, or work nights, and my clock is never right	Situations 5 and 10, pages 57 and 62
I eat out most nights and cannot see how to fix it	Situation 6, page 58
I keep buying things that do not work	Situation 7, page 59
I am tired in a way sleep does not touch	Situation 8, page 60
A check-up booked, and I do not know what to ask for	Situation 9, page 61
My mornings are set by a child, not an alarm	Situation 11, page 63
I am well, but stairs and low chairs are getting harder	Situation 12, page 64
A new baby, and neither of us is sleeping	Situation 13, page 65
I am not sure where to start at all	Your first week, page 9, then sleep

How I grade the evidence

Almost every claim in the source list on page 78 carries a grade. Here is what each one means, so you can disagree with me on the evidence instead of on my say-so.

Grade	What earns it	The common misreading
Strong	Meta-analysis or systematic review of randomized trials, large enough to settle the direction. Or a very large cohort with a consistent dose-response and no serious confounding.	Strong findings still get overturned.
Established	At least one well-conducted randomized trial, or evidence settled enough that the direction is not in dispute.	It says how confident I am, not how big the effect is.
Moderate	Prospective cohorts, or more than one trial where the samples are small, the durations short or the outcomes stand-ins.	Most useful lifestyle evidence sits here, so this is not a tier to skip.
Emerging	Cross-sectional or mechanistic work, animal studies, or one small trial standing on its own. Drawn as a dashed line on the system map.	No one has shown it properly in humans yet, which is not the same as showing it does not work.
Background	Reading that informs the argument without being a study, so it carries no grade.	When a claim rests on background, I say so.
Guideline	A clinical body reviewed the evidence and made a recommendation, and I say which body.	A guideline carries judgment as well as evidence.

What the labels on the advice boxes mean

Where the book grades a piece of common advice instead of a study, it uses four words. **True** means the advice is right and I am only adding a number to it. **Half-true** means it holds in one direction and fails in another. **Oversold** means the thing is real but far smaller than the marketing suggests. **Myth** means the claim did not survive contact with the evidence.

How the studies were chosen

I did not do a systematic review, there was no pre-registered search, and I will not dress it up as one. I started from the reviews and guidelines a clinician reaches for first, worked back to the primary studies, and preferred the largest and most recent pooled evidence where more than one existed. Where two disagreed I printed both and graded the smaller down. What the method misses: anything new, small, or published outside the main journals. If you know a study that would change a page, send it.

Three things to hold me to

The grades are mine, and they are judgments. They borrow the shape of GRADE and of Examine, which are the public standards for this, and I have not invented a private scheme. Where I depart from them I say so, and here is the departure: GRADE and Examine both downgrade a finding when the literature behind it looks prone to publication bias. So do I, by one step and no further than Established, and I say in the entry which field it is. I grade down one step where a smaller review disagrees with a larger one, and say so in the entry. Grades tell you how confident the evidence lets you be.

Almost every number here is relative. I rarely have the absolute version to give you. When I say risk falls 47% between 2,000 and 7,000 steps, that is a proportion of a baseline risk. And that baseline differs enormously between a fit forty-year-old and a sedentary seventy-year-old. Relative figures are what the studies report, so they are what I print. They overstate what any individual should expect. Worked once, so you can do it yourself: if your own risk of dying in the next year is around 1 in 500, a 47% lower risk takes it to about 1 in 950. That is real and worth having, and a long way from what "47%" sounds like. If your risk is 1 in 50, the same 47% saves ten times more, so hold the direction, and let the size of the gain follow your own baseline.

Charts showing a curve instead of plotted points are marked schematic. They show the shape of a finding, and the data behind them sits in the sources. Where a chart carries real numbers, those numbers are in the sources like everything else.

> **IN SHORT**
>
> Where a claim carries no grade and is not marked Background, treat that as a gap and tell me. This is a first edition, so there is no corrections record behind it yet.

DO THIS FIRST · YOUR FIRST WEEK · TEAR THIS OUT

Your first week

One line here is your first week. The rest is the order to add them in, and that order runs over months. Habits take a median of about 66 days to hold (page 49), and adding the second before the first is automatic is how people end up with neither. Start with the wake time, marked below. It is the first line of the pillar that multiplies the other two.

SLEEP · THE BASE

- [ ] **Wake time. START HERE.** Same time every day, weekends too, with ten minutes of daylight when I get up. This is the only line for week one. Everything under it waits until this one runs without you thinking about it.
- [ ] **Wind-down.** Screens down half an hour before bed, a convention that nobody has tested; keep the room cool and dark.
- [ ] **Cut-offs.** Leave about nine hours between a mug of coffee and bed. A pre-workout scoop, 200 mg or more, needs closer to thirteen. Up to about 400 mg a day is the level regulators treat as safe, and under 200 mg in pregnancy. Doses vary widely by drink and by brand, so read the label rather than guess. No alcohol within three hours, longer after more than one drink, and longer again if you have sleep apnea, where it worsens the airway.

EAT · THE FUEL

- [ ] **Protein + plants.** A palm of protein and a vegetable on the plate first, at every meal.
- [ ] **Cut liquid sugar.** Swap one daily sugary drink for water, sparkling water, or coffee.
- [ ] **Feed the gut.** Add one fermented food a day, and reach for plants at most meals.

EXERCISE · THE ENGINE

- [ ] **Strength.** Two 30-minute sessions in slots I pick now: a push, a pull, a squat.
- [ ] **Daily base.** A ten-minute walk after lunch, and I stand and move once every half hour of sitting.
- [ ] **Go hard once a week, after the base is in.** One short hard effort: hills, stairs, or brisk intervals. Build the easy base first. Over 40 and inactive, or any heart condition or symptom on exertion, check with your doctor before adding these.

MEASURE · THE BASELINE

- [ ] **Numbers.** Write down my waist measurement with today's date, and book a basic blood test.
- [ ] **Self-test.** Try one free fitness test: stand on one leg beside a counter you can grab, or get off the floor and up again. Have someone in the house. If you have fallen in the past year, skip it and ask your doctor about a falls assessment.

> **HOW IT LINKS TOGETHER**
>
> These are not four separate lists but one loop. Sleep sets up the food you eat and the training you do, and food and training feed back into deeper sleep. The numbers tell you it is working. Fix sleep first, because it multiplies the other two.

MARK A DAY, EVERY DAY

One mark for a day you held the wake time. Nothing else. Seventy boxes, because the median habit takes about 66 days. Page 50 has the evidence that a record you can see carries the effect, so put this where you walk past it.

1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	16	17	18	19	20	21	22	23	24	25	26	27	28
29	30	31	32	33	34	35	36	37	38	39	40	41	42
43	44	45	46	47	48	49	50	51	52	53	54	55	56
57	58	59	60	61	62	63	64	65	66	67	68	69	70

> **IN SHORT**
>
> Tick the wake time and nothing else until it holds. Your five baseline numbers are on the back of this leaf, so one tear takes both.

DO THIS FIRST · WRITE IT DOWN ONCE · TEAR THIS OUT

Where you are today

Five numbers, one date, ten minutes. This is not something to optimize or to check weekly. The point is the comparison you make a year from now.

Everything in this book is a trend, and a trend needs a first point. Write these down, in pen, and put the date on them. Then close the book and go and live for a year.

TODAY

DATE

WAIST, RIB TO HIP MIDPOINT

cm or inches, measured on bare skin, breathing out, halfway between your lowest rib and your hip bone. A rule that needs no table: keep your waist under half your height. Above that is where risk starts climbing, and it works across heights and backgrounds. If measuring yourself is something you know you cannot do lightly, skip this page: the pages from 68 say why. The trend over a year says more than any single number.

BLOOD PRESSURE

from a pharmacy or a clinic

RESTING HEART RATE

on waking, before you get up

GET OFF THE FLOOR WITHOUT HANDS

yes, no, or with how much help

STAND ON ONE LEG, EYES OPEN

seconds, on your worse side

A YEAR FROM NOW

DATE

WAIST, RIB TO HIP MIDPOINT

BLOOD PRESSURE

RESTING HEART RATE

GET OFF THE FLOOR WITHOUT HANDS

STAND ON ONE LEG, EYES OPEN

WHAT THESE NUMBERS WILL AND WILL NOT TELL YOU

There is no fitness test in this book that predicts your future on its own, and no single reading here means much. Waist and blood pressure carry the most weight of the five. If you have fallen in the past year, skip the movement tests and ask your doctor about a falls assessment. They are here because they cost nothing and because losing them quietly is how independence goes later.

If a number comes back clearly abnormal, that is an appointment. The blood-pressure and blood-test thresholds are on page 67.

WHY ONCE A YEAR

A year is the shortest honest interval for most of this. The one number with a rule you can read today is the waist: keep it under half your height.

FIRST, THOUGH

Four things outrank this whole book, and none of them is what this book is about, so none gets a chapter: not smoking, keeping your blood pressure treated, taking the screening you are offered, and your vaccinations. If any of those is unattended, do it before you optimize anything here. I left them out because there is nothing useful I can add, not because they matter less.

PART I · THE BASE OF THE LOOP

Sleep

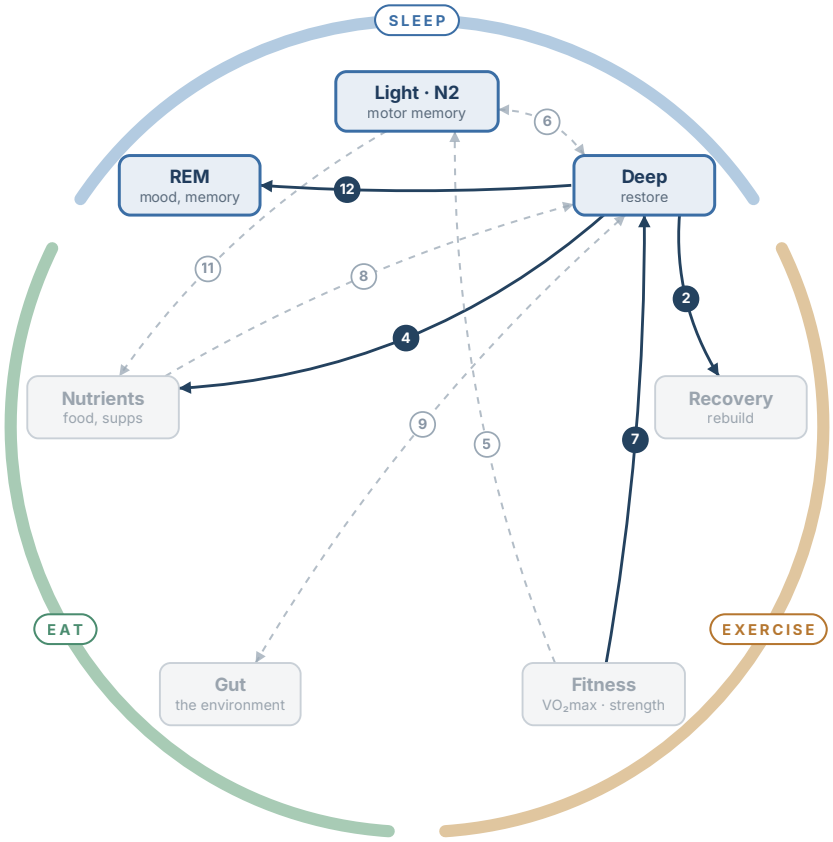
Start here, because everything else in the loop runs through it. Sleep sets up the food you eat and the training you do, and they feed back into the sleep you get. Here I walk the night in the order it happens. Light, then deep, then REM.

SLEEP · EAT · EXERCISE

What matters most in a night

REMEMBER THIS Protect a full, dark, cool night on a steady clock.

7-8 h asleep	**±30 min** same wake time	**18-19°C / 64-66°F** dark room, warmer past age 65
0 alcohol 3 h before	**~9 h** coffee before bed	**~30 min** wind-down



Where sleep sits in the system: the nine pathways that run through the night

ESTABLISHED · SOLID LINES

- **2** Deep sleep and the overnight growth-hormone pulse reinforce each other
- **4** A good night steadies next-day appetite
- **7** Training deepens slow-wave sleep, by minutes
- **12** REM sits behind deep sleep, so cutting the end of a night takes REM first

EMERGING · DASHED LINES

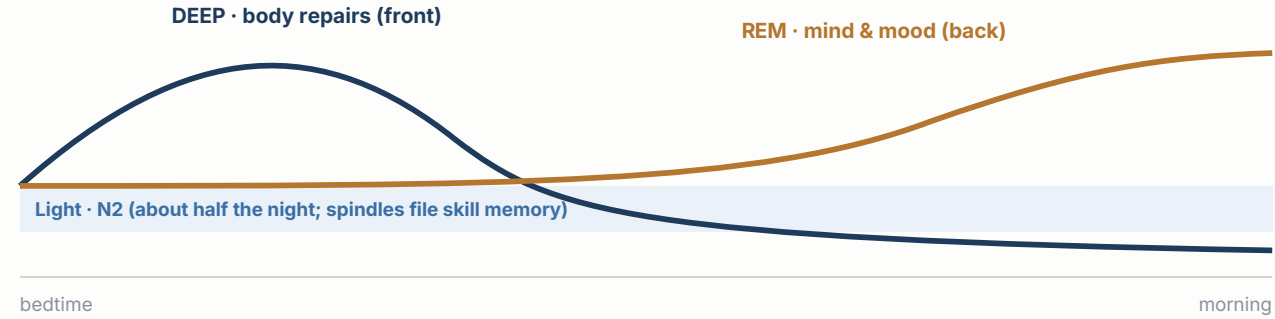
- **5** The day's practice is filed in light sleep
- **6** Deep and light sleep couple to consolidate memory
- **8** Better diet quality, a little more deep sleep
- **9** Sleep and the gut track together
- **11** Spindle-rich light sleep supports next-day glucose

WHY SLEEP GOES FIRST

Sleep goes first because it is free, because it sets up the other two, and because short sleep measurably degrades appetite, glucose handling, and training response. My map reflects that judgment.

A night is not one thing

A night runs in cycles of roughly ninety minutes, and each cycle is weighted differently depending on where in the night it falls. Deep sleep is front-loaded into the first third, the body's repair shift, when growth hormone is released and tissue rebuilds. REM is back-loaded and grows toward morning, when the brain sorts memory and settles mood. Light sleep (N2) is about half the whole night and carries the rest, filing the day's skills between the deeper stages. Cut the end of the night short and you lose the REM-heavy morning first. Cut the front and deep sleep goes, though not one for one. Pressure for it builds when you miss it, so the body claws some back from whatever sleep is left, but not the total. Skip the wind-down and you lose some of the deep sleep at the front. Drink too late and the cost lands in the back half instead. Rather than managing the stages one by one, protect the whole night.



How the night touches everything else. Read the map on the page before, and the case for sleep-first becomes an argument you can check. Deep sleep is where the day's training becomes repair, through the overnight growth-hormone pulse (link 2). It also steadies the next day's appetite (link 4), so a bad night tends to show on your plate before it shows in training. What the studies measure is what people eat, whatever the appetite hormones get blamed for. Light sleep files the motor skill you practiced that day (link 5), and its spindles couple with deep sleep to consolidate memory (link 6). Traffic runs the other way too: training deepens slow-wave sleep (link 7), better diet quality adds a little more (link 8), and sleep and the gut track together (link 9). Nine of the twelve pathways in this book touch the three sleep boxes, and five of those nine are drawn dashed.

When life gets in the way. On a really wrecked week, do not try to hold everything. Protect one thing: the wake time. Getting up at the same hour, even after a short night, keeps your body clock from drifting. Once the week eases, a steady clock is what lets morning light, meals and training fall back into place. A fixed bedtime is nice, but the fixed wake time is the anchor, so let the rest flex and rebuild from that single fixed point.

What to track, and what to buy

From the wrist, watch sleep total, regularity and resting heart rate as trends over weeks. Do not chase a nightly score, because any score is an estimate and how you feel is the better guide. On the shelf, there is less to buy here than anywhere else in the book, and everything on this page is free. Melatonin is not a default sleeping aid: it needs a prescription in some countries and sits on the shelf in others, often at many times the dose that was studied. Where it is sold as a supplement, tested products have run from far below the label dose to several times above it, and some contained serotonin, which has no business being there, so the doses that follow assume you got what you paid for. It has a narrow case if you are older or shifting time zones, at 0.5 to 5 mg, taken close to the bedtime you want. Above 5 mg is no better, and occasional use is the well-studied one. Short-term use looks safe; beyond about three months the data thin out. Who should not take it, and what it interacts with, is on the three pages from 68: pregnancy and breastfeeding, the combined pill and HRT, warfarin, epilepsy, and adding it on top of a sleeping pill. Magnesium is the weaker case, because blood magnesium is a poor test of what is in your cells, so a normal result does not rule a shortfall out. Some trials show a small sleep benefit without testing first. The test that matters is kidney function, not magnesium: below an eGFR of 30, a blood-test estimate of how well the kidneys filter, it accumulates, and between 30 and 60 it needs supervision.

Sources: melatonin label content, Erland & Saxena 2017; sleep architecture, Carskadon & Dement 2017; Ohayon 2004 (meta, 65 studies); regularity out-predicts duration, Windred 2024; duration, Cappuccio 2010 & Yin 2017; morning light, the circadian phase-response curve, Khalsa 2003; evening light, Chang 2015; alcohol, Gardiner 2024 (Sleep Med Rev meta).

The seven studies under the sleep advice

Regularity out-predicts duration

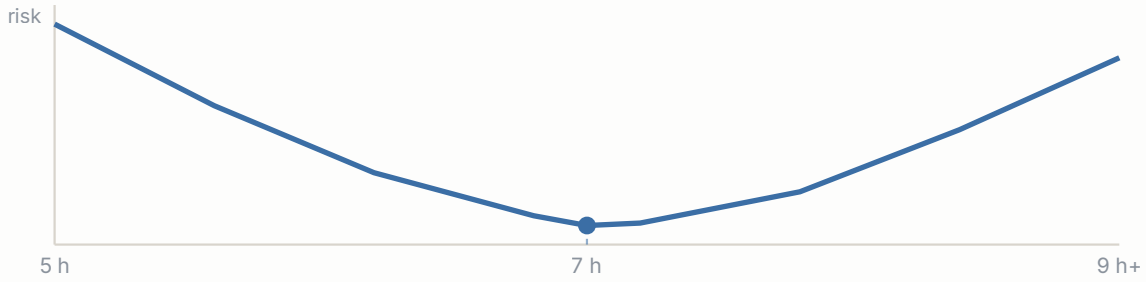
In UK Biobank, 60,977 people wore a wrist tracker for a week and were followed for six years. The more regular sleepers had much lower all-cause, cancer and cardiometabolic mortality, and regularity out-predicted duration with both in the same model (**Windred 2024**). This is prediction, with the causal question still open, because irregular timing also tracks shift work and unstable circumstances. The study is observational and in an older self-selected cohort, so it supports a pattern without proving one buys you years.

> **HOW TO USE IT**
> If you fix one thing in this chapter, fix the wake time. Same time every day, weekends included. That ordering is my judgment about what pays off soonest for least effort, not something a trial has ranked.

Duration is a U, not a ladder

Pooled cohorts find a U-shaped curve, with the lowest risk near seven hours and risk rising on both sides (**Cappuccio 2010**; **Yin 2017**). The long-sleep end needs care, because sleeping a great deal is often a symptom of something else.

SLEEP DURATION AND MORTALITY: A U, NOT A LADDER SCHEMATIC



The shape of the pooled cohort finding: lowest risk near seven hours, rising on both sides. Long sleep is more often a symptom of something else than a cause of harm.

> **HOW TO USE IT**
> You have probably read that short sleep doubles your risk of dying. It does not: the pooled cohorts put it between a few percent and a quarter, on self-reported hours. Aim at seven to eight hours and stop treating more as automatically better. If you routinely need ten hours and still feel unrefreshed, see someone.

Evening light delays the clock

Chang and colleagues had volunteers read before bed on a light-emitting tablet or on paper, then measured what happened to melatonin and to the body clock. Screen readers released melatonin later, took longer to fall asleep, had less REM, and woke sleepier (**Chang 2015**).

> **HOW TO USE IT**
> The evidence behind the wind-down points at light and timing. Chang compared a tablet against paper and did not test room light or filters, so read it as evidence about light before bed. I think dimming the room is the better bet than a filter, but no trial has compared the two.

For real insomnia, the first-line treatment is not a pill

The American College of Physicians recommends cognitive behavioral therapy for insomnia as the initial treatment for chronic insomnia in adults, ahead of medication (**Qaseem 2016**). A clinical guideline standing on many trials, which is why it carries weight.

> **HOW TO USE IT**
> These habits are for plain bad sleep. Three months of trouble most nights is a different problem: ask for CBT-I by name, and page 16 says what it is.

Sources: Windred 2024 (UK Biobank, n=60,977); Cappuccio 2010 & Yin 2017; Chang 2015 (PNAS, crossover, n=12); Qaseem 2016 (ACP guideline).

Two more sleep studies, and one prevalence figure

Sleep sits upstream of your blood work

Restrict 20 healthy young men to five hours a night for a week and insulin sensitivity falls about 11%. Buxton and colleagues measured that directly, though whether restoring the sleep restores the sensitivity was not tested there (**Buxton 2010**). Nothing else in the book shows as clearly that sleep is not a separate compartment from metabolic health. Going the other way has been harder to show. A randomized trial gave short sleepers an extra hour a night for six weeks, and their sleep improved while insulin sensitivity, measured directly, did not (**Beals 2026**, n=29).

HOW TO USE IT

If your fasting glucose is drifting and you're sleeping six hours, fix the sleep before you buy a glucose monitor. That holds while it is only drifting. A fasting glucose over 7 mmol/L (126 mg/dL), or an HbA1c, the three-month average of blood sugar, over 48 mmol/mol (6.5%), is a diagnosis to confirm now. Do not expect the blood work to follow automatically, because the one trial that tested it did not find that.

A large share of bad sleep is not a habits problem

Nobody had a global figure for sleep apnea until Benjafield and colleagues pooled the prevalence studies. Their estimate put the figure at roughly 936 million adults aged 30 to 69 with mild-to-severe disease, around 425 million of them moderate-to-severe (**Benjafield 2019**). Modeled, and extrapolated from a limited set of national studies. Read it as an order of magnitude. It is common, heavily underdiagnosed, and no wind-down routine touches it.

HOW TO USE IT

If you snore loudly, gasp or stop breathing at night, get assessed. Same if you wake unrefreshed however long you spend in bed. Stop optimizing the routine. Everything else in this chapter assumes your airway is working while you sleep.

936m
adults aged 30 to 69 estimated to have mild-to-severe sleep apnea

425m
of them in the moderate-to-severe range, where treatment matters most

Benjafield 2019, a modeled global estimate from a limited set of national studies, funded by a maker of sleep apnea devices. Take it as an order of magnitude, not a headcount.

WHAT WE LOOKED FOR AND COULD NOT FIND

Three things a sleep chapter is expected to contain are missing, because the evidence is not there. **No supplement has been shown to raise REM:** magnesium, melatonin, glycine and B6 touch sleep onset or dream recall. None of them moves the amount of REM you get. **No trial shows that wearing a sleep tracker improves sleep.** The effect running the other way is better documented, because anxiety about the score keeps people awake. **Nothing on the shelf competes with a fixed wake time,** which costs nothing. Three products people ask about: blue-light-blocking glasses, where Cochrane found the sleep evidence indeterminate rather than negative; cooling bedding, which moved no sleep measure in the pooled trials; and white-noise machines, where the reviewers graded the evidence very low, which they note contradicts how widely it is used.

When a sleep product claims a stage, ask which stage, measured how, and against what control. Almost always, the honest answer is that it was not measured.

IN PRIORITY ORDER

A steady clock first, seven to eight hours second, a dim last half hour third. If it has run for months, that is a doctor's problem.

Sources: blue-light lenses, Downie Cochrane 2023; cooling bedding, Pasquier 2025; white noise, Riedy 2021; Buxton 2010 (Diabetes); Beals 2026 (Diabetes Care, RCT, n=29, null); Benjafield 2019 (Lancet Respir Med, modeled estimate).

A fixed wake time

If you take one thing from this book, take this. It costs nothing to try, and almost no one does it. Most sleep advice is about the hour you go to bed. The stronger evidence is about the hour you get up, and about doing it at the same time every day, including the days you would rather not.

Page 14 has the study: 60,977 people, a week wearing a wrist tracker, six years of follow-up, and regularity beating duration when both went into the same model (**Windred 2024**). This page is about what that means for the one clock you control. It is observational, in an older and self-selected cohort, so it supports a consistent pattern and does not prove one buys you years.

Of every section here, this is the one I would defend hardest, and it is worth being clear why, and clear that no trial has ever raced a fixed wake time against the other levers. The ranking is mine, and every other habit in these pages competes for time, money or willpower. This one asks for no money and no equipment. Alone among the habits here, it improves the other two pillars by itself. With a steady clock, morning light, meals and training land at the same time each day. In my experience, people resist this change more than any other. It means giving up sleeping in.

And about naps

The question comes up as soon as people are tired. A short one, twenty minutes or so, taken before mid-afternoon, lifts alertness for a few hours and costs the night nothing. Longer than about thirty minutes and you wake out of deep sleep groggy. Later than mid-afternoon and you borrow pressure from tonight, which is the one thing a poor sleeper cannot afford. If you need a nap most days despite seven hours in bed, that is not a napping question. Go back to the page on what to see someone about.

What holding it looks like

Same time, seven days, within about half an hour. The half hour is a working rule of thumb, not a trial result; what is tested is that irregular timing tracks worse outcomes. On a night when you get to bed at two, get up at your usual hour and take the short night. A short night costs you a day, and a drifting clock costs you a week. If you need to recover sleep, go to bed earlier and keep your wake time.

> **HOW TO USE IT**
>
> Pick the wake time you can hold on your worst weekday, then hold it on Saturday. Sleeping in on weekends is the biggest source of clock drift in most weeks.

Two honest caveats come with it: the trial that would settle this, randomizing people to a fixed or drifting wake time for years, has never been run and probably never will be. And regularity is easier to hold if your life is settled, so some of what the study measured may be a marker of a settled life as much as a cause of a longer one.

When it has gone on too long

If you have slept badly three or more nights a week for three months or more, you have moved from bad sleep to insomnia disorder, and a fixed wake time on its own will not fix it. Neither will sleep hygiene, and neither will more time in bed. The treatment with the best evidence is a short course of cognitive behavioral therapy for insomnia, usually four to eight sessions, which the American College of Physicians puts ahead of medication (**Qaseem 2016**). It is five things, and sleep restriction cuts your time in bed to roughly the hours you sleep, then adds it back in quarter-hours. Stimulus control gets you up after twenty minutes awake, cognitive work tests the thoughts that keep you up, and a diary runs two weeks. Sleep hygiene is the advice in this chapter, and the weakest part of the five. Sleep restriction is the active ingredient, and it makes you sleepier for two weeks before it makes you better. Do not attempt it unsupervised if you have bipolar disorder, epilepsy or a job where you drive. Ask for CBT-I by name; many systems let you refer yourself, and a supervised digital course counts. Pills work faster and stop working when you stop; at twelve months the therapy is ahead.

> **THE ONE TO KEEP**
>
> Hold the wake time within about half an hour, seven days a week. That margin is a working rule of thumb, and the price is giving up sleeping in.

Sources: sleep regularity and mortality, Windred 2024 (UK Biobank, n=60,977); CBT-I first-line, Qaseem 2016 (ACP guideline).

Light sleep (N2): the substrate of the night

A night begins in light sleep. It is about half the total, and it does real work. It carries you between the deep and REM cycles, and its spindles file the day's motor and skill memory.

REMEMBER THIS **Continuity is the part N2 needs: it is the first thing a broken night costs you.**

HOW THIS CONNECTS TO THE SYSTEM

- ← FED BY: A full, unbroken night; The day's practice (link 5); Coupling with deep sleep (link 6)
- → FEEDS: Skill & motor memory; Next-day glucose (link 11, emerging)

THE EVIDENCE, AND WHY THE ADVICE BELOW FOLLOWS

Volunteers learned a finger-tapping sequence paired with an odor, then had that odor replayed to them in the lab during N2 sleep, during REM, or not at all. Only the N2 group improved beyond the others by morning, and the change in spindle frequency during the replay accounted for the gain (**Laventure 2016**). The design lets you say the sleep did it.

In a separate analysis of thousands of nights, how tightly deep-sleep slow waves locked onto N2 spindles predicted next-day fasting glucose (**Vallat 2023**, observational).

Neither spindles nor their coupling is a dial you can turn, so the advice below is simply to protect the whole night. Give N2 its full length and it files the day. The glucose link runs through its coupling with deep sleep, which is something I can observe and nobody has yet learned to work.

Why it earns its half of the night

Light sleep looks like the leftover, the part that is neither deep nor REM. N2 is where the brain runs its spindles, short bursts of activity that file the day's motor and skill learning. Between the deep-rich start and the REM-rich morning, N2 is the connective tissue between cycles, and nothing you can swallow reaches it. Like the rest of sleep architecture, N2 responds to a full night, a steady clock and a calm, cool room.

A shortened or broken night trims every stage, and N2 is the first casualty of a fragmented one, because it links one cycle to the next and there is nothing to target directly. Guard total time and continuity, keep the wake time steady, and N2 comes along with the deep and REM you are already protecting. If your nights are broken and not merely short, fix the cause of the waking: a late drink, a warm room, a screen at 2am.

The gaps are the same ones that hurt deep and REM: short nights and a drifting clock. N2 gives you nothing to feel, unlike deep sleep, which shows up as a groggy or a clear morning. Do not try to grade it. If your total sleep and your regularity are good, it is doing its job.

WHAT WE LOOKED FOR AND COULD NOT FIND

There is no way to train light sleep directly. **I found no convincing human trial showing that a supplement raises spindles**, and no device on sale targets N2. The coupling that predicts next-day glucose is an association from one large study, not a dial. This section is shorter than the other two sleep stages for that reason. Everything you can do about N2 is already covered by protecting the night.

Give the night its full length, hold the wake time, and fix whatever is waking you at 2am: a late drink, a warm room, a screen, a bladder filled by drinking too late.

The next-day glucose link is drawn as an emerging line. Nobody has shown you can pull on it directly. And if you have frequent, fragmented waking through the night that leaves you unrefreshed despite enough time in bed, that is worth a professional's look instead of more self-management.

Sources: spindles and memory, Laventure 2016; slow-wave to spindle coupling and next-day glucose, Vallat 2023 (observational); stage architecture, Carskadon & Dement 2017 (textbook chapter).

Deep sleep: the body's repair shift

As the night deepens, slow-wave sleep front-loads into the first third, when growth hormone is released and tissue rebuilds. I say it supports repair, because proof is a stronger word than the evidence earns. No study has isolated slow-wave sleep and measured the rebuild.

> **REMEMBER THIS** **Training buys minutes of deep sleep, and a nightcap costs you the rest of the night.**

HOW THIS CONNECTS TO THE SYSTEM

- ← FED BY: Hard training that day (link 7); A cool, dark, alcohol-free first third; Unrefined evening carbs (link 8, small)
- → FEEDS: Muscle repair & growth hormone (link 2); Next-day appetite (link 4); A clean back half

THE EVIDENCE, AND WHY THE ADVICE BELOW FOLLOWS

When researchers sampled blood through the night, most of the growth hormone released, the body's main repair signal, came during the deep sleep of the first cycles (**Van Cauter 2000**, measured in men).

In a controlled study, five nights of four-hour sleep cut the muscle-building response measured in muscle tissue by about 18%. Three interval sessions across those nights held it at normal levels (**Saner 2020**, three groups of eight young men).

On the input side, pooled trials find exercise nudges slow-wave sleep upward, at a small effect size that converts to a handful of minutes (**Kredlow 2015**). The larger effects sit in people with a sleep disorder (**Wang 2025**). A separate trial extended sleep in adults who habitually slept under six and a half hours, and saw them eat about 270 fewer calories a day (**Tasali 2022**, n=80, all overweight).

That two-way traffic is why the advice on the next page pairs training by day with a cool, alcohol-free first third: those are the hours where the day's work becomes repair.

Why the first third carries the repair

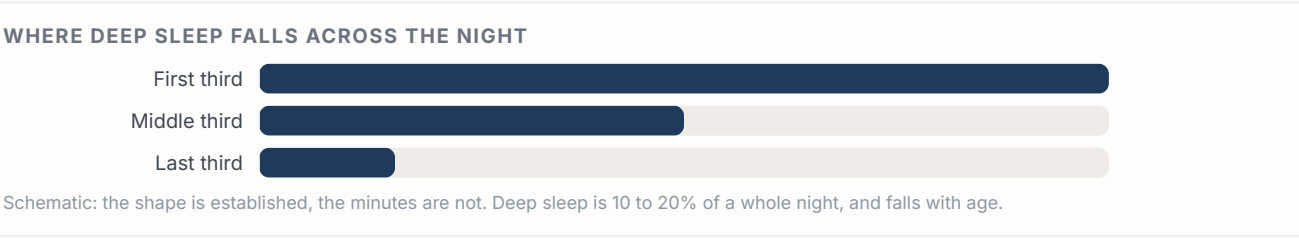
Deep sleep is not spread evenly across the night; it is front-loaded, and steeply. Most of it lands in the first third, less in the middle, almost none by morning. From that single fact follows most of what you can do. The repair work, the growth-hormone pulse, the tissue rebuilding, the clearing of the day's metabolic load, is scheduled early and cannot be rescheduled. Sleep the same seven hours starting two hours later and you do not get the same night.

On a late night, the instinct is to claw the hours back in the morning. It works poorly for deep sleep, because the deep-rich hours are gone with the front of the night, and what the body claws back it takes from whatever sleep is left. If the evening is going to run late, protect the descent you still have. Keep the room cool and skip the drink. Cut the last stretch of screen and work, so arousal is falling by the time you switch off the light. On a really broken week, get to bed as close to your usual hour as the day allows. If you cannot, take the short night and hold the wake time, and accept that the deep-rich hours are the ones you lose.

Most people leave deep sleep on the table in four plain ways. Too little physical activity in the day, so the body is not tired enough to go deep. A bedtime that drifts steadily later does it too, as does late caffeine, which cuts deep sleep as well as delaying onset. Then the nightcap, which feels like it helps and does the reverse in the second half of the night. Deep sleep is easier to read than the other stages. If you wake physically restored, and soreness from training clears in a day or two, the repair shift is running. A tracker's deep-sleep figure is a rough estimate, so treat it as a trend and not a score.

I say deep sleep supports repair, but I do not say it is proven. Suppressing slow-wave sleep lowers the overnight growth-hormone pulse, and enhancing it raises it, so the first link holds. What nobody has done is hold everything else constant and measure the rebuild itself. The chain runs through growth hormone and through what short sleep takes away, and no direct experiment has tested it. If you snore loudly or gasp at night, or feel unrefreshed no matter how long you spend in bed, that pattern points at something like apnea. That is a professional's call, well past a wind-down.

Protecting the first third



1 · Be physically tired by the evening

Why it works. Regular activity is the most reliable lever on slow-wave sleep, and the gain is small: minutes, not a transformed night, and bigger if you already have a sleep disorder.

Nothing you can buy or swallow does even this much. An aerobic base you are building for other reasons already does the job.

> WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT
>
> "working out in the evening ruins your sleep" MYTH
>
> An evening session slightly raises deep sleep. Hard work close to bed delays falling asleep instead.

MAP · LINK 7 The arrow from fitness into deep sleep.

2 · Protect the first hours, not just the total

Why it works. Deep sleep is 10 to 20% of a whole night, falls with age, and is front-loaded, so the start of the night carries most of what you get.

So a consistent, not-too-late bedtime matters more here than anywhere else. A hot bath is one of the few parts of a wind-down with a trial behind it. Taken at 40 to 42.5°C for at least ten minutes, one to two hours before bed, it shortens how long it takes to fall asleep. Not in pregnancy, where a long hot soak is treated the same way as a sauna. What does the work is the drop in core temperature afterward. Give the first third a cool room, real darkness, and a wind-down of half an hour or so, that last figure being convention. Through the menopausal transition, night sweats track with broken nights in cohort data (Kravitz 2008). A cool room and a fixed wake time count for more here than at any other stage, and page 71 has the detail.

> WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT
>
> "as long as I get my hours, timing is fine" HALF-TRUE
>
> The total matters, but it is not interchangeable across the night. A late night eats the deep-rich hours first, and sleeping in cannot move them back.

MAP · LINK 2 Deep sleep is when growth hormone is released, the arrow into recovery.

3 · Keep the last few hours before bed alcohol-free

Why it works. Alcohol adds a little deep sleep in the first hour or two. Then it fragments the rest of the night and suppresses REM as it clears.

You drop off faster and feel like you slept, while the second half is shallow and broken.

> WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT
>
> "a drink helps me sleep deeply" MYTH
>
> Judging it by how fast you fall asleep measures the one part it improves and ignores the five hours it damages. One caution on cutting it: if you drink heavily most days, ask a doctor for a plan rather than stopping on your own, because sudden withdrawal in someone who has become dependent can cause seizures (NICE CG100, CG115).

Sources: warm bath before bed, Haghayegh 2019 (17 studies); Kredlow 2015; evening exercise, Stutz 2019 (23 studies); training and slow-wave sleep, Wang 2025; sleep extension and appetite, Tasali 2022; Van Cauter 2000 (correlational, men); Saner 2020; Ebrahim 2013; Carskadon & Dement 2017 (textbook chapter).

REM sleep: the mind's night shift

As the night runs on, REM grows block by block and dominates the last two hours. It is where the brain sorts memory and mood.

REMEMBER THIS **Cutting the morning short is what takes REM, and nothing sold for sleep puts it back.**

HOW THIS CONNECTS TO THE SYSTEM

- ← FED BY: A full night to the morning; The deep sleep before it (link 12); A clean back half (no late alcohol)
- → FEEDS: Memory consolidation; Mood & emotional regulation

THE EVIDENCE, AND WHY THE ADVICE BELOW FOLLOWS

Decades of laboratory sleep recording established how the stages are distributed through the night: REM is scarce early, builds cycle by cycle, and dominates the last two hours before waking (**Carskadon & Dement 2017**, textbook chapter), typically following the deep sleep that comes before it in each cycle (**Park & Weber 2020**, a review).

Two sleep-lab cohorts followed people for years afterward. Every 5% less REM went with about 13% higher all-cause mortality in 2,675 older men, and the finding replicated in a younger mixed cohort of 1,386 followed for two decades (**Leary 2020**). Observational, one night of recording, and the men averaged 76. Illness, antidepressants and untreated apnea all lower REM, so some of this is the illness rather than the REM. Same reverse causation I flag at the long-sleep end of the duration curve.

In 18 people who slept in a lab, those with the lowest prefrontal gamma activity during REM, a proxy for adrenergic tone, showed the largest overnight drop in amygdala response to the previous day (**van der Helm 2011**). The amount of REM was not the predictor, and the authors flagged the correlation as descriptive only.

Reviews of alcohol and sleep find it is the clearest disruptor, suppressing REM in a dose-dependent way and fragmenting the back half of the night as it wears off (**Ebrahim 2013**).

You cannot add REM directly, so the advice on the next page is all protection: sleep to the morning, hold the wake time, and keep the back half clean. That is where the mood and memory work happens.

Why the last two hours carry it

REM is the mirror image of deep sleep. Scarce in the first third, building with each cycle, dominant in the last two hours. That is where the brain sorts: filing memory and taking the emotional charge off the day, with one small imaging study consistent with that. Which stage you lose depends on which end you cut. Lose the last hours and mostly REM goes, and lose the first hours and it is deep sleep. Most people cut the last hours, so REM is the stage they quietly lose.

WHERE REM FALLS ACROSS THE NIGHT

Schematic: the shape is established, the minutes are not. REM is 20 to 25% of a whole night.

Facing a short night, most people go to bed on time and get up early to attack the day. That trades away the REM-rich last two hours. Deep sleep is defended without your help, so REM gives way. If you have to lose sleep, lose it at the front and guard the wake-up. On a run of short nights, hold the wake time and let the bedtime drift.

The two common losses are cutting the morning short and a nightcap that fragments the back half. Nothing sold for sleep fixes either, and magnesium, melatonin and glycine act on how fast you drop off, leaving REM where it was.

Acting out dreams, gasping, or insomnia past three months: see someone.

Protecting the last two hours

What	What it does to REM	Do
Alcohol	Suppresses REM and fragments the second half	None within ~3 h of bed, a conventional gap
Nicotine	Most studies show REM suppression; lighter, more broken sleep	Avoid, especially evening
Cannabis / THC	Lowers REM; quitting brings a vivid-dream rebound	Not a sleep aid
Late caffeine	Shortens and fragments sleep; the damage is continuity, not REM	~9 h gap; dose matters more than the clock

1 · Guard the wake-up before the bedtime

Why it works. REM is back-loaded and clock-timed, so the last two hours of the night carry most of it and a fixed wake time holds them in place.

Keep your wake time within about half an hour, weekends included. Temperature regulation is blunted during REM, which is why the room matters more then. So a cool, dark room protects the REM-rich morning as much as the start of the night.

> WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT
>
> "if you are short on sleep, go to bed on time and get up early" MYTH
>
> It sounds disciplined and cuts from the worst end of the night. Losing early hours costs deep sleep, which the body defends anyway, while losing late hours costs REM.

MAP · LINK 12 Deep sleep leads into the REM that follows.

2 · Keep the back half of the night clean

Why it works. Alcohol suppresses REM in proportion to the dose. It also breaks up the second half of the night as it wears off, which is when REM should peak.

Nicotine and evening cannabis pull the same way; late caffeine costs you continuity rather than REM. None of them feels like a sleep problem at the time, because their cost lands hours later in the part of the night you do not remember. On the combined pill or HRT, estrogen slows caffeine clearance by about half again, so move the nine-hour cut-off nearer thirteen (Abernethy & Todd 1985). More on the pages from 71.

> WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT
>
> "magnesium or melatonin will boost your REM" MYTH
>
> There is no REM supplement, because these touch sleep onset or dream recall, and melatonin has a narrow case if you are older or shifting time zones.

Sources: REM and mortality, Leary 2020 (JAMA Neurol; MrOS n=2,675, WSC n=1,386); REM and next-day emotional reactivity, van der Helm 2011 (n=18 with sleep recording); alcohol, Gardiner 2024 (Sleep Med Rev meta) & Ebrahim 2013; cannabis, Angarita 2016; sleep architecture, Carskadon & Dement; caffeine, Gardiner 2023.

PART II · THE FUEL OF THE LOOP

Eat

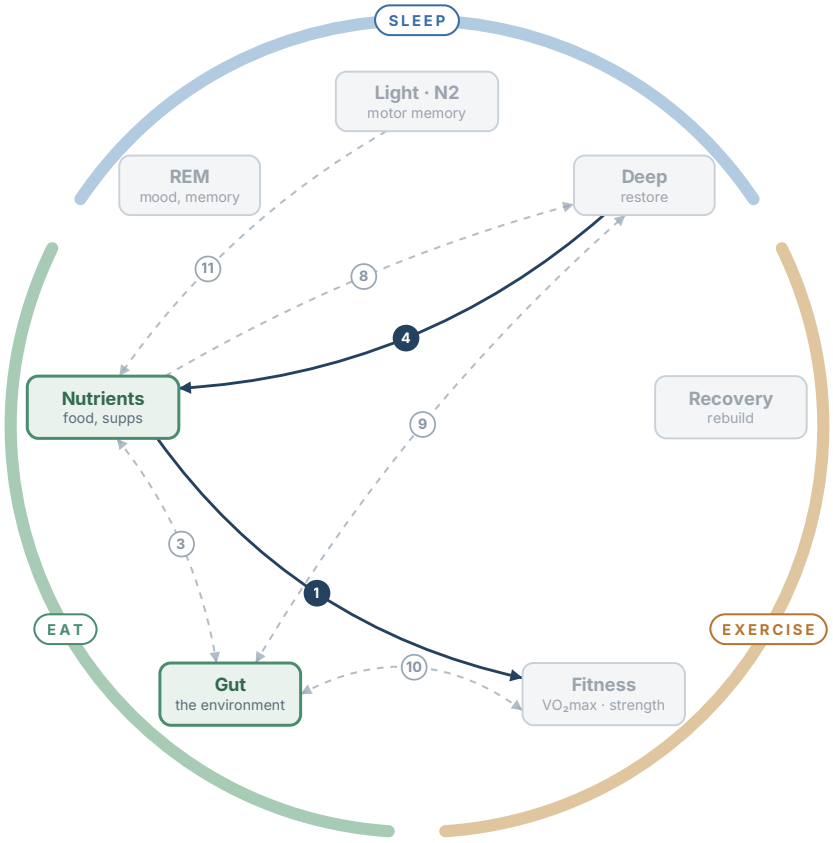
Sleep set the table; now I fill the plate. What you eat becomes muscle only when training and recovery use it, and it feeds back into the deep sleep you just protected. The signal is short: protein and plants, unrefined by default, cut ultra-processed, feed the gut.

SLEEP · EAT · EXERCISE

What matters most on the plate

REMEMBER THIS Build meals on protein and plants, make unrefined the default, and cut ultra-processed food.

1.2-1.6 g/kg protein/day	**20-40 g** protein/meal	**30 g** fiber/day
~30 plant types/week	**½ plate** vegetables & fruit	**halve** ultra-processed



Where food sits in the system: the seven pathways that run through the plate

ESTABLISHED · SOLID LINES

1. Food and protein fuel training
4. A good night steadies next-day appetite

EMERGING · DASHED LINES

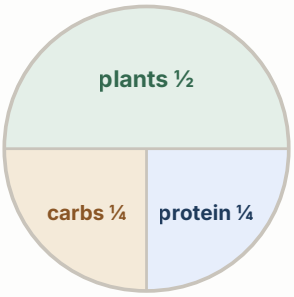
3. Food feeds the gut, and the gut feeds back
8. Better diet quality, a little more deep sleep
9. Sleep and the gut track together
10. Training shifts the gut toward fiber-fed bacteria
11. Spindle-rich light sleep supports next-day glucose

WHERE FOOD SITS

Two of the seven pathways through the plate are drawn solid; the other five are associations. What you eat today shows up in tonight's sleep and tomorrow's appetite.

Three moves do most of it

BUILD THE PLATE, SIZE BY THE HAND



no weighing, no counting
a convention, not a measurement

YOUR HAND IS THE MEASURE

Palm = one protein serving
about 20 to 40 g; two if you train hard

Fist = one serving of vegetables
two fists at most meals, half the plate

Cupped hand = one carb serving
unrefined by default; more on hard days

Thumb = one serving of fats
oils, nuts, seeds; easy to overshoot

Three moves. Protein at every meal, about a palm, keeps you full and protects muscle. Plants, half the plate, cover fiber, most micronutrients, and the food your gut runs on. Cut the ultra-processed, which supplies over half of typical calories in the US and a large share elsewhere, starting with sugary drinks, packaged snacks, and processed meat. Get these three right and fat quality and nearly every vitamin fall into place, and you do not have to count anything to get most of the gain.

How the plate touches everything else. Look at the map on the page before and you see why food is not a standalone project. Protein only becomes muscle when training is there to use it (link 1), and that is the most established line on the map. So the protein target sits alongside a lifting habit rather than on its own. Fiber and plant variety feed the gut, and the gut feeds back (link 3). Traffic runs the other way too, from bedroom to kitchen. A good night steadies the next day's appetite (link 4). After a run of short nights, the plate gets harder to get right, and that is not about willpower. Thinner lines mark what is still emerging. Better diet quality is associated with a little more deep sleep (link 8), sleep and the gut track together (link 9), and light sleep supports next-day glucose control (link 11). Those are drawn dashed, and none of them is a reason to buy anything.

When life gets in the way. With no time to cook, do not aim for the perfect plate. Aim for the one habit that survives a bad week: protein and a vegetable at every meal, and let the rest go. A supermarket rotisserie chicken, frozen vegetables, and canned beans all count. On a chaotic week, forget the ideal diet and keep the two things that carry most of the gain, so the habit is still standing when life settles.

What to track, and what to buy. You do not need a food diary. Let ApoB, which counts the particles that carry cholesterol into an artery wall, plus fasting glucose, blood pressure and your waist tell you whether the plate is working, read as trends over months. On the shelf, the list is short. Protein powder if you are struggling to hit the target from food, and vitamin D is the one with a population recommendation behind it: 10 µg (400 IU) a day through autumn and winter under UK guidance, and more if you have darker skin or rarely get sun on it. Other countries set it differently, so use the figure that applies where you are. Stay under 4,000 IU a day unless a doctor is supervising. In someone without diabetes, a continuous glucose monitor seldom changes what to do. Often it manufactures anxiety about normal post-meal rises.

Sources: ultra-processed food, Lane BMJ 2024; fiber outcomes, Reynolds Lancet 2019; protein, Morton BJSM 2018; vitamin D, SACN 2016. Fasting and alcohol are covered on the next two pages (Liu NEJM 2022; Zhao 2023).

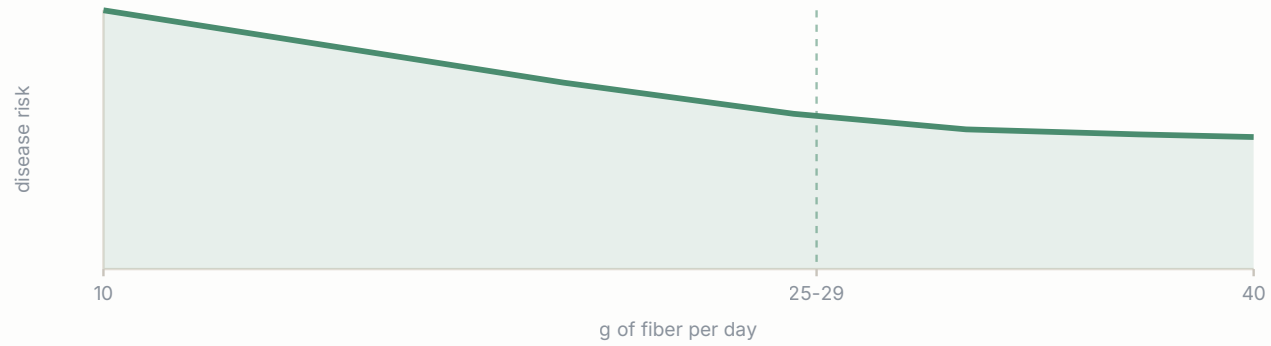
The seven studies under the plate

Fiber, and how much is enough

135 million person-years across 185 prospective studies, plus 58 trials. Reynolds and colleagues pooled the fiber and whole grain evidence for the World Health Organization. Higher fiber intake tracked with lower all-cause mortality, and with lower rates of heart disease, stroke, type 2 diabetes and colorectal cancer. Dose-response throughout, and clearest between 25 and 29 g a day (**Reynolds 2019**).

> **HOW TO USE IT**
> Guidelines set the target at 30 g a day; the observed benefit in Reynolds runs from about 25 g upward, which is why you see both figures quoted. The evidence was built on food, so that is where I point you.

FIBER INTAKE AND DISEASE RISK SCHEMATIC



Risk falls across the range, with the clearest gains between 25 and 29 g a day.

Ultra-processed food, graded honestly

An umbrella review pools the reviews. Lane and colleagues ran one on ultra-processed food, across dozens of outcomes. Higher intake was associated with worse outcomes across a wide range of them, consistently enough to act on (**Lane 2024**). The certainty behind most of those pooled results is low, because the evidence is observational and the category is very broad. People who eat the most ultra-processed food differ in many other ways. The category has a name, NOVA, and it sorts by processing rather than nutrition, which is part of why the evidence is messy. An earlier inpatient trial pointed one way: 20 adults ate about 500 calories a day more on the ultra-processed arm of the same menu (Hall 2019). Then a randomized feeding trial put a floor and a ceiling on it. Holding diet quality constant still favored minimally processed food, by about one percentage point of body weight over eight weeks (**Dicken 2025**).

> **HOW TO USE IT**
> Halve it instead of banning it, and start with the three that carry most of the load: sugary drinks, packaged snacks, and processed meat.

Why fasting windows are not in this book

Does the window add anything the calorie cut does not? For twelve months, Liu and colleagues randomized 139 adults with obesity to eating 8am to 4pm plus a calorie cut, or the same cut with no window. There was no significant difference in weight loss or metabolic markers between the groups (**Liu 2022**). The benefit tracked with eating less rather than with the clock.

> **HOW TO USE IT**
> If a window helps you eat less, keep it, and treat it as a convenience instead of a mechanism. If it does not, you're giving up breakfast for nothing.

Sources: fiber dose-response, Reynolds 2019 (Lancet, WHO commission); ultra-processed food, Lane 2024 (BMJ umbrella review); ultra-processed and intake, Hall 2019 (Cell Metab, inpatient RCT, n=20); minimally vs ultra-processed, Dicken 2025 (Nat Med, crossover RCT, n=55); time-restricted eating, Liu 2022 (NEJM RCT, n=139).

Two more on the plate, and the survey figure

Why I do not tell you a drink a day is good for you

Moderate drinking looks protective. Re-analyzing the literature, Zhao and colleagues showed that it is mostly an artifact of study design. Among the abstainers being compared are people who stopped drinking because they were already unwell (**Zhao 2023**). Correct for that and the effect mostly disappears.

HOW TO USE IT

Do not start drinking for your health. For sleep specifically, the relevant number is elsewhere in this book: none within about three hours of bed. Three hours is a conventional clearance gap rather than a tested threshold.

When you eat your protein matters a little, too

Same daily protein, fed two ways: about 30 g at each of three meals, or 11, 16 and 63 g skewed to dinner. In eight adults, Mamerow measured muscle protein synthesis over 24 hours. Spread evenly, it produced more synthesis over the day (**Mamerow 2014**). I grade this one down because it is an acute tracer measurement. Later trials in older adults found no difference in outcomes between even and skewed distribution, and the daily total matters far more than the pattern.

HOW TO USE IT

One protein source at every meal, instead of most of it at dinner. That is where the 20 to 40 g per meal figure comes from.

And where the ultra-processed figure comes from

The claim that ultra-processed food supplies over half of typical calories sounds like rhetoric, and the figure behind it is measured in US survey data. Martinez Steele and colleagues analyzed a US national dietary survey. Ultra-processed foods made up about 57.9% of dietary energy, and close to 90% of the added sugar people ate (**Martinez Steele 2016**). Survey data, describing the US at one point in time.

WHERE THE CALORIES IN A TYPICAL US DIET COME FROM

Martinez Steele 2016, from a national dietary survey. Ultra-processed food supplied close to 90% of the added sugar people ate.

HOW TO USE IT

You don’t have to hunt for ultra-processed food to cut it, because it is already most of the plate, so halving it means changing the default. The added-sugar figure tells you where to start, and that is with drinks.

WHAT WE LOOKED FOR AND COULD NOT FIND

No trial supports a superfood. The gains credited to exotic ingredients keep dissolving, because people who eat them also eat more plants. **Personalized nutrition is the second gap.** The same meal really does affect people differently, but the products built on that promise a precision one glucose study does not support. **And no supplement outperforms the plate.**

If a food claim names a single ingredient instead of a pattern, treat it as marketing, and wait until someone shows the pattern without it.

Sources: Zhao 2023 (JAMA Netw Open); Mamerow 2014 (J Nutr); ultra-processed share of energy, Martinez Steele 2016 (BMJ Open, NHANES).

Nutrients: the six that matter

Six things worth getting roughly right, three of them with a number you can remember. You build the plate and dial these in.

REMEMBER THIS **These are averages to aim at, and more past them adds little. Micronutrients are the one place to test first.**

HOW THIS CONNECTS TO THE SYSTEM

← FED BY
- Appetite steadied by sleep (link 4)
- Light-sleep glucose control (link 11)

→ FEEDS
- Muscle, with training (link 1)
- The gut, via fiber (link 3)
- Deep sleep, a little (link 8)

THE EVIDENCE, AND WHY THE ADVICE BELOW FOLLOWS

A meta-analysis pooled 49 randomized trials, nearly 1,900 people, testing protein supplements alongside weeks of resistance training. Protein plus lifting reliably increased strength and lean mass. Supplementing beyond about 1.6 g/kg a day added nothing further, though the estimate is imprecise: the breakpoint is 1.62 g/kg with a confidence interval running from 1.03 to 2.20. The gains at any dose are modest, about 0.3 kg of lean mass across a training block. Protein only becomes muscle when training is there to use it (**Morton 2018**).

And the plate is partly set the night before, since a trial that lengthened people's sleep saw them eat about 270 fewer calories a day (**Tasali 2022**).

That is why the advice that follows leads with protein and plants. Get the inputs right and the rest of the loop puts them to work.

Why these six, and not the other fifty

Nutrition science can name hundreds of compounds worth having, and almost none of them is a decision you make. Nobody chooses their selenium intake directly; you choose what is on the plate, and the rest follows. So the six here are picked for a different reason. Each one is something you can act on, three of the six carry a number you can hold in your head, and between them they carry most of the gain. Get protein, fiber, the type of carbohydrate, the type of fat, a tested micronutrient gap and water roughly right, and the vitamins no one talks about arrive on their own.

On a week with no cooking in it, do not try to hit six numbers. Hold two: a protein source and a plant at every meal. That single default keeps the two levers that carry most of the gain, and it survives a weeknight when nothing gets cooked from scratch. The rest, the fat quality, the micronutrients, the water, mostly takes care of itself once those two are in place.

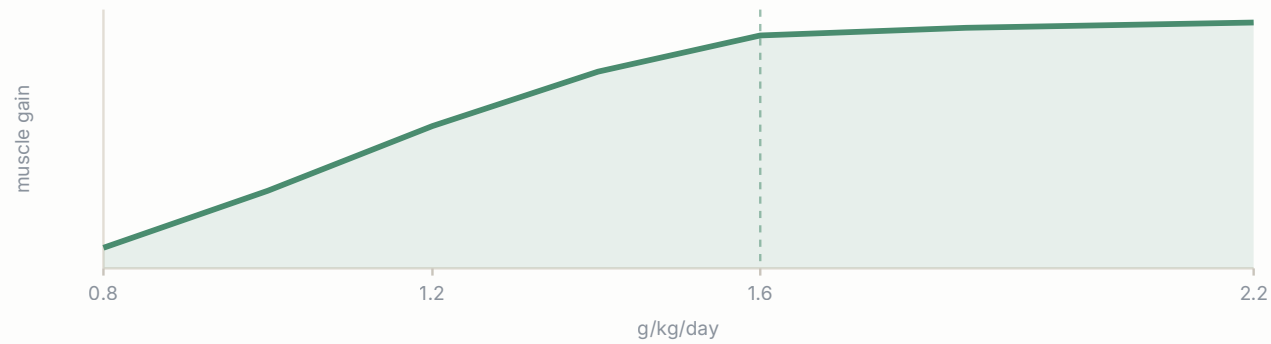
The gaps are consistent and unglamorous, and fewer than one adult in twenty reaches the fiber target in UK and US surveys. Protein intake tends to fall with age, just when the need rises. Ultra-processed food quietly supplies over half of typical calories in US surveys, and a large share in most high-income countries, crowding the six out. No test is needed to read whether this is working. You stay full between meals, energy holds level instead of spiking and crashing, and over months your waist, blood pressure, fasting glucose and ApoB drift the right way.

These numbers are targets to average out at. They are not lines you cross or fail, and more is not better past them. Supplementing protein above roughly 1.6 g/kg a day adds little, extra water past thirst does nothing, and a multivitamin taken on suspicion mostly produces expensive urine. Micronutrients are the one place to test instead of guess. Unexplained weight change, ongoing gut symptoms, or a deficiency you suspect are all worth a professional and a blood test before a shelf of supplements.

Around the menopausal transition the same 1.2 to 1.6 g/kg band applies, aimed at its upper end if you train (**Black & Matkin-Hussey 2024**). The women-specific evidence behind that is sparse and of low quality; the pages from 71 have the rest.

What to put on the plate

PROTEIN: THE MUSCLE SWEET SPOT SCHEMATIC



The sweet spot is 1.2-1.6 g/kg, and extra adds little muscle. Aim high in the band if you lift regularly. For healthy over-65s, 1.0 to 1.2 g/kg is a floor rather than a target: aim inside the band above it if you lift.

1 · Eat 1.2 to 1.6 g/kg of protein, spread across meals

Why it works. Across 49 randomized trials, protein alongside resistance training reliably added strength and lean mass. The benefit flattened above about 1.6 g/kg a day.

Protein is the building material for muscle, repair, enzymes, and hormones. It is also the most filling of the three macronutrients, so hitting the target makes the rest of eating well easier. The current enthusiasm for 2 to 3 g/kg has no support in this pooled resistance-training literature, and I would not spend money chasing it. Whole foods first, powder only to top up a shortfall. Spread across meals, roughly 20 to 40 g at each, protein is better used than in one large serving. It matters more as you get older. The aging body needs a bigger dose per meal to trigger the same response.

> WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT
>
> "load up on shakes, and too much wrecks your kidneys" MYTH
>
> Both halves are wrong in opposite directions. More is not better past the sweet spot, so the shakes are mostly expensive calories once you are there, and in people with normal kidney function, intakes in this range do no harm. Kidney disease is common and usually silent, so if you have never had yours checked, agree on the target with your doctor.

MAP · LINK 1 Protein is what training turns into muscle.

2 · Build to 30 g of fiber a day

Why it works. Fiber is the plant carbohydrate you cannot digest. It reaches the gut bacteria that support your immune system and metabolism. Higher intakes track with lower disease risk across large reviews.

Almost no one reaches the target, which makes this the biggest easy win on the plate. It comes from whole grains, legumes, nuts, seeds, vegetables, and fruit, and legumes are the cheapest way to move the number fast. What things are worth, roughly: a can of beans 10 g, two big portions of veg 6, two slices of whole-wheat bread 5, a baked potato with the skin 5, oatmeal 4, a piece of fruit 3, a handful of nuts 3. Most days are five or six of those, and most people get halfway. Ramp up over a few weeks, with water, or the adjustment is uncomfortable enough to put you off.

> WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT
>
> "eat more fiber, with no one ever saying how much" TRUE
>
> The advice is right and useless without a number. Twenty-five to thirty grams is the target, real food does it better than a supplement, and fewer than one adult in twenty currently gets there in UK and US surveys.

MAP · LINKS 3, 8 Your biggest lever on the gut, and on the emerging diet-to-sleep path.

DAILY FIBER: TARGET VS REALITY

Survey means, UK NDNS, and US NHANES. The gap, not the target, is the point.

The quality of what is left

3 · Keep carbohydrate unrefined by default

Why it works. Unrefined carbohydrate still carries its fiber and nutrients, so it releases slowly. It is also the main fuel for hard training and the brain.

Match the amount to how hard you trained: more on heavy days, less on quiet ones. The distinction that matters is refined against unrefined rather than carbohydrate against none, and getting it right is mostly the same act as hitting your fiber target.

> WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT
>
> "carbs are bad, cut them" MYTH
>
> Cutting a whole macronutrient to avoid its worst forms throws out the whole grains, legumes and fruit along with the sugary drinks, and under-fueling hard days costs you the training and the sleep that follows it. Nor is sugar special for body weight: swap it for the same calories of other carbohydrate and the scale does not move. It is just very easy to drink a lot of without noticing, which is why liquid sugar is first on the cut list and carbohydrate as a class is not on it at all.

MAP · LINK 1 Fuel behind training.

4 · Favor unsaturated fat over saturated

Why it works. Fat supplies energy and is also the carrier that lets you absorb vitamins A, D, E and K. The type matters more than the amount.

Lean on olive oil, nuts, seeds, and fatty fish, and keep heavy saturated fat occasional. It is what the steroid hormones are built from, one reason very low-fat eating is hard to sustain. No trial links fat intake to deep sleep, so treat that claim as unproven.

> WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT
>
> "fat is bad, and seed oils are toxic" HALF-TRUE
>
> The first was the mistake of the low-fat decades. The second confuses the oil with the fried, ultra-processed food it usually arrives in, which is the part worth cutting.

5 · Test a micronutrient gap, then fill it

Why it works. The small doses worth knowing about are vitamin D, magnesium and iron, with B12 and iodine on some diets. Only vitamin D has a population recommendation: 10 µg (400 IU) a day in autumn and winter where winter sun is weak, under UK guidance. Other countries set it differently, so use the figure that applies where you are. Salt sits alongside them: aim under 5 to 6 g of salt a day. The three big guidelines are quoted in different units: WHO says under 5 g of salt, UK guidance 6 g, and US guidance sets its limit on sodium instead, at 2,300 mg, which is how US labels count it. Most of it is already in the food, so cutting ultra-processed does most of this for you, and it is the clearest food lever on blood pressure. Micronutrients are the opposite case: you need only tiny amounts, and a real shortfall quietly drags on energy, mood and sleep.

If you do not eat meat or fish, three things need attention: B12, which is not in plant food, iodine if you have cut dairy and fish, and iron, which is absorbed less well from plants, so pair it with vitamin C. Protein is reachable; it just takes legumes, tofu and soy at every meal. Food first, then fill a measured gap: vitamin D as above; magnesium only if intake is genuinely low, and expect loose stools if you overdo it; iron only if a blood test says so. Keep iron four hours clear of thyroid medication. Antibiotics differ by direction: take a quinolone two hours before iron, or six hours after. Iron is not one to take on a hunch. If you menstruate and you are tired in a way sleep does not fix, ask for ferritin and a complete blood count before buying anything (NIH ODS). That is on the pages from 71.

> WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT
>
> "take a daily multivitamin, everyone is deficient" OVERSOLD
>
> Most people are not short of most things, and the few who are need a specific correction instead of a shotgun dose.

The last one, and a day that hits all six

6 · Drink to thirst, and read your urine

Why it works. Water is the medium every reaction in the body runs in. Thirst is a well-calibrated signal for how much you need.

Drink more when it is hot or you are training, and let pale-yellow urine be the gauge. That is the whole protocol, and it costs nothing and needs no tracking. The number is missing here on purpose.

> WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT
>
> “eight glasses, or a gallon, a day” OVERSOLD
>
> The numbers were never based on much. Past thirst, extra water buys nothing, and daily electrolyte sachets solve a problem most people do not have.

A day that hits all six	What it covers
Breakfast: eggs or Greek yogurt, oats, berries	Protein at breakfast, where most people miss it; fiber from the oats and fruit
Water with the meal, and to thirst after	The whole of the water rule, without counting
Lunch: chicken or beans, a big salad, whole grain	Second protein hit, half the plate as plants, unrefined carbohydrate
Nuts or a piece of fruit mid-afternoon	Fiber, unsaturated fat, plant variety, instead of a packaged snack
Dinner: fish, vegetables, lentils or potatoes	Third protein hit, fatty fish for unsaturated fat, more plant types
Yogurt, kefir or kimchi at some point	The gut habit from the next section, at no extra effort

It is an illustration. Nothing in it is special, and swapping any line for something you prefer changes nothing, provided the swap keeps the job that line was doing. What it shows is that the six are not six separate tasks, and protein at each meal covers one. Building the plate around plants covers fiber, most of the micronutrients and the plant variety the gut needs. Choosing the unrefined version of whatever carbohydrate you were going to eat anyway covers another. It comes to three or four decisions a day, and few people keep counting six things for long.

Meals out, travel and other people’s cooking are not failures of the plan; they are the plan’s normal operating conditions. The two habits worth carrying into them are the ones with the most evidence behind them: find the protein on the menu, and take the vegetables when they are offered. Everything else can wait for a week you cook in. A diet that only works when you are in control of every meal is not one you will keep, and the six are targets you hit on average.

Sources: sugar and body weight, Te Morenga 2012 (30 RCTs, 38 cohorts); protein, Morton 2018; distribution, Mamerow 2014; fiber target, SACN 2015 (30 g/day); fiber outcomes, Reynolds 2019; fiber gap, NDNS 2019 to 2023 (UK); fats, AHA advisory; micronutrients, NIH ODS.

The gut: the environment food runs in

Most of the microbiome story is oversold. One part is not, and it is the least glamorous of all: feeding the gut with food rather than with anything from a bottle.

REMEMBER THIS **Add fiber a few grams a week, with water. Jumping to thirty grams overnight is why people give up on it.**

HOW THIS CONNECTS TO THE SYSTEM

← FED BY: Fiber & plant variety (link 3); Exercise, emerging (link 10)

→ FEEDS: Sleep & recovery, emerging (link 9)

THE EVIDENCE, AND WHY THE ADVICE BELOW FOLLOWS

In a small randomized trial, roughly 18 people per arm, one group added fermented foods and the other added fiber. The trial's pre-specified immune endpoint did not move in either arm. In an exploratory panel, the fermented-food group grew a more diverse microbiome and 19 of 93 inflammatory proteins fell. The fiber arm changed the gut's enzyme capacity without changing diversity (**Wastyk 2021**). The trial was not powered to compare the two arms directly.

Links to sleep and exercise show up in humans too, but mostly as associations, and where a direction is clear it tends to run from lifestyle into the gut (**Smith 2019**; **Allen 2018**, n=32, six weeks, reversing on detraining).

That direction is why the advice that follows feeds the gut through fiber, plant variety and a daily fermented food rather than through test kits or probiotic capsules.

Why feeding it works

The gap between marketing and evidence is at its widest here, and the science is real and early. A more diverse microbiome tends to accompany better health, and I can move diversity with food. What I cannot yet do is read your results and tell you what to change. Into that gap go test kits, cleanses and capsules.

Down in your large intestine, bacteria ferment the fiber you cannot digest into short-chain fatty acids. Those acids feed the cells lining your gut wall and train the immune tissue alongside them. They also take part in how you handle food and store energy. Diversity matters because a wider community covers more of that work and copes better when something disturbs it. That is why variety and fiber are the levers, and the point is to feed the bacteria you already have.

WHAT WE LOOKED FOR AND COULD NOT FIND

Nothing you can buy for your gut does as much as feeding it. Microbiome test kits do not yet change what you should do. Nobody can read your sample and tell you which foods to eat. **Cleanses have no supporting evidence** and solve a problem the liver and kidneys already handle. **And multi-strain capsules** claim a precision the trials do not support. They cost many times the price of a jar of kimchi, and no trial has tested them head to head against it.

For a healthy gut, spend on plants and a jar of something fermented. No product covers the red flags below.

Two gaps, both cheap to close: fewer than one adult in twenty hits the fiber target in UK and US surveys, and plant variety usually sits far below thirty types a week. The commonest mistake is fixing the first one too fast. Jumping fiber overnight causes bloating and puts people off for good, so add a few grams a week, with water, and the gut adapts without complaint. You can read it without a test. Regular, comfortable digestion and steady energy after meals are what working looks like.

Sleep and the gut track together, and so do exercise and the gut, but the human evidence is mostly associational and the exercise link comes from one six-week trial in 32 people. Where a direction is clear it runs from lifestyle into the gut, so I treat the gut as something you feed. Blood in your stool, persistent pain, unexplained weight loss or a lasting change in bowel habits are a doctor's question, not a probiotic one.

Feed it, and leave it alone

1 · Hit the same 30 g of fiber, and build up slowly

Why it works. This is not a second target but the fiber you are already aiming at on the plate, seen from the gut's side: fiber is what the bacteria run on, and diversity falls when they are starved.

Add it over a few weeks, with water. Jumping straight to the number is the usual reason people give up on it.

> WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT
>
> "eat more fiber, which almost no one manages" TRUE
>
> True, and worth a number, or it stays a slogan. Fewer than one adult in twenty gets there in UK and US surveys.

MAP · LINK 3 Food shapes the gut.

2 · Eat about thirty different plants a week

Why it works. A wider range of plants tracks with a more diverse gut, and diversity is the marker of resilience down there. The thirty-a-week figure comes from cross-sectional citizen-science data and no trial has tested it, so treat it as a useful target and hold it loosely.

It is the count of different plants across a week that does the work. Vegetables, fruit, whole grains, beans, nuts, seeds, herbs, and spices all count, which makes thirty easier to reach than it sounds.

> WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT
>
> "you need exotic superfoods and powders" OVERSOLD
>
> The benefit tracks with variety rather than with rarity or price. A can of mixed beans and a jar of herbs move the number as well as any imported berry.

MAP · LINK 3 Plant variety is the second half of that arrow.

3 · Eat one fermented food a day

Why it works. This is the gut move whose randomized evidence is about the food itself rather than a marketing claim, and that trial is small and its headline immune result was exploratory; page 31 carries the detail.

One serving a day does it: yogurt, kefir, kimchi, sauerkraut, kombucha or miso. It is the cheapest habit here with any randomized evidence behind it, and everything on that list comes from the supermarket.

> WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT
>
> "buy a psychobiotic or multi-strain probiotic" OVERSOLD
>
> The capsules promise a precision the evidence does not support, at many times the price of the fermented food in the aisle.

MAP · LINK 3 Food shapes the gut, and this is the fermented half of it.

Sources: sleep and the gut, Smith 2019; exercise and the gut, Allen 2018 (n=32); fermented foods, Wastyk 2021; probiotic colonization, Zmora & Suez 2018.

PART III · THE ENGINE OF THE LOOP

Exercise

You have slept and eaten well; now you give the body a reason to adapt. The session is only half of it. Training is the stimulus, recovery is where it is banked, and both run on the sleep and food from the last two parts. Treating fitness as one thing, usually cardio, is the common mistake.

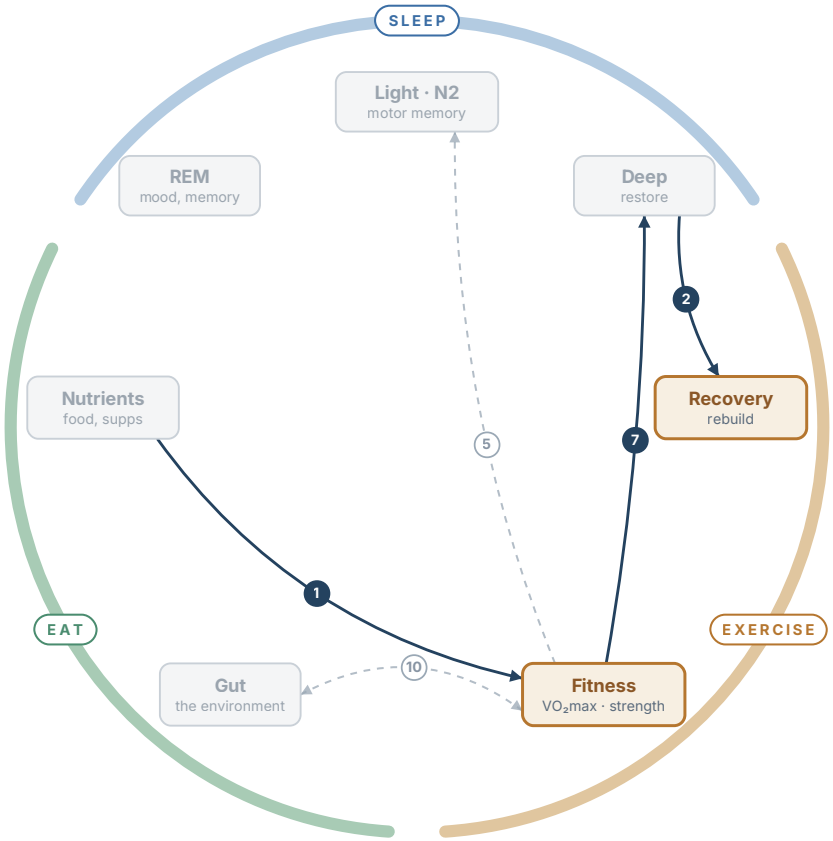
SLEEP · EAT · EXERCISE

EXERCISE · START HERE

What matters most in training

REMEMBER THIS Lift twice a week, move easy most days, and go hard sometimes.

2+	150-300 min	~7,000	1-2
strength days/week	moderate/week	steps/day	hard sessions/week



Where training sits in the system: the five pathways that run through the engine

ESTABLISHED · SOLID LINES

1. Food and protein fuel training
2. Deep sleep and the overnight growth-hormone pulse reinforce each other
7. Training deepens slow-wave sleep, by minutes

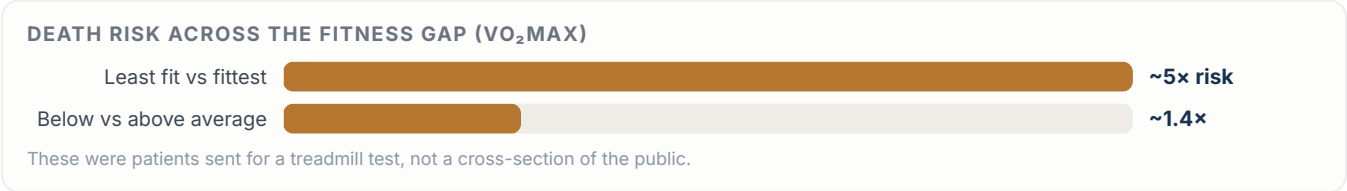
EMERGING · DASHED LINES

5. The day's practice is filed in light sleep
10. Training shifts the gut toward fiber-fed bacteria

WHERE TRAINING SITS

Every arrow reaching this part of the map starts in the last two. What you can train is set by the sleep and the food that came before it.

Three moves build the engine



Three moves. Lift twice a week across the major muscles, which keeps the muscle, bone and strength you lose fastest with age. Then move easy, and a lot of it. The WHO target is 150 to 300 minutes of moderate cardio a week, at a pace where you can still hold a conversation. Around 7,000 steps a day sits alongside it. The big unglamorous base does most of the health work. Go hard sometimes: one or two short interval sessions lift VO_2max, the fitness marker with the best mortality data behind it. Even short hard bursts in plain life count toward the last one.

How training touches everything else. This part comes third rather than first for the reason the map on the page before shows. The session itself is only a withdrawal, and protein turns it into muscle (link 1) while recovery banks the work as adaptation, and both sit upstream of the gym. Train harder on poor sleep and thin food and you mostly buy fatigue. Running the other way, training files skill into light sleep overnight (link 5). It also deepens slow-wave sleep modestly, with the biggest gains in people who sleep badly (link 7). Deep sleep repays it through the overnight repair pulse (link 2). Training shifts the gut toward fiber-fed bacteria, reversing when training stops (link 10).

When life gets in the way. Do not write training off until you can get back to full sessions: the gap is what undoes you. Drop to the minimum that keeps the habit alive: a ten-minute daily walk, and one short set of push-ups or squats. That is not enough training to matter. It keeps the chain unbroken, so you restart by adding load instead of starting cold.

What to track, and what to buy. Resting heart rate drifts down as you get fitter, which makes it a cheap and honest progress marker. VO_2max is the number worth raising if you can get an estimate. The most useful signal is simpler still: the same load feeling easier over a few weeks. On the shelf, creatine at 5 g of plain monohydrate is the one extra that clearly earns its place if you lift, and the recovery gadgets do not.

Sources: the weekly targets, WHO 2020 (Bull, BJSM); sets and progression, ACSM Position Stand 2026; strength and mortality, Momma BJSM 2022; the 7,000-step plateau, Ding 2025 (Paluch 2022 is age-dependent); fitness and mortality, Mandsager 2018; short bursts, Stamatakis 2022; cold water after lifting, Roberts 2015.

The eight studies under the training advice

Strength training earns its place separately from cardio

Muscle-strengthening activity tracks with lower all-cause, cardiovascular and cancer mortality, independently of aerobic activity. Momma and colleagues pooled the cohort evidence. The association was strongest at modest volumes and faded at high ones (**Momma 2022**). Put resistance and aerobic training together and a separate pooling of the cohorts found the combination tracked with lower mortality than either on its own (**Shailendra 2022**). Both are pooled cohorts, so the grade is moderate.

> **HOW TO USE IT**
> This is why the book asks for two lifting sessions instead of treating cardio as the whole of fitness. Past about an hour a week of lifting, the returns fade.

The step target is 7,000, not 10,000

Pool the step-count studies, as Ding and colleagues did, and risk falls steeply from around 2,000 steps to about 7,000. That is roughly 47% lower all-cause mortality (**Ding 2025**). After about 7,000 the curve mostly flattens for older adults; under 60 the plateau sits nearer 8,000 to 10,000 (**Paluch 2022**). Where did 10,000 come from? A Japanese pedometer campaign in the 1960s.

> **HOW TO USE IT**
> If you're near 3,000, the next 3,000 steps are the most valuable thing in this chapter. If you're at 8,000, stop chasing the number and put the effort into lifting.

Short bursts in plain life count as training

25,241 people who never formally exercise: that was the sample Stamatakis studied. Wearables captured brief vigorous bursts in daily life: stairs taken quickly, carrying groceries, walking hard to catch a bus. Around four and a half minutes a day of these bursts tracked with roughly a quarter to a third lower all-cause mortality, and roughly a third lower cardiovascular mortality. The dose-response was near-linear (**Stamatakis 2022**). Observational, with large effect sizes, so it is encouraging rather than settled.

> **HOW TO USE IT**
> The bursts in that study came to about four and a half minutes a day. Taking the stairs at speed is one way to collect them.

Aerobic capacity is the single strongest fitness signal

After a treadmill test, Mandsager and colleagues tracked 122,007 people for mortality. Higher cardiorespiratory fitness lined up with lower mortality at every level, with no ceiling of benefit, and between below-average and above-average fitness sat about 40% higher risk, which the authors put on par with smoking, diabetes or heart disease. Between the least fit and the very fittest it was roughly fivefold (**Mandsager 2018**).

> **HOW TO USE IT**
> The curve keeps rising, but it is steepest at the bottom, so getting off the lowest rung buys the most. The easy base does that work, with one or two hard sessions to raise the top end.

Sources: strength and mortality, Momma 2022 (BJSM meta); the combination, Shailendra 2022; steps plateau, Ding 2025 (Lancet Public Health); the under-60 plateau, Paluch 2022; incidental bursts, Stamatakis 2022 (Nat Med, n=25,241); fitness and mortality, Mandsager 2018 (n=122,007).

Two more, and the simplest test of progress

Balance is the quality with the trial evidence behind it

The Cochrane review of exercise for preventing falls in older people pooled 108 randomized trials covering around 23,000 participants and found that exercise programs cut the rate of falls. Balance and functional training cut the rate by about a quarter. Adding resistance training to balance work did best, at about a third (**Sherrington 2019**). Unlike most of the evidence in this chapter, that comes from randomized trials and not from observation.

HOW TO USE IT

It's why a two-minute daily habit that looks trivial has a place in a short book. Falls are a leading cause of lost independence in older adults. This is the one quality where training it directly is shown to work.

And the cheapest test of whether it is working

Across 17 countries, PURE measured grip strength in around 140,000 people and followed them for years. Lower grip strength was associated with higher all-cause and cardiovascular mortality, and in that dataset it predicted death more strongly than systolic blood pressure did (**Leong 2015**). Observational again, and grip stands in for whole-body strength without being the cause of anything. Take it as a readout and train the whole body.

HOW TO USE IT

You don't need a lab, and grip is the cheapest proxy you have. The same logic applies to any load you repeat. If the same weight feels easier over a few weeks, the engine is being maintained. Train the whole body, and let grip be the dial you read.

WHAT WE LOOKED FOR AND COULD NOT FIND

The recovery industry is the clearest gap. No gadget, garment or protocol has been shown to beat sleep, food and time for recovery. **Stretching is the second.** It helps a specific restriction, and static stretching is oversold for injury prevention and for health outcomes generally. **And no program variable**, whether training to failure, time under tension or equipment type, reliably changes the result.

Spend on the session and on the sleep after it. If a recovery product cannot name the outcome it improves and the control it beats, it is selling the feeling of recovering.

And training is not how you lose weight. Pooled across fourteen trials, aerobic exercise on its own took off about 1.6 kg over six months, a long way from what a gym membership implies. Train for what training does, and fix the plate if weight is the target. In one cohort of 14,345 men, change in fitness predicted mortality and change in weight added nothing once fitness was in the model.

And who this literature was built on. Across 250 studies of high-dose exercise and heart outcomes, women were around 18% of participants, and just over half excluded them entirely (**Patel 2021**). Read effect sizes from that research as a sensible default for women, and see the pages from 71.

IN SHORT

Two strength days, a large easy base to about 7,000 steps, a little hard work, and two minutes of balance. Every part of that has a study under it.

Sources: exercise and weight, Thorogood 2011 (14 RCTs, aerobic only); fitness versus weight change, Lee 2011 (n=14,345); balance and falls, Sherrington 2019 (Cochrane, 108 RCTs); grip strength, Leong 2015 (PURE, 17 countries, n≈140,000).

Fitness: the four qualities

Fitness is four qualities, and the three people skip are the ones that fail first with age.

REMEMBER THIS **On a bad month, keep one short set and two minutes of balance. Aerobic fitness is the quality that comes back fastest.**

HOW THIS CONNECTS TO THE SYSTEM

- ← FED BY: Protein & fuel (link 1); Recovery, where the training sticks
- → FEEDS: Deep sleep (link 7); Light-sleep skill filing (link 5); The gut, emerging (link 10)

THE EVIDENCE, AND WHY THE ADVICE BELOW FOLLOWS

The fitness-and-mortality numbers are on page 36: 122,000 patients, no ceiling of benefit, roughly fivefold between the least and most fit (**Mandsager 2018**). Where those patients came from matters, because these were patients sent for a test rather than a random sample.

Fitness only compounds if the rest of the loop supports it. Protein supplies the material (**Morton 2018**), recovery banks it (**Saner 2020**), and the training itself raises slow-wave sleep (**Kredlow 2015**).

The advice that follows tracks that: build strength and an easy aerobic base, then let it recover, instead of training harder on an empty tank.

Why fitness is four things, not one

Ask most people whether they are fit and they will answer about cardio. That is one quality of four, and the habit of treating it as the whole picture is why the other three go untrained. Strength holds the muscle and bone you lose fastest with age. Aerobic capacity is the fitness measure with the best mortality data behind it. Power, force produced quickly, fades earlier than plain strength, which is how an older person can be strong and still unable to catch a stumble. Balance is a trained skill that most people never train. Of the four, it is the one most shown to prevent falls.

The four qualities are not equally fragile, which tells you what to protect on a bad month. Aerobic fitness falls away fastest and comes back fastest, so losing a few weeks of it is an inconvenience, and not a loss. Strength holds far longer than people fear, and muscle you have built is rebuilt quickly even after a long gap. So when the week collapses, keep the minimum from page 35: the daily walk, and one short set. That one set, of a push or a pull or a squat, takes about two minutes. Let the cardio volume go. Balance costs two minutes and needs no equipment, so it survives almost anything. The one thing not worth doing is waiting for a clear run at full sessions, because the gap undoes you, and a reduced dose does not.

Fewer than a third of adults train for strength twice a week, the level the guidelines ask for (NHIS 2020, US). Many chase a step count while skipping the lifting and the hard intervals that carry most of the gain. The signals are slow and worth watching. The same load feels easier over a few weeks, resting heart rate drifts down as you get fitter, and you hold a conversation at a pace that used to leave you breathless.

Between least fit and fittest, that gap is observational, and fitness is not proven to buy the years it accompanies. The same training appears to produce large gains in some people and almost none in others, and that spread needs care. Work that models measurement error and day-to-day variation finds far less true difference between people than the raw range suggests, and most of what looks like a non-responder turns out to be noise (**Xiao 2025**, **Bonafiglia 2021**). The floor is where nearly all the gain sits either way. Chest pain, unusual breathlessness or dizziness on exertion are reasons to stop and see a doctor instead of pushing through.

Sources: trainability and the non-responder, Xiao 2025 (78 studies) & Bonafiglia 2021 (149 studies); fitness and mortality, Mandsager 2018 (n=122,007); strength-training prevalence, NHIS 2020 (US).

Lift, go easy, go hard, and move fast

1 · Lift twice a week across the major muscles

Why it works. Muscle and bone are the tissues you lose fastest and miss most in later life. Two short sessions a week hold them and slowly build.

Warm up with five minutes of walking and a light set at about half the weight, then two to three hard sets per movement, in thirty to sixty minutes. New to lifting? Start at a weight you could lift fifteen times and stop at ten. Once the movement is solid, work in a range of six to ten reps and progress on a rule: hit ten on every set twice in a row and add a little weight, about 2.5 kg or 5 lb. Stall three sessions in a row and take an easier week, a third lighter. The 2026 ACSM overview found strength improves fastest at or above roughly 80% of a one-rep max, which is about the weight you could lift eight times, so no max test is needed. If you are inactive and have known heart, kidney or metabolic disease, get medical clearance first. Bone loss speeds up about a year before the final period, near 2.5% a year at the spine for the two years after, which is normal physiology on a schedule (Greendale 2012). Lifting in those years is worth more than the same work started a decade later; the pages from 71 set out the window.

> WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT
>
> "lifting bulks you up, and you have to train daily" **MYTH**
>
> Both keep people out of the gym. Visible size takes years of deliberate effort, and daily training mostly costs you the recovery that turns the work into strength.

MAP · LINK 1 Protein becomes muscle here.

2 · Keep most cardio easy, and go hard once or twice

Why it works. Cardiorespiratory fitness is the strongest single fitness predictor of a long life, a bigger signal than almost any blood marker. It responds to a large easy base with a little hard work on top.

Think of VO_2max as the size of your engine. Keep about 80% of your minutes easy enough to hold a conversation. You will see this sold as Zone 2, though the name is newer than the evidence. No trial has shown one named zone beating another, and the 80% is coaching convention. That is what the guidelines call moderate intensity: you can talk, but you could not comfortably sing. Easy is where the volume comes from without the fatigue. If you are gasping between words you have drifted out of it, which is the most common way people train too hard to recover and too easy to improve. Then lift the top end with one or two short interval sessions a week. One to start: after a five-minute warm-up, go hard for a minute, walk easy for two, and repeat four times. Hard means you can get out two or three words at a time. Add a repeat every two weeks, up to eight repeats.

> WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT
>
> "easy steady cardio is all you need" **HALF-TRUE**
>
> The easy base does most of the health work. On its own it leaves the top of your range untrained, and that top end is the part most closely tied to a long life.

MAP · LINK 7 Fitness feeds deep sleep, if you let it recover.

3 · Move fast on some of your reps

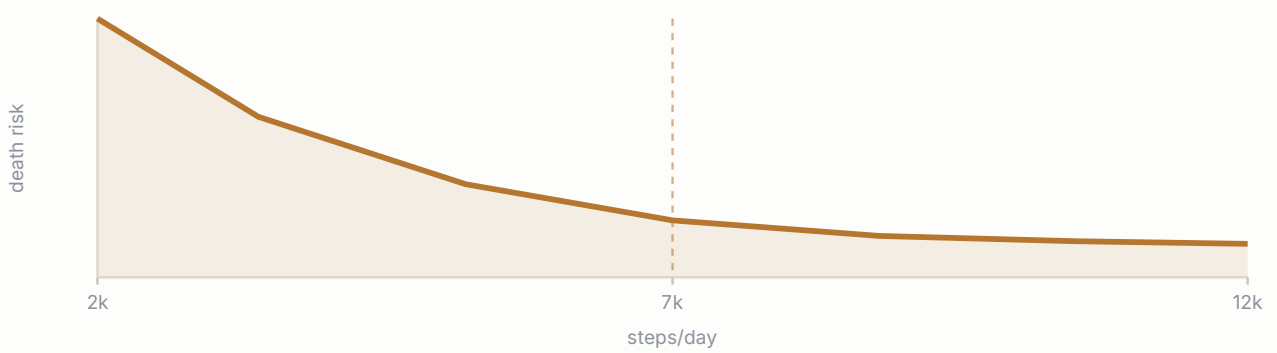
Why it works. Power is force produced quickly, and it fades earlier than plain strength, so an older person can be strong yet unable to catch a stumble.

Power needs a lighter bar: the same ACSM overview puts the range at 30 to 70% of a one-rep max, driven fast and lowered under control. Do it as separate lighter sets, not by speeding up your heavy ones. Standing up fast from a chair counts, and so do stairs at speed.

> WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT
>
> "power training is only for athletes" **MYTH**
>
> It is sold as a sports quality, and its real payoff is getting out of a chair and catching a stumble. Train it as part of the lifting rather than as a fifth thing to fit in.

Balance, and the base underneath it all

DEATH RISK VS DAILY STEPS SCHEMATIC



Risk drops steeply to about 7,000 steps, then mostly flattens. The plateau sits near 7,000 for people over 60, and nearer 8,000 to 10,000 for those under it.

4 · Stand on one leg for two minutes most days

Why it works. Across 39 trials, balance and functional training cut the rate of falls by about a quarter, and adding strength work took it to about a third on 11 more.

Two minutes a day, say two goes of thirty seconds a side, with no equipment and no extra time. Do it beside a counter you can grab, while you brush your teeth or wait for the coffee. Balance responds to practice, but the Cochrane effect comes from far larger structured programs, so treat this as maintenance. If you have fallen in the past year, ask about a falls assessment instead of practicing alone. It works best as an addition to the strength training.

WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT

"balance is something you either have or you do not" MYTH

Treating it as fixed is why it goes untrained until a fall makes the point. It responds to practice at any age, and the programs that reduce falls are built on just this.

5 · Walk about 7,000 steps, and break up long sitting

Why it works. Death risk falls steeply as daily steps rise to roughly 7,000, then mostly flattens. The base of the pyramid is the walking you barely notice.

What matters more than the exact count is not sitting still for hours. Take a short walk every half hour. Breaking up sitting with two to five minutes of light walking blunts the glucose rise compared with staying seated, and does a little better than standing (Buffey 2022). Short intense bursts in plain life, stairs two at a time or carrying the groceries briskly, count as real training.

WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT

"you need 10,000 steps a day" OVERSOLD

The figure came from a pedometer marketing campaign, not a study. The curve has mostly flattened by 7,000 for older adults, though under 60 the plateau sits nearer 8,000 to 10,000. Read it as a plateau rather than a target you are failing to hit.

Sources: strength dose, ACSM Position Stand 2026; strength and mortality, Momma 2022; VO_2max and mortality, Mandsager 2018 & Han 2022; balance and falls, Sherrington 2019; steps, Ding 2025; walking after meals, Buffey 2022.

EXERCISE ▸ RECOVERY · THE LOOP CLOSES

Recovery: where the work pays off

Training is the stimulus, and you adapt during recovery, the half that turns effort into progress.

REMEMBER THIS **Five nights at four hours cut the muscle-building signal about 18%, and no gadget has put that back.**

HOW THIS CONNECTS TO THE SYSTEM

← FED BY: Deep sleep & growth hormone (link 2); Protein (from the plate)

→ FEEDS: Adaptation: the training sticks

THE EVIDENCE, AND WHY THE ADVICE BELOW FOLLOWS

This is where the loop pays out, and the sleep studies show it starkly. Growth hormone, the body's main repair signal, is released in its biggest pulse during the deep sleep of the first cycles (**Van Cauter 2000**, measured in men).

In one controlled study, five nights of short sleep cut the muscle-building response measured directly in muscle tissue by about 18% (**Saner 2020**).

In another, a single week restricted to five hours a night lowered daytime testosterone by 10 to 15% in ten healthy young men (**Leproult 2011**). One small study, so take the direction, not the number.

No supplement or gadget has reproduced what that lost sleep took away, so the advice that follows is sleep, protein, and time.

Why the session is only half the work

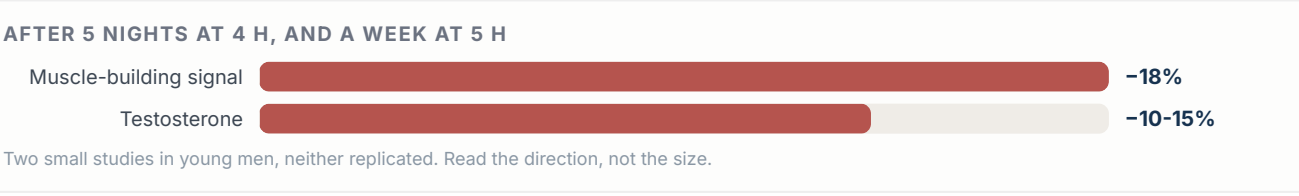
A training session does not make you fitter, and in the moment it makes you temporarily worse. It breaks tissue down and drains the tank, and it stays a withdrawal until recovery turns it into a deposit. This arrow closes the loop in this book. Follow it and you land back in the sleep chapter you started with. The repair is scheduled at night and paid for with protein.

A stressful stretch is a recovery problem before it is a training problem. Work pressure, poor sleep and a run of late nights all draw on the same account the training does. In a bad month, cut the load and keep the sessions. Drop the hard intervals and the heaviest sets. Hold the sleep and the protein, because those two do the repair. Training at full intensity on five hours a night is how people arrive at the far side flat, sore and no fitter.

Recovery is not the pricey part. Massage guns, compression boots, ice baths and the rest sell the feeling of recovering, and the evidence keeps landing on the free three: sleep, food and time. Cold plunges taken right after lifting can even blunt the strength gains you just trained for, so if you enjoy them, keep them to a separate day. The usual mistake underneath all this is treating rest as wasted time and training hard every day, at which point progress stalls and aches pile up.

You come back to the next session a little stronger, you sleep well, and soreness from familiar work clears within a day or two. The levers are the same for men and women, though around menopause protein and sleep matter more for holding muscle and bone. When a lift hurts, stop that lift, not the session: halve the weight, try a smaller range, swap the movement if it still hurts. Soreness after new work peaks a day or two later and can last three or four. Pain that is sharp, one-sided or lasting is a reason to get it looked at, and so are fatigue and performance that keep falling despite genuine rest.

Where the work becomes adaptation



1 · Protect seven to eight hours of sleep

Why it works. Short sleep undoes the training, because five nights at four hours cut muscle-building signaling about 18%; a week at five cut testosterone 10 to 15%.

Nothing on the shelf replaces it, though training offsets part of it: in the same study, three interval sessions across those five nights held the muscle-building signal at normal levels. That is one signal in one small trial and not the whole of what sleep was doing. It is the recovery lever people ignore while chasing marginal ones, and it is free.

> WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT
>
> “sleep is wasted time, grind through it” MYTH
>
> Training does not replace the sleep, because grinding through on short sleep removes the mechanism that was going to turn the session into strength, so the extra work buys less than the sleep it cost.

MAP · LINK 2 The deep-sleep-to-recovery arrow.

2 · Hit the day’s protein total, spread across meals

Why it works. Enough total protein, spread across the day, rebuilds what training breaks down. The daily total matters far more than the timing of any single serving.

About 1.6 g/kg spread over your meals covers it. Practically, that means a protein source at each meal instead of one large hit, which is easier to eat and better used.

> WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT
>
> “slam a shake inside the 30-minute window” HALF-TRUE
>
> The window is far wider than the marketing suggests. Getting the day’s total right matters more than the half-hour after training, and chasing the window while missing the total is the common error.

3 · Leave about 48 hours, and take an easier week when you need one

Why it works. Adaptation happens between sessions, and the two-day gap is training convention rather than a settled finding: the 2026 ACSM overview found periodization did not consistently change outcomes. An easier week means keeping the sessions and cutting the weight by about a third, every six to eight weeks or whenever the same weights feel heavy three sessions in a row.

The deload is not lost training, because adaptation catches up during it.

> WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT
>
> “rest days are for people who are not serious” MYTH
>
> It inverts the mechanism, because the session is a withdrawal and the rest is where it becomes a deposit, so training every day without backing off mostly stalls progress and collects aches.

Sources: cold water, Roberts 2015; sleep and recovery, Saner 2020; testosterone, Leproult 2011; deload timing, my own working rule rather than an ACSM recommendation.

PART IV · WHAT SITS ON TOP OF THE LOOP

Data and support

These sit on top of the pillars. Data tells you where you stand; support is a short earned list, and neither substitutes for the basics.

SLEEP · EAT · EXERCISE

Health data: the numbers worth tracking

A short panel turns a vague question, am I healthy, into something you can act on. Each of these flags a common, silent driver of early death years before you would feel it.

REMEMBER THIS **Most of these move with the three pillars. Lp(a) is inherited, and measured at least once.**

Number	What it flags
Blood pressure	Silent and common; a leading driver of stroke and heart attack.
Fasting glucose / HbA1c	The drift toward diabetes, flagged years early.
ApoB	Counts the particles that drive plaque; a better marker than plain cholesterol.
Lp(a)	Largely genetic, and high in roughly one person in five. Measure at least once; repeat if borderline.
Waist	Free at home; tracks the visceral fat that does the damage.
Triglyceride-glucose (TyG) index	From fasting triglycerides and fasting glucose, both on a standard panel. No continuous monitor needed.

Why these few, and not a dashboard

Most of these numbers respond to the same three pillars this book is built on. Lp(a) is the exception: it is largely inherited, you measure it at least once, and it is there to change how hard you work the others. Read the panel as a scoreboard for sleep, food and training, though the traffic runs both ways. Your glucose is partly downstream of your sleep, since a week of short nights cuts insulin sensitivity by more than 10%.

WHY THE TREND MATTERS MORE THAN THE DOT SCHEMATIC

Every reading is inside the normal range, so every year the result comes back fine, and the direction is the finding.

The common mistake is reading one result as a verdict. One high blood pressure reading on a stressful morning means very little, and one good cholesterol panel does not clear you for a decade. Watch the same number over months and you can see a drift while it is still cheap to fix. Write them down with the date, in one place, and a handful a year is enough. It is working when the trend moves the right way, rather than when one reading lands where you hoped.

WHAT WE LOOKED FOR AND COULD NOT FIND

More testing does not produce more health. A boutique longevity panel sells breadth; the value is depth over time. The standard panel carries almost all of the decision-grade information. **A continuous glucose monitor in someone without diabetes** seldom changes the plan and reliably manufactures anxiety about entirely normal post-meal rises. **A full-body scan** mostly surfaces incidental findings, which lead to more scans and not to better health.

Before paying for a test, ask what you would do differently for each possible result. If the answer is the same either way, the test will not change anything.

Risk scores were mostly built on men, women's heart risk is underdiagnosed and rises after menopause, and ApoB is worth asking for by name instead of waiting to be offered. None of these numbers is a diagnosis, or a substitute for a doctor reading them against your history. Any that comes back abnormal, or keeps drifting despite the basics, is a reason to go.

Which numbers, and how often

From the wrist	How to read it
Resting heart rate	Drifts down as you get fitter, so watch the weekly average.
HRV	Only meaningful against your own baseline, never against anyone else.
Sleep total & regularity	The two sleep numbers that track with outcomes. Consistency first.

1 · Book a basic panel once a year, an interval that is convention rather than a tested schedule, and ask for ApoB by name

Why it works. The standard blood panel carries almost all of the decision-grade information. ApoB counts the particles that drive plaque instead of estimating them.

Once a year is enough for most people, more often if something is drifting. Take blood pressure at home now and then, since it is free and it is the most common of the silent problems. Lp(a) is 70 to 90% inherited, so one measurement usually settles it. Guidelines say measure at least once, and repeat it if the result is borderline, or after menopause, or if kidney or thyroid disease develops.

> WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT
>
> "buy the boutique longevity panel" OVERSOLD
>
> It sells breadth where the value is in depth over time. The standard panel covers more of what matters, and the money is better spent repeating a short panel for several years than running a long one once.

2 · Read the trend over months

Why it works. A single reading carries far more noise than signal. The same number tracked over months shows a drift early, while it is still easy to move.

Write each result down with the date, in one place, so you are comparing like with like. A short list of numbers, read against the last time you measured them, tells you more than any dashboard refreshed every morning.

> WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT
>
> "your result is in the normal range, so you are fine" HALF-TRUE
>
> A result inside the reference range that has climbed toward the top of it for five years is a trend worth acting on. The range alone will never show you that.

3 · Use the wrist for trends, and ignore the daily score

Why it works. Three wearable readings are worth watching: resting heart rate, HRV against your own baseline, and sleep total with regularity. Only the first and third track with health outcomes.

A recovery score is a suggestion, so train if it says red but you feel good, and rest if it says green but you are run down. Use the multi-week trend to spot genuine drift and ignore the daily color.

> WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT
>
> "trust the recovery score over how you feel" OVERSOLD
>
> It is the fastest way to end up managing a wristband instead of your health. The score is one more data point against your own honest read of energy, mood and soreness, and your read wins.

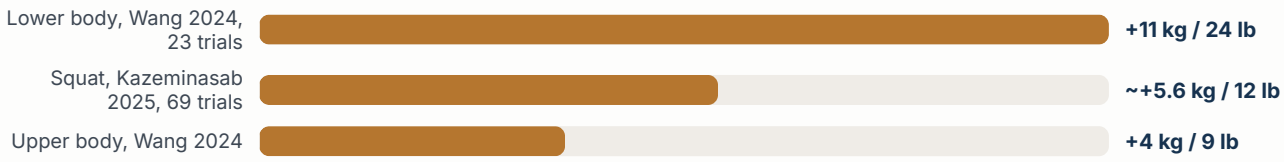
Sources: Lp(a), AHA/ATVB 2022; TyG, Lopez-Jaramillo PURE 2023; short sleep and insulin, Buxton 2010; CGM in the healthy, Liao 2026; wearable HRV, Plews 2013 (review, elite endurance athletes); overtesting harms, Welch 2011 (a book, not a study).

Health support: earn the extras

Once the three pillars stand, a thin layer of support can help. Keep it to the proven few, in a plain form with the dose on the label.

REMEMBER THIS **Change one extra at a time, give it six to eight weeks, and stop it if nothing you can observe moved.**

CREATINE PLUS TRAINING VS TRAINING ALONE: EXTRA ONE-REP-MAX



These are not two estimates of one number: Wang pooled a lower-body composite; the Kazeminasab bar is the squat specifically. The squat figure is the one from the larger and newer review.

Why this comes last, and stays short

Working in this industry myself, I graded this section hardest of all. Support comes last in the order of operations, which is why it sits here and not at the front. It trims the edges once the edges are all that is left. On top of solid pillars, a proven extra adds a small but real margin: creatine for strength, protein powder when food alone misses the target, vitamin D for a low test, and magnesium only if your diet is short of it. The same extras on top of five hours of sleep and no training add nothing worth having, so the order matters.

Most of the money goes somewhere that has nothing to do with whether the ingredient works. A proprietary blend under-doses the active ingredient and hides how much you get. Prefer the plainest proven form at the studied dose, and if a product will not tell you the amount of each ingredient, put it back on the shelf.

The usual error is buying the extras first, because they are the part you can act on today while the pillars take months. The second is never stopping, and a deficiency you correct should be re-tested so you can stop once it is fixed, instead of supplementing forever out of habit. And the limit on the best of these is real. Sauna evidence comes from Finnish men, watched and not tested, in a country where the sauna is a social institution. People who use it four times a week differ from people who use it once, in ways no adjustment fully captures. I have kept it in the table because it is the strongest thing in a weak field. If it turns out to be healthy-user bias all the way down, I would not be surprised.

WHAT WE LOOKED FOR AND COULD NOT FIND

Almost the entire frontier fails the first question. Most wellness peptides have no randomized human evidence, and several are sold gray-market, with no way to know what is in the vial. **Biological-age tests are not decision-grade:** published comparisons find different tests disagree on the same sample.

The four questions catch just this, so if a product fails the first one on proof in humans, nothing it answers afterward matters much.

Almost no one checks whether a supplement is doing anything, which is why cabinets fill up. Change one thing at a time and give it a fair run of six to eight weeks. Judge it against something you can observe: the weight on the bar, a repeat blood test, how you sleep, how you feel at four in the afternoon. If you cannot say in advance what you expect to change, that is a sign you are buying reassurance rather than an effect. If nothing moved, stop taking it, because an extra costs attention as well as money, and that attention belongs to the three things that were going to work anyway.

What is worth buying

Modality	The honest read	Grade
Sauna	~40% lower mortality in frequent Finnish men; observational, healthy-user bias.	Moderate (benefit)
Cold plunge	Blunts long-term strength and hypertrophy gains after lifting; the short-term mood lift is widely reported and I found no trial I would grade. The gasp-and-heart-rate response makes it unsafe with heart disease, an arrhythmia or uncontrolled blood pressure.	Established (harm)
Fish oil (omega-3)	Little or no effect on all-cause mortality or on cardiovascular events across 143,693 people, at high certainty. A small reduction in coronary deaths is possible, at low certainty. Eat the fatty fish; skip the capsule. Prescription omega-3 for high triglycerides is a different product and a prescriber's call.	Strong (no effect)
Peptides · wellness	Unproven, mostly gray-market, and nothing here is graded because there is nothing to grade.	
GLP-1 drugs	Licensed, and effective for weight; these start with a prescription conversation.	Established (benefit)

1 · Take 5 g of creatine monohydrate, if you lift

Why it works. Creatine is the rare supplement that clearly earns its place: cheap, safe and effective on top of training. Wang 2024 pooled 23 trials under 50: 447 men, 40 women. Kazeminasab 2025 pooled 69 trials but measured the squat, a narrower lift, and found a smaller gain, with nothing in women or over 50. The two are not measuring the same thing, so read the headline as a young-male estimate of lower-body strength. Page 72 has what the postmenopausal-specific trials found. Creatine also raises the creatinine reading without harming your kidneys, so tell whoever draws your blood.

Five grams a day of plain monohydrate, any time, no loading phase. The only entry here I would suggest to most people who train.

> WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT
>
> "you need the new, better-absorbed form" OVERSOLD
>
> Monohydrate is the form the evidence was built on, and the cheapest. Newer forms charge more for absorption claims that have not translated into results.

2 · Fill a tested gap, then re-test and stop

Why it works. Protein powder to hit a target that food alone missed, and vitamin D if a test is low. Magnesium glycinate or citrate, 200 to 400 mg an hour or two before bed, only if your diet is short of it, and not at all below an eGFR of 30. The dose, the form and the pre-bed timing are all convention rather than trial results.

Each one is a correction you stop making. Re-test after a few months and stop when the gap closes.

> WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT
>
> "a multivitamin is cheap insurance" OVERSOLD
>
> Large trials in already-fed people keep coming back null, and a multivitamin treats a gap you have not measured.

3 · Run anything new through the four-question screen

Why it works. Almost everything at the frontier fails one of four questions. Proven in humans? Dose and downside known? Basics done? Best use of the money?

Most fail on the first or the third: unproven in humans, or promising what sleep, protein or training already deliver free. The screen is in situation 7.

> WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT
>
> "get in early, before the evidence catches up" MYTH
>
> Being early only helps if the thing works, and on the frontier you pay full price to find out, with the downside unknown by definition.

Sources: omega-3, Abdelhamid Cochrane 2020 (45 RCTs, n=143,693); creatine, Wang 2024 and Kazeminasab 2025; cold water and strength gains, Roberts 2015; sauna, Laukkanen 2015; multivitamins, Sesso 2022.

PART V · WHETHER ANY OF IT LASTS

Making it stick

You now have the whole prescription. Everything from here is about whether you are still doing it in six months, which is the only question that decides whether any of it works. Three levers carry that, and two of them have been measured directly.

SLEEP · EAT · EXERCISE

Three ideas to drop

Three popular ideas about discipline and progress that do not survive the evidence, and what to put in their place.

Three claims, and what the evidence shows

“Twenty-one days to a habit”

How long until a new habit feels automatic? Lally and colleagues timed 96 volunteers adopting one, of whom 39 produced usable curves. Median was about 66 days, on a fitted range of 18 to 254 (**Lally 2010**). The study ran 84 days, so the top of that range is extrapolated. Losing one is faster than building it: take the cue away, through travel or illness or a new job, and the automaticity goes long before 66 days have passed. The three-week figure is usually traced to Maxwell Maltz’s Psycho-Cybernetics, a 1960 book about adjusting to plastic surgery, and whatever its origin it is not from habit research.

> **HOW TO USE IT**
> Expect months, and treat week four still feeling like effort as the normal course of it.

“Willpower is a muscle that runs out”

23 laboratories ran a pre-registered replication of ego depletion across 2,141 people. The effect came out indistinguishable from zero, with a confidence interval straddling it (**Hagger 2016**). Later work finds small, context-specific effects at most. If the thing exists it is small and does not replicate reliably.

> **HOW TO USE IT**
> Stop treating adherence as a character test. If something keeps failing, look for a better cue or less friction.

“One percent better every day compounds to 37 times a year”

It is not a study at all, which is the point. It is compound-interest arithmetic applied to human beings, and the sum only works if every day’s gain multiplies the last one and nothing ever plateaus, regresses or gets skipped. Real progress in sleep, strength and diet is nothing like that. Progress moves in steps, stalls for weeks at a time, and has a ceiling.

> **HOW TO USE IT**
> Judge a habit by whether it is still running in six months. The honest version of the claim is that small things repeated do more than big things abandoned.

> **IN SHORT**
> Median time to automatic was about 66 days, on a fitted range of 18 to 254. Take the cue away through travel or illness and the automaticity goes long before that, so expect months and protect the cue.

Sources: habit timeline, Lally 2010 (n=96 recruited, 39 usable curves); ego depletion replication, Hagger 2016 (23 labs, n=2,141).

Make it stick

Knowing what to do is rarely the hard part. Three levers decide whether any of it lasts, and two of them have been measured directly.

REMEMBER THIS **Decide the cue, cut the friction, keep the record visible. Both effects are small, and publication bias puts both numbers at the top of their range.**

The three levers, and the evidence behind them

Decide the cue in advance

Written out, an implementation intention reads “when [something I already do], then I will [the small version].” Gollwitzer & Sheeran pooled 94 independent tests covering more than 8,000 people. Forming one improved follow-through against the same goal with no plan, before any correction for publication bias. It reports an effect size, not a follow-through rate, so do not convert it into a percentage (**Gollwitzer & Sheeran 2006**). The pooled figure is d≈0.65, on a scale where 0.2 counts as small and 0.8 as large, though corrected it lands in the small band. Sheeran, Listrom and Gollwitzer re-pooled it in 2024 across 642 tests and found substantial publication bias. Correcting for it drops the effect to somewhere between d≈0.15 and d≈0.35, depending on which correction you use (**Sheeran 2024**). It is still worth two minutes with a pen, though it will not do the work for you. The effect is largest for one-off, low-friction actions and smaller for the sustained changes this book is about. It worked best on things people already wanted to do and kept failing to start.

HOW TO USE IT

Take the one change you keep postponing and name the exact moment it happens. “I will exercise more” is a goal. “When I finish lunch on Monday, I walk for fifteen minutes” is a plan.

Engineer the cue, and cut the friction

Wood and Rünger’s review of the habit research makes the case that habits are cue-driven and context-dependent. What carries a behavior over months is a stable cue in a stable setting, with as little friction as possible (**Wood & Rünger 2016**). A later randomized trial in 192 people tested the fashionable refinement of this. It pitted anchoring a new habit to an existing routine against a plain time-of-day cue, and found no advantage for the clever version (**Keller 2021**), so any reliable cue will do.

HOW TO USE IT

Put the gear where you’ll trip over it, and keep the food you want at eye level and the food you don’t out of the house.

Track it, somewhere you can see it

Harkin and colleagues pooled 138 experiments covering close to 20,000 people; prompting people to monitor progress measurably improved how often they reached the goal, an effect around d≈0.40, though this literature carries the usual publication-bias risk, so read it as the top of a range (**Harkin 2016**). Recording it outside your head worked better than tracking it internally, and paper against phone was not tested.

HOW TO USE IT

One line a day on paper, or a mark on a wall calendar, is enough, and it works best somewhere you walk past anyway.

Sources: Gollwitzer & Sheeran 2006 with Sheeran 2024; Wood & Rünger 2016; Keller 2021; Harkin 2016.

Cue, friction, record

1 · Write one if-then sentence for the change you keep postponing

Why it works. Across 94 tests and more than 8,000 people, naming the cue in advance improved follow-through. A small gain over the same goal with no plan once publication bias is corrected, and smaller than that for sustained change.

One change, one sentence, in the form “when [cue], then I will [action].” Keep the action embarrassingly small, and write the next one only when the first has stopped needing a decision.

WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT

“set a big goal and commit to it” HALF-TRUE

A goal tells you where to arrive and nothing about when to move, and almost all the evidence sits on the second half.

2 · Put the cue and the gear in your way

Why it works. Habits are cue-driven and context-dependent, so what sustains one over months is a stable cue with low friction, which carries the behavior without a decision each time.

Change the environment before you change yourself: shoes by the door, weights in the living room, cookies not in the house. Pick a cue you will meet reliably, however ordinary it is.

WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT

“stack the new habit onto an existing routine” OVERSOLD

It is presented as uniquely powerful, but when it was tested head to head against a plain time-of-day cue in 192 people it was not better.

3 · Keep a visible one-line record

Why it works. Across 138 experiments and nearly 20,000 people, prompting progress monitoring improved goal attainment, and recording it worked better than tracking it in your head.

A wall calendar, a notebook by the coffee maker, one mark a day, somewhere you will see it without choosing to look.

WHAT YOU ARE USUALLY TOLD, AND WHY IT FALLS SHORT

“track everything, in detail, in an app” OVERSOLD

The benefit came from the prompt and the visibility, and elaborate tracking adds friction to something you wanted easy.

AND TWO NUDGES, HONESTLY SIZED

Two smaller nudges are worth knowing, and the first is that starts spike after a landmark date, a Monday or the first of the month (Dai 2014). The effect is small and has not held up everywhere it has been tested. Pairing something you want with something you should do raised gym attendance in a controlled study (Milkman 2014). Both are real, and both are modest and short-lived, so use them to get started and do not count on more.

Sources: Gollwitzer & Sheeran 2006 with Sheeran 2024; Wood & Rünger 2016 with Keller 2021; Harkin 2016; Milkman 2014 & Dai 2014.

PART VI · THE LOOP UNDER STRESS

The situations

The health system is the loop running smoothly. These thirteen are the loop under real-world stress: a crunch week, a red-eye, a 2am mind. Each gets the story, then sleep, food and training aimed at that exact moment.

SLEEP · EAT · EXERCISE

THE SITUATIONS · 1

The 2am racing mind

THE SITUATION

Maya, who runs product at a fifty-person startup. By day she is decisive and quick, but at 2am her body is exhausted in the dark and her head will not stop. The hire she hasn't made, the message she reread, the quarter that ends in nine days.

She has tried everything the internet sells. The apps, the magnesium, the occasional nightcap, and a bedtime routine that has grown longer and stricter every week for a month. None of it touches the 2am wake-up, and some of it leaves the mornings worse than they were.

What helps is smaller and slightly counterintuitive. Two minutes with a pen before bed takes the loop out of her working memory, which is where it has been circling. When she is awake and not sleeping, getting out of bed instead of lying in it stops the bed from becoming a place she associates with effort. That association is what turns one bad night into a pattern, and breaking it is the part that helps most.

When it is more than a bad stretch. One rough night self-corrects, but three or more nights a week for months is conditioned arousal, and the fix is CBT-I rather than a nightly pill.

What to do when you wake at 2am

IF YOU DO ONE THING THIS WEEK

When I brush my teeth, then I spend two minutes writing tomorrow's list onto a pad by the sink.

SLEEP

Two minutes with pen and paper to offload the loop, then if still awake after ~20 minutes, get up, sit under dim light with a dull book, and return only when sleepy. Keep the phone across the room.

EAT

Leave about nine hours between a mug of coffee and bed. A big pre-workout dose, around 200 mg, needs nearer thirteen. Skip the nightcap, because it feels like it helps you wind down and then wakes you at 2am.

EXERCISE

A daytime walk or session burns off the stress chemistry, so there's less adrenaline left to replay the day when the lights go out.

NOW WRITE YOUR OWN, IN YOUR WORDS

WHEN

_____

the cue you already meet every day

THEN I WILL

_____

the smallest version of it

What good looks like. You fall back asleep within twenty minutes or so, and over a couple of weeks the 2am wake-ups get rarer.

The trap. Counting the hours left before the alarm. That arithmetic is what keeps you awake.

Sources: CBT-I first-line, Qaseem 2016 (ACP guideline); stimulus control is a CBT-I component, not a separate trial.

THE SITUATIONS · 2

The crunch week

THE SITUATION

Devan, mid-raise and short on sleep. A launch, a raise, and a deadline have collided, and sleep is the first thing he sacrifices. He cannot fix his sleep this week; the calendar simply will not allow it.

He has been here before and knows the pattern: by Wednesday the edge is gone. By Friday he is snapping at people, living on coffee, and reading the same paragraph three times before it goes in.

The move is to stop trying to win the week and pick a floor to defend instead. A minimum number of hours he will not go below, and a wake time he holds regardless of when he got in. A steady wake time keeps the clock together even on short nights, so he is back to himself within days. He is managing a debt deliberately, with his eyes open.

When the week stops ending. If every week is a crunch week, that is the problem to solve.

What to do in a week with no slack

IF YOU DO ONE THING THIS WEEK

When my alarm goes off, then I keep the same wake time no matter how late I slept.

SLEEP

Pick a floor, say six hours, and hold the same wake time no matter how late you landed. Front-load the hardest thinking into the morning when the debt bites least.

EAT

Keep alcohol out; it steals the little sleep you're getting. Protein and a vegetable at each meal to hold energy steady instead of riding sugar.

EXERCISE

One short daily walk to burn off stress. Park the long sessions until the week clears, since a missed workout costs you less than a lost night.

NOW WRITE YOUR OWN, IN YOUR WORDS

WHEN

_____

the cue you already meet every day

THEN I WILL

_____

the smallest version of it

What good looks like. You hold your wake time, keep functioning through the week, and bounce back within a few days once it ends.

The trap. Letting the whole schedule float because the week is exceptional. The body clock unravels with it, and rebuilding that takes days after the deadline has passed.

Sources: Regularity, Windred 2024 (n=60,977).

THE SITUATIONS · 3

The 3pm crash

THE SITUATION

Priya, desk-bound with a mid-afternoon slump. Her energy is gone by mid-afternoon, so she reaches for coffee and something sugary, rides the spike and crashes again an hour later.

There is no spare hour for the gym, and the advice to just work out lands as useless when she is this flat. By the time she gets home she is too tired to cook, and dinner is whatever is fastest.

The next morning she is a little more tired than the one before, the coffee creeps earlier, and the same slump sets up again. It is a loop, and it closes a little tighter each day.

The slump is two things stacked: a glucose swing from lunch sitting on top of a sleep debt from the night before, both of which respond to something much smaller than a gym block. Walking after a meal blunts the rise, and breaking up long sitting does more than one heroic session. Building lunch on protein and plants removes the crash instead of masking it, and none of it needs an hour she does not have.

When the slump is not the schedule. Constant fatigue despite good sleep and food can be iron deficiency, thyroid, or apnea, so get it tested.

What to do about the afternoon

IF YOU DO ONE THING THIS WEEK

When I finish lunch, then I take a five-minute walk before I sit back down.

SLEEP

The crash is partly last night's short sleep. Protect the wake time so the debt doesn't deepen, and keep the big coffee to the morning so it doesn't follow you to bed.

EAT

Build lunch on protein, plants and unrefined carbs, since a sugar hit only sets up the next slump.

EXERCISE

A two to five minute walk after lunch, and stand up for a short walk every half hour. Snack on movement: stairs, a set of sit-to-stands.

NOW WRITE YOUR OWN, IN YOUR WORDS

WHEN

_____

the cue you already meet every day

THEN I WILL

_____

the smallest version of it

What good looks like. The slump softens within a week or two, and you stop needing the afternoon coffee to function.

The trap. Fixing the slump with an afternoon coffee. It follows you to bed, so tomorrow starts worse than today did.

Sources: Walking breaks and glucose, Buffey 2022; caffeine timing, Gardiner 2023.

THE SITUATIONS · 4

The reset

THE SITUATION

Tom, starting over after a rough year. Everything has slipped over a rough year, and he is starting again from zero: sleep, food, training, all of it at once.

The temptation is the Monday overhaul: a new schedule, a new diet and the gym five days a week, all beginning at once on a date that feels like a line in the sand.

It is the same all-or-nothing plan he has launched and abandoned three times before, always by about Thursday. The problem was never ambition, and telling himself to want it more has not worked any of the three times.

Habits fire from cues, so pick one keystone and run it until it stops requiring a decision, then add the next. It feels slower, but it is not, because the alternative is the one that hardly ever finishes. Give it months, and treat week four still feeling like effort as normal.

When starting over keeps failing. If starting feels impossible for weeks, and mood and interest are low with it, that's worth a professional conversation.

What to do when you are starting again

IF YOU DO ONE THING THIS WEEK

When my alarm goes off, then I get up at the same time and step outside for ten minutes of light.

SLEEP

Start with one keystone, almost always a fixed wake time plus ten minutes of morning light. Let it run until automatic before adding anything.

EAT

Once sleep holds, add one food default: a palm of protein and a vegetable at each meal, with nothing else to count yet.

EXERCISE

Then stack movement: a daily walk first, then two short strength sets a week once the walk is automatic.

NOW WRITE YOUR OWN, IN YOUR WORDS

WHEN

_____

the cue you already meet every day

THEN I WILL

_____

the smallest version of it

What good looks like. Week four still takes effort, which is the normal course of it. The signal to add the second habit is the first one running without a decision.

The trap. Sizing the plan to match how bad the year was. Six new habits compete for the same attention and go down together in the first hard week.

Sources: Habit timeline, Lally 2010 (n=39 curves); willpower, Hagger 2016 (23 labs); if-then plans, Gollwitzer & Sheeran 2006; cues, Keller 2021.

THE SITUATIONS · 5

Red-eyes and time zones

THE SITUATION

Aisha, a consultant always in the air. She crosses time zones most weeks, east on the way out and west on the way back, on overnight flights with a glass of wine and food served at the wrong hour. Her body is perpetually on the wrong clock, and by the time she adjusts she is flying home again.

Correctly timed light moves the body clock. Morning light at the destination pulls it earlier, which is what she needs flying east, and the reverse works flying west. A small dose of melatonin at the destination bedtime also shifts it, in a direction that depends on when you take it, so treat it as a clock cue and not a sedative. The aim is to be on local time by tomorrow.

When it is not the time zone. What wears you down is chronic misalignment, week after week. If your schedule never settles, treat it like shift work.

What to do when the clock has moved

IF YOU DO ONE THING THIS WEEK

When I board, then I set my watch to the destination and eat on that schedule.

SLEEP

Going east, get morning light at the destination and avoid bright light late; going west, do the reverse. Guard one consolidated sleep block.

EAT

Meal timing is a clock cue in its own right, so the watch trick above does real work. Skip the airline breakfast served at your 2am and eat at the destination's next real mealtime. Keep the protein and the plants where they normally sit, because the timing is what does the work here. Alcohol on the flight costs you the back half of the first night, the night you can least afford. Melatonin shifts the clock too, on its own schedule rather than light's. Flying east, 0.5 to 5 mg at the destination bedtime (Herxheimer 2002). Flying west it pulls the wrong way, so leave it and use evening light instead. It is prescription-only in some countries, at the wrong hour it delays adaptation, and it can leave you drowsy, so do not drive until you know how it affects you. The pages from 68 say who should not take it.

EXERCISE

A daylight walk at the right end of the day anchors the clock faster than sitting inside under artificial light. On the flight, get up and move every couple of hours. If a calf swells or aches, or you get breathless in the days after, that is on page 67 and it is a same-day question.

NOW WRITE YOUR OWN, IN YOUR WORDS

WHEN

_____

the cue you already meet every day

THEN I WILL

_____

the smallest version of it

What good looks like. You adjust to the new time zone in a day or two instead of most of the trip.

The trap. Chasing bright light at the wrong end of the day, which shifts the clock the wrong way.

Sources: Jet lag, Herxheimer & Petrie 2002; melatonin dosing, Circadin SmPC. Light timing is phase-shift work, not a trial.

THE SITUATIONS · 6

The dinner circuit

THE SITUATION

Marco, on the dinner-and-conference circuit. Weeks of travel, late client dinners, wine, and no routine. Almost every meal is someone else's choice, and every night ends later than he meant it to.

Writing the whole stretch off feels easier than fighting it, so he does. He pays for it afterward, and each time it takes a few more days to feel normal once he is home.

Moderation at dinner is not something he will sustain, so the approach is two anchors that hold while everything else moves: a fixed wake time with morning light whatever last night looked like, and protein and a vegetable first on every plate he controls. Drinking less and earlier protects the back half of the night, where the damage from a late glass lands.

When it is every week, not this week. If the circuit is your whole life, the annual check and a metabolic marker matter more.

What to do when someone else picks the menu

IF YOU DO ONE THING THIS WEEK

When I wake, then I keep the same time and get morning light, whatever last night looked like.

SLEEP

Hold a fixed wake time and morning light whatever last night looked like. That one anchor keeps the clock from unraveling.

EAT

Protein and plants first at every meal you control. Drink less and earlier; the last glass costs you the back half of the night.

EXERCISE

Walk after the big dinners, and keep a daily minimum so the habit is still alive when you get home.

NOW WRITE YOUR OWN, IN YOUR WORDS

WHEN

_____

the cue you already meet every day

THEN I WILL

_____

the smallest version of it

What good looks like. You come home tired but not wrecked, and slot back into your routine within a day.

The trap. Trying to be perfect at every dinner, then giving up when you can't. The wake time slides with everything else, and that is what turns four days away into a week of recovery at home.

Sources: Regularity, Windred 2024; alcohol and REM, Gardiner 2024 (meta, 27 studies).

Should I take X?

THE SITUATION

Sam, tempted by the latest peptide. A friend swears by it, and the influencer says it changed their life. The bottle is one click away, and the promise is just the edge Sam feels they are missing.

It is the fifth such product this year. The last four are in a drawer, half-used, each bought on the same rush of a testimonial and a discount code that expired in an hour.

The question is not whether it might help someone, somewhere. It is whether there is any real reason to believe it will help Sam, before the money leaves.

The discipline that works is the same one the rest of this book runs on, applied before you buy. Four questions, in order: is it proven in humans, are the dose and the downside known, are your basics already done, and is this the best use of the money? Most things fail on the first or the third, and the point is to find the few worth saying yes to, with your eyes open about which of them is an experiment.

When a test, not a label, says you are short. If a specific test flags a specific deficiency, that's a targeted, testable case. Correct the gap, re-test, and stop when it is closed instead of supplementing forever out of habit.

What to do before you buy anything

IF YOU DO ONE THING THIS WEEK

When I want to buy something new, then I run it through the four questions before I check out.

SLEEP

Have you fixed sleep first? Most "energy" and "recovery" products are selling you what a full night gives for free.

EAT

Have you hit protein and fiber and cut ultra-processed food? That is the change most of these products claim to stand in for.

EXERCISE

Have you trained and recovered consistently for months? That's the adaptation the supplement claims to shortcut.

NOW WRITE YOUR OWN, IN YOUR WORDS

WHEN

_____

the cue you already meet every day

THEN I WILL

_____

the smallest version of it

What good looks like. You spend on the few things that pass the screen, and feel no worse for skipping the rest.

The trap. Buying first and testing it on yourself, instead of running the four questions before the money leaves.

Sources: The four questions are mine rather than a finding, and the studies behind each product named here are in the source list.

THE SITUATIONS · 8

Burnout

THE SITUATION

Lena, running on empty. She is exhausted in a way sleep alone does not fix, and she cannot tell whether it is burnout or just a bad month.

Her instinct is the one that got her here, which is to optimize harder. Another supplement, a stricter routine, one more system to manage the overwhelm.

She is good at systems, which is precisely the trap. Every previous problem in her life has yielded to more effort and better organization, so it is hard to believe that this one will not.

Treat a high-stress stretch the way a coach treats a heavy training block: when load is high you protect recovery and cut volume, and you do not add sessions. Sleep and daily movement are the two free levers here, and sleep carries the most evidence. They are what carry you through it, though reducing the load is what touches the cause.

When it is past tiredness. Persistent exhaustion, low mood and loss of interest over weeks are questions for a doctor or therapist, not a forum.

What to do when the tank is empty

IF YOU DO ONE THING THIS WEEK

When my week is overloaded, then I protect sleep and a daily walk first, and cut one commitment.

SLEEP

Protect sleep first and hardest: of the three pillars it is the one that makes the others work, and the one most often at the bottom of the problem.

EAT

Keep the plate simple, no cooking projects, and do not add another supplement to a full plate.

EXERCISE

Move gently and daily for mood; do not add hard training to an already overloaded system.

NOW WRITE YOUR OWN, IN YOUR WORDS

WHEN

_____

the cue you already meet every day

THEN I WILL

_____

the smallest version of it

What good looks like. Protecting sleep and cutting one commitment lifts the fog within a couple of weeks.

The trap. Absorbing it well enough that nobody notices. A problem that is still being delivered on time does not get escalated, so the load stays where it was.

Sources: The sleep and movement levers are applied from the sleep and exercise chapters; the load framing is a training principle, not a trial result. Nothing on this page rests on a burnout trial.

THE SITUATIONS · 9

The annual check

THE SITUATION

Ben, due for his annual check. He is unsure which of the tests on offer are worth having. The clinic upsells a full-body scan and a glucose monitor; a podcast told him to demand ten more markers.

He does not want a dashboard of numbers he cannot interpret, half of them flagging things that were never a problem and sending him for yet more scans.

He wants the few numbers that would change a decision, and the confidence to ignore the rest.

A short panel, read as a trend over years, does the work instead. Blood pressure, fasting glucose or HbA1c, ApoB, Lp(a) at least once, and his waist. Each flags something common and silent, years before he would feel it. All but Lp(a) respond to the same three pillars; Lp(a) is inherited, measured at least once, and there to tell him how hard to work the rest. The most useful thing he can do at the appointment is write the results down with the date, so next year he can read a direction.

When a number comes back wrong. A markedly high blood pressure, glucose, or ApoB is a doctor's appointment, not a lifestyle experiment.

What to do before the appointment

IF YOU DO ONE THING THIS WEEK

When I book my check, then I ask for ApoB, a metabolic marker, and Lp(a) once.

SLEEP

Bring your wrist trends: sleep total, regularity, and resting heart rate. They show the base the rest sits on.

EAT

Ask for a metabolic marker and ApoB. Food moves these more than most pills do, so they tell you whether the eating is working.

EXERCISE

A VO_2max estimate or a simple fitness proxy is the number worth raising. Note it and watch the trend.

NOW WRITE YOUR OWN, IN YOUR WORDS

WHEN

_____

the cue you already meet every day

THEN I WILL

_____

the smallest version of it

What good looks like. You leave with a handful of numbers you understand and a plan to move the ones that matter.

The trap. Buying the scan because more data feels safer. One incidental finding starts a chain that is hard to stop: another scan, a specialist, and months of low-level dread in between.

Sources: CGM in normoglycemia, Liao 2026; Lp(a), AHA/ATVB 2022; overtesting, Welch & Schwartz 2011 (background reading).

THE SITUATIONS · 10

Shift work and odd hours

THE SITUATION

Grace, a nurse working nights. Her schedule fights her biology, and the usual advice assumes a nine-to-five she does not have.

She cannot simply keep a fixed bedtime, and every article she reads opens by telling her to. The temptation is to decide there is nothing to be done and just cope: coffee in, blackout curtains, hope for the best.

Nights make resetting her clock impossible, so the goal is one consolidated sleep block at the same time each working day. Control light hard in both directions, and defend every basic more tightly than a day worker would. Her margin is thinner, and the same slip costs her more.

When the shifts are doing damage. Persistent insomnia or sleepiness on shift work has a name, shift work disorder, and it is treatable, so take it to a doctor. Long-term night work carries measured risks; if it is chronic, plan an exit or mitigation with clear eyes.

What to do on a schedule you did not choose

IF YOU DO ONE THING THIS WEEK

When I finish a night shift, then I wear dark glasses home and keep the bedroom fully dark.

SLEEP

Anchor sleep in one consolidated block, and keep the bedroom dark, cool and quiet by day, with dark glasses on the commute home. If you are fighting to stay awake on the drive, do not drive: nap twenty minutes first, or get someone else to take the wheel. A nap before or during the shift is the standard protection against that moment.

EAT

Protect meal timing where you can, and avoid a heavy meal in the biological night when the body handles it worst.

EXERCISE

Use bright light and some movement early in the shift to hold alertness, then wind down before the daytime sleep block.

NOW WRITE YOUR OWN, IN YOUR WORDS

WHEN

_____

the cue you already meet every day

THEN I WILL

_____

the smallest version of it

What good looks like. Your sleep block lands at roughly the same time on each working day, and your days off cost you one night to reset.

The trap. Letting the shift pattern become a reason to drop food and movement as well. Your margin is thinner than a day worker's, so the basics matter more here.

Sources: Sleep restriction and insulin sensitivity, Buxton 2010 (n=20 men); circadian misalignment, Scheer 2009. Napping and light timing are convention, not trial results.

The clock is not yours

THE SITUATION

Rachel, whose mornings belong to a seven-year-old. She is woken most days at ten after six, and not by an alarm. School drop-off, work, pick-up, dinner, bath, bedtime, and the first quiet hour of her day starts at nine at night.

Every sleep book she has opened tells her to hold a fixed wake time and get seven to nine hours, and she would love to. The wake time is set by a child, and the only hours available to claw back are the ones after everyone else is down.

So she goes to bed late, because the evening is the only part of the day that belongs to her, and then she is woken at ten after six anyway. The arithmetic never works and she has stopped expecting it to.

A wake time you did not choose still does the work, because the clock does not know whether you set the alarm or a child did. Hers is already steadier than most people manage.

When the arrangement is the problem. If you are getting seven hours and still exhausted for months, stop assuming it is the children. Thyroid, iron and sleep apnea all present exactly like this and all are treatable.

What to do when someone else sets your alarm

IF YOU DO ONE THING THIS WEEK

When the last child is down, then I start my hour, twenty minutes earlier than I used to.

SLEEP

Move bedtime twenty minutes earlier, no more than that, and keep the evening hour by starting it twenty minutes sooner. Bank an early night when you can, since sleeping in does the opposite.

EAT

Eat with them or right after. A late heavy meal is one of the few things that makes a short night worse.

EXERCISE

Walk the drop-off where you can. Ten minutes of movement and daylight in one, on a trip you are already making.

NOW WRITE YOUR OWN, IN YOUR WORDS

WHEN

_____

the cue you already meet every day

THEN I WILL

_____

the smallest version of it

What good looks like. You are getting twenty more minutes most nights, and the late-afternoon fraying eases.

The trap. Trying to reclaim the sleep at the wrong end. Sleeping in on the weekend costs you the clock you already have for free.

Sources: Regularity, Windred 2024. The rest is applied from the sleep chapter, not separately trialed.

Staying independent

THE SITUATION

Ken, sixty-eight and determined to stay in his own house. He is well: no diagnosis anyone is worried about, a walk most days, and a doctor who says keep doing what you are doing.

What he has noticed is smaller: getting out of a low chair takes a hand on the arm now. He held the rail on the stairs last winter and has not stopped since. A jar he could have opened five years ago went to his daughter.

This is the strongest evidence in the book. In a Cochrane review of 108 randomized trials, balance and functional training, across 39 trials and 7,920 people, cut the rate of falls by about a quarter. Adding resistance took it to about a third, on 11 trials rated moderate-certainty. That is a hard outcome from randomized trials, and lifestyle evidence rarely gets stronger.

When it is already happening. Any fall, or a near miss you did not mention to anyone, is worth telling your doctor about. Ask about a falls assessment. It is a real service and most people do not know it exists.

What to do to stay on your feet

IF YOU DO ONE THING THIS WEEK

When I wait for the coffee to brew, then I stand on one leg beside the counter until it is done.

SLEEP

Sleep gets shallower and more broken with age, and that is normal. Hold the wake time, get morning light, and do not chase eight hours with a pill.

EAT

Protein matters more now than it did at forty. Treat 1.0 to 1.2 g/kg as a floor rather than a target, and aim nearer 1.2 to 1.6 if you are lifting, spread across meals, since the aging body needs a bigger dose per meal for the same response.

EXERCISE

Three days a week rather than two: for over-65s the guidelines ask for three or more, combining strength, balance and moving around. Two strength sessions with sit-to-stands and a carry, plus a third day of balance and a walk. The extra day is the one aimed at falls. Balance practice beside a counter, and something quick for power like standing up fast from a chair.

NOW WRITE YOUR OWN, IN YOUR WORDS

WHEN

_____

the cue you already meet every day

THEN I WILL

_____

the smallest version of it

What good looks like. You get out of a low chair without hands, carry the groceries in one trip, and stop thinking about stairs.

The trap. Doing the strength work and skipping the balance day. The quarter reduction in fall rate came from balance and functional training across 39 trials, and resistance was what added on top of it.

Sources: Falls, Sherrington 2019; power, Balachandran 2022; load, ACSM 2026; the over-65 target, WHO 2020.

The new-parent crunch

THE SITUATION

Nadia and Omar, new parents. Broken nights, no time, and two bodies running on empty. The baby wakes four times before dawn and the day starts anyway.

The advice to optimize your recovery lands as a bad joke. There is no routine to optimize; the baby sets the schedule, and any plan they make is broken by 3am.

The goal here is triage, and saying that plainly lowers the bar on purpose. Split the nights so that one person is always somewhat rested. Take any sleep on offer without negotiating about fairness. Get outside for ten minutes of daylight, which does more for mood and the clock than anything they could buy. The system is built to run on a floor for a while, and the floor is set out below.

When it is more than exhaustion. Postpartum mood changes are real and affect both parents. Persistent low mood or anxiety is a doctor's question. Confusion, agitation or unusual thoughts in the weeks after birth are a same-day call: postpartum psychosis is rare, treatable, and an emergency.

What to do until it eases

IF YOU DO ONE THING THIS WEEK

When my partner is on baby duty, then I take any sleep on offer, guilt-free.

SLEEP

Take any sleep on offer and split nights with a partner. Defend a floor; do not try to perfect a routine the baby controls.

EAT

Protein and plants without cooking projects. Keep easy, good-enough food within reach so the plate doesn't collapse to snacks.

EXERCISE

A short outdoor walk with the stroller, for light and mood rather than training. Movement is for the head as much as the body here.

NOW WRITE YOUR OWN, IN YOUR WORDS

WHEN

_____

the cue you already meet every day

THEN I WILL

_____

the smallest version of it

What good looks like. The split is settled before the night starts, so nobody is negotiating at three in the morning, and one of you is somewhat rested.

The trap. Holding on to a routine the baby controls. A plan you cannot keep adds guilt to the exhaustion, which makes the stretch harder.

Sources: Split-night advice is practical rather than trial-tested; the sleep-debt case is the sleep chapter's.

PART VII · WHEN IT DOES NOT FIT

The back matter

Everything from here is reference: the pages you need on the day something does not fit. They cover which problems belong in front of a doctor, where a medicine or a condition changes the advice, and where men and women differ. Then how much of the variation is you, and what was left out and why. The last two are what any term means, and every source with its grade.

Stop, and see someone

Most readers will have none of these. Scan the list once, then get on with it. Each one is a reason to book an appointment, and the first group will not wait. The thresholds come from NICE (NG136, NG133, NG28), ESC/EAS 2019, the DVLA and the AASM.

SAME DAY, OR SOONER

Thoughts of harming yourself, or that life is not worth living	Do not wait. Call your emergency number or go to an emergency department, and tell someone. Crisis lines, any hour: US 988, UK 116 123, Singapore 1767, elsewhere findahelpline.com.
Chest pain, unusual breathlessness or dizziness on exertion	Stop and get assessed the same day. Do not push through it.
Calf pain or swelling, or new breathlessness, after a long flight, surgery or illness	Get assessed the same day. A clot in the leg or lung is treatable, time-critical, and easily mistaken for a strain.
Blood pressure 180/120 or higher on repeat	Same day if you also have confusion, chest pain, breathlessness or visual change. With no symptoms it is still urgent: ask to be seen within a week, with checks for organ damage.
Thirst, passing a lot of urine, blurred vision and weight loss together	Get a same-day glucose and ketone check. That combination can be new diabetes.
Pregnant, and 140/90 or above after 20 weeks	Call your midwife, obstetrician or maternity unit the same day. This page's other numbers are read differently in pregnancy, and gestational diabetes is picked up well below the glucose figures elsewhere on this page.
Falling asleep, or fighting to stay awake, at the wheel	Stop driving today. With apnea you must not drive while sleepiness is uncontrolled. Rules differ by country and, in the US, by state, so ask whether you must notify. Commercial licenses are stricter.
In the weeks after birth: confusion, agitation, not feeling like yourself, or unusual thoughts	Get seen today, through the emergency department or a crisis team. Postpartum psychosis is rare, treatable, and an emergency.

BOOK AN APPOINTMENT

Snoring, gasping, or waking unrefreshed however long you sleep	Ask about a sleep apnea assessment. The most commonly missed condition in the book, and the sleep chapter assumes your airway works.
Sleep attacks, sleep paralysis, or knees buckling when you laugh	Ask about narcolepsy. Rare, treatable, often missed for years.
An urge to move your legs at night, worse at rest, eased by moving	Ask about restless legs. Common, treatable, often mistaken for insomnia. Ask for ferritin too: the treatment threshold here is far higher than for anemia, so a normal-looking result may not be.
Trouble sleeping most nights, past three months	Ask for CBT-I by name, and ask what is driving it. Insomnia this persistent usually has a cause worth treating alongside it.
Physically acting out your dreams	This needs a neurological assessment.
Blood in your stool, persistent pain, unexplained weight loss or a lasting change in bowel habits	A doctor sees this one. Neither a probiotic nor more fiber will touch it.
Low mood, anxiety or loss of interest running for weeks	A doctor or therapist. Clinical ground, and nothing to do with discipline.
Drenching night sweats with fever or weight loss	Needs investigating. Not a menopause question until someone has checked.
Exhausted after a month of good sleep, food and training	Worth blood work. Iron, thyroid, and a basic panel.
A home blood pressure average repeatedly at or above 135/85, fasting glucose over 7 mmol/L (126 mg/dL), HbA1c over 48 mmol/mol (6.5%), or ApoB over 1.0 g/L (100 mg/dL)	Book an appointment before you change anything.
Over 45, and sleep, mood, memory and periods all changed in the same year	Ask about perimenopause by name. After 45 it is diagnosed on symptoms rather than a test, and often mistaken for burnout.
Tired, and you menstruate	Ask for ferritin and a complete blood count. Low iron is a finding, not a diagnosis.

Where this does not apply to you unchanged

Twenty-four cases where something here needs adjusting before you use it, with medicines first and then conditions and life stages. The rest of the book still applies. Check the specifics, because intervals differ by drug, and a pharmacist will usually answer any of this quickly, and in many places free.

Medicines you may take

You take levothyroxine	Take it 30 to 60 minutes before breakfast, with water, and keep calcium and iron four hours away. Two things raise the dose you need: pregnancy, usually by 25% to 40% and early on, and starting estrogen as the combined pill or HRT. Ask for a TSH check in either case rather than adjusting it yourself.
You take a bisphosphonate	Order matters more than the gap. Tablet first, with plain water, and stay upright. Then wait 30 minutes, 60 for ibandronate, before magnesium or anything else. Not in pregnancy: the product information rules it out, and the drug stays in bone for years after the last dose.
You take a quinolone or tetracycline antibiotic	Magnesium, calcium, iron and zinc block these. Take the antibiotic at least two hours before your magnesium, or six hours after it. Intervals differ by drug. Tetracyclines are ruled out in pregnancy and while breastfeeding, so say if either applies.
You already take something to sleep	Do not just stop. Zolpidem, eszopiclone, zopiclone and the benzodiazepines are labeled for short-term use, typically two to four weeks at most depending on the drug and the country, and past that most people get far less effect than they think. Stopping suddenly makes sleep worse for a week or two, which is the effect of stopping and not proof you needed it. With a benzodiazepine it can be unsafe. Ask your prescriber for a taper and get CBT-I started first. Sedating antihistamines count here too: diphenhydramine and doxylamine, sold over the counter in many countries, and promethazine, which is prescription-only in some.
You take warfarin	Do not suddenly increase green vegetables. Keep vitamin K steady and tell your clinic before changing anything. No melatonin unless they agree and monitor your INR.
You take a statin	Muscle pain or weakness with darker urine is not ordinary training soreness. Stop the statin and get seen the same day. Ordinary aches without dark urine are different: keep taking it and ask for a creatine kinase test rather than stopping on your own. If you also take creatine, say so: it raises creatinine, not creatine kinase, but the two get confused on a report.
You take omeprazole, lansoprazole or another stomach-acid pill	Long-term use lowers magnesium and makes iron and B12 harder to absorb, so if you are tired on one of these, ask for those three to be checked rather than guessing. It also reduces levothyroxine absorption, and spacing the doses does not fix that, so ask for a TSH check instead.
You take metformin	Ask about vitamin B12. Low B12 is a recognized effect of long-term use, and the tiredness looks just like the tiredness this book is aimed at.
You take a gliflozin: dapagliflozin, empagliflozin or canagliflozin	Do not cut carbohydrate hard, do not fast, and do not use an eating window on these without agreeing to it first. They can push you into ketoacidosis while your blood sugar still reads normal, so the usual warning sign is missing. Prescribed for heart and kidney conditions as well as diabetes.

Sources: levothyroxine in pregnancy, British Thyroid Association and RCOG Green-top 76; statin muscle symptoms, NICE NG238; diabetes and metformin, NICE NG28 and MHRA drug safety updates. Melatonin with warfarin rests on case reports rather than trials, which is why the line is do not, rather than a dose.

Medicines, and two cases that are not

You take a GLP-1 or GLP-1/GIP drug: semaglutide, liraglutide or tirzepatide	You lose muscle along with the fat, so the protein target and the two lifting sessions matter more here than anywhere in this book. With sleep apnea, ask to be reassessed as you lose weight.
You take a beta blocker	Your resting heart rate will not move with fitness the way this book says, because the drug sets it. Use the weight on the bar and the talk test instead.
You take insulin or a sulfonylurea	Agree on any change with your diabetes team first. Walking after meals, cutting carbohydrate on quiet days and eating windows can all drop your blood sugar too low.
Your kidney function is reduced	Magnesium is cleared by the kidneys and can build up. Below an eGFR of 30, avoid it. Between 30 and 60, only with your clinician, and have kidney function re-checked yearly. eGFR is a blood-test estimate of how well your kidneys filter; the thresholds follow general kidney-disease electrolyte practice rather than a supplement trial. Creatine raises the creatinine reading through its own metabolism, not by damaging the kidney, so tell whoever draws your blood. If it matters, ask whether a cystatin C estimate is available: that one does not use creatinine. That reassurance comes from trials in people with normal kidneys, so below an eGFR of 60 treat it as your clinician's call.
You are on testosterone replacement	It can worsen sleep apnea. If you snore, gasp or wake unrefreshed, raise it with whoever prescribes it. Do not reach for melatonin first: it can make the nights feel better while the apnea carries on untreated, and feeling better is what stops people getting tested.
You are pregnant or postpartum	Three things first: 400 µg of folic acid daily from before you conceive to week 12, 10 µg (400 IU) of vitamin D daily under UK guidance, every day of the year while pregnant or breastfeeding, and nothing containing vitamin A as retinol, which rules out cod liver oil. Ask about the higher folic acid dose if you have diabetes or take epilepsy medicine. Then: caffeine under 200 mg a day, and by the third trimester you clear it two to three times more slowly, so a morning cup can still be with you at bedtime, no alcohol, no melatonin, magnesium supplements only with your midwife or obstetrician, and skip unpasteurized milk and dairy plus mold-ripened and blue soft cheeses. Kimchi, sauerkraut, miso and yogurt from pasteurized milk are fine. Leave creatine, sauna and cold plunge for your midwife or obstetrician. Keep exercising, because the guidelines want you active. If you were not already doing hard intervals, this is not the week to start.
You take fluvoxamine, or a medicine for seizures	Do not take melatonin with fluvoxamine: it raised melatonin exposure roughly seventeen-fold in a pharmacokinetic study of five healthy men (Härtter 2000) and the product information says avoid. With seizure disorders, or alongside sedatives, melatonin is a prescriber's call.
You take the combined pill, or HRT	Estrogen slows the breakdown of both melatonin and caffeine. The pill raises what a melatonin dose delivers four- to five-fold, so if it is prescribed, start at 0.5 mg. Caffeine half-life runs about half again as long, so make the nine-hour cut-off nearer thirteen. Fluvoxamine and some quinolones do the same.

Sources: magnesium and kidney function, NICE NG203; melatonin interactions, Hilli 2008 and Abernethy & Todd 1985; clinical nutrition, ESPEN guidance.

Conditions and life stages

You are under 18	The melatonin and magnesium advice comes from adult trials. Treat both as a clinician's call.
A known narrowing, or Crohn's with obstructive symptoms	Reduce fiber and texture, with a dietitian.
You have myasthenia gravis, heart block or a known high magnesium level	Magnesium is not for you without specialist advice. Everything else in the book still applies.
Something this book suggested is doing something to you	Foggy mornings on melatonin mean too high or too late. Loose stools on magnesium are the first sign of too much. Less urine or swelling on creatine means stop and ask for kidney function.
You have IBS	Cut insoluble fiber such as bran. If you add fiber, make it soluble: oats or psyllium, sold as ispaghula in some countries.
You have diverticular disease	The guidance runs the other way: a high-fiber diet for life if you tolerate it, built up gradually. No need to avoid seeds, nuts or skins. During an acute flare the advice reverses, so follow whatever your clinician sets for that.
Counting food or measuring your body feels compulsive	This book is the wrong tool. The numbers are averages to drift toward, not a daily test. Put it down and talk to someone.

Sources: NICE CG61 (irritable bowel) and NG147 (diverticular disease); British Menopause Society guidance; BNF and the electronic Medicines Compendium.

Across genders

The system is the same for everyone. Here it is read through the book's own framework, pillar by pillar. It flags the few points where the weighting differs between women and men.

The pillar	For women	For men
Sleep · the base	Report insomnia more often, and around menopause night sweats fragment the night. Protect a cool room and a steady clock harder; the levers are the same.	The short-sleep metabolic trials were run almost entirely in men, so those numbers are theirs. Whether men are hit harder has not been tested head to head. The floor and the levers are the same.
Eat · the fuel	Iron is often low while menstruating: test, then fill. Calcium and vitamin D matter earlier for bone, and protein needs edge up around menopause.	Iron is rarely needed, and over-supplementing can harm. The protein and plant targets are the same.
Exercise · the engine	The same program, and the same relative gains as men, smaller in absolute terms because you start smaller. Lifting for bone density pays off most around menopause, and two sessions a week is the floor to work up from once muscle loss accelerates.	The same program, from a higher starting point for muscle and bone, with the same need to keep them.
Data · the readout	Heart risk is underdiagnosed and rises sharply after menopause. Risk scores were built mostly on men, so push for an ApoB by name.	Heart risk tends to present earlier; the same core panel applies.
Across the month	In the two weeks before a period, body temperature runs slightly higher and sleep is more often broken. If sleep is worse in that stretch, hold the wake time and let the rest of the week absorb it.	No monthly cycle to work around, so the defaults in this book apply unchanged.
Life stage	Pregnancy, postpartum and the menopausal transition raise needs and carry real mood risks; a doctor's call where flagged.	Postpartum mood changes affect fathers too, at lower rates.

What is really different, and what only looks it

Almost nothing in this book changes by sex. The pillars are the same, the short answers are the same, and the pathways on the map run the same way in everyone. What differs is timing and weighting: when a risk window opens, which shortfall is common, and how hard a particular dial needs turning at a particular life stage. That is a narrower set of differences than the wellness industry usually claims.

There is also a difference in the evidence itself, which is worth naming before the studies that follow. Much of the exercise and cardiovascular literature was built on men. Where a finding rests on a male-heavy sample, it is a reasonable default for women and not a measured one. Where that applies, the next two pages say so.

For men, the differences are smaller, and mostly about the floor. There is no equivalent of the menopausal transition, so there is no window where the dials need turning together. Short sleep hits male hormonal and metabolic markers hard and fast. One week restricted to five hours a night lowered daytime testosterone in healthy young men by 10 to 15% (Leproult 2011). On melatonin, the human data at ordinary doses show no consistent effect on testosterone; nightly long-term use in men of reproductive age has not been studied, so ask a clinician if fertility is on the table. Iron runs the reverse way from women. Men rarely need it and excess accumulates, so casual supplementation carries a real downside.

I have not written a pregnancy chapter, and the adjustments that do apply are on the pages from 68. Needs change a great deal, several of the defaults here do not apply unchanged, and the mood risks are real and clinical. I would rather say so than offer a thinner version of advice that should come from a doctor who knows your history. One thing carries over unchanged: the situations chapter. The new-parent crunch is about protecting a floor under broken sleep, and that logic holds for anyone in it.

> **IN SHORT**
>
> The system is the same for everyone, and the differences are mostly timing and weighting. Much of the exercise and heart evidence was built on men, so a male-heavy finding is a reasonable default for women and less precise than it looks.

The studies behind the differences

Sleep fragments through the menopausal transition. SWAN followed 3,045 women aged 42 to 52 and tracked their sleep across it. Trouble falling and staying asleep rose as they moved through. Vasomotor symptoms, the night sweats, tracked closely with the worse nights (**Kravitz 2008**). This is cohort data, and self-reported sleep at that, so read it as a description of the pattern. What drives it is a separate question. **What to do about it:** nothing new, but turn two dials harder. A cool room and a fixed wake time count for more here than at any other stage of life. Around 18 to 19°C (64 to 66°F) suits most people, though over-65s do better nearer 20 to 22°C (68 to 72°F). The range comes from sleep-hygiene convention, with no trial behind it, and WHO treats 18°C as the floor for a home. Night sweats and flushes interrupt the night repeatedly, so what you are protecting is continuity. If the nights have been broken for months and the days are unrefreshed, that is a doctor's conversation, past what a wind-down will fix.

Bone loss accelerates around the final period. The same cohort measured bone mineral density directly, by DXA, across the transition. Accelerated bone loss began roughly a year before the final menstrual period. For the two years afterward it ran at about 2.5% a year at the spine and about 1.8% at the femoral neck (**Greendale 2012**). This is normal physiology on a schedule, not a diagnosis, and confirming it needs a DXA scan and a doctor. **What to do about it:** the window is the point. Load-bearing exercise and resistance training in the years around the transition are worth more than the same work started a decade later. Pair them with enough protein, calcium and vitamin D.

Cardiovascular risk markers shift across the transition. The American Heart Association reviewed the evidence and issued a scientific statement: across the transition, LDL, triglycerides, Lp(a), blood pressure and visceral fat all tend to rise, and the transition is a critical window for prevention (**El Khoudary 2020**). Two caveats go with it: the underlying data are observational, and how much of the change belongs to menopause and how much to aging is contested, and the size of the shift varies a great deal between women. The statement also does not recommend hormone therapy for prevention. **What to do about it:** get the numbers instead of assuming them. Ask for ApoB by name, take blood pressure at home, and treat this as the moment to tighten the plate and the training.

The four things people take, by life stage

	Combined pill or HRT	Pregnancy or breastfeeding	Later life
Melatonin	Estrogen slows its breakdown, so a standard dose delivers several times more. Use less.	No. The licensed information does not recommend it.	Usual starting doses run 0.5 to 5 mg, and it is a prescription medicine in some countries. The trial evidence in later life is thin.
Caffeine	Cleared about half again as slowly, so move the cut-off from nine hours to nearer thirteen.	Under 200 mg a day, and far more slowly cleared by the third trimester.	Clearance slows with age, so if sleep is poor, this is the first thing to move.
Magnesium	No established interaction.	Only with your midwife or obstetrician.	Check kidney function first. Below an eGFR of 30, avoid it.
Creatine	No established interaction.	Not enough data, so leave it.	The big pooled analysis was mostly young men, and its over-50 and women subgroups came out null (Kazeminasab 2025). Seven trials run only in postmenopausal women found a gain on the same lift: leg press up about 7.5 kg (16 lb) and lean mass up 0.4 kg (about a pound), at 5 g a day with lifting, nothing on bone (Naddafha 2026).

Where a cell says the evidence is thin, that means the question has not been studied in that group, not that it has been answered safely.

IN SHORT

The transition is a window, and the levers are the ones already in this book. The size of the shift varies a great deal between women, the data behind it are observational, and how much belongs to menopause and how much to aging is contested.

Sources: Every study on this page has a full entry in the sources and references.

Muscle, iron, and a gap in the evidence

Holding muscle after menopause takes protein and lifting, and the evidence is thinner than the marketing. A narrative review of protein and muscle in postmenopausal women concludes only that intake should be at least the RDA, 0.8 g/kg a day, with the dose at each meal probably mattering. The higher band used elsewhere in this book comes from the older-adult and training literature, not from women-specific trials. Flagged in the same review: the women-specific evidence is sparse and of low quality (**Black & Matkin-Hussey 2024**). Because it cuts against the sales pitch, I report the caveat. The thin evidence base is being used to sell very high protein intakes to women, and it does not support them. **What to do about it:** hold the same targets as the rest of the book. Aim at the upper end of the 1.2 to 1.6 g/kg band if you train, spread across meals. Do the resistance training, because the protein does very little without it. Treat anything marketed as a menopause-specific protein protocol as unproven.

Iron is the one common shortfall that really splits by sex. Menstruation is a recurring iron loss, so low iron is common in women who menstruate. In men the risk runs the other way, since excess iron accumulates and causes harm (**NIH Office of Dietary Supplements**). **What to do about it:** this is the clearest case in the book for putting a test first. If you menstruate and you are tired in a way sleep does not fix, ask for ferritin and a complete blood count before buying anything. Correct what the test shows, then re-test. If you are a man taking iron without a test that says you need it, stop. Untested iron is the supplement most likely to harm an otherwise healthy person. Others carry conditional risks, listed on the pages from 68.

One gap is worth knowing about. Across 250 studies of high-dose exercise and heart outcomes, women made up around 18% of participants on average. Just over half the studies excluded women entirely (**Patel 2021**). It is specific to that literature and should not be stretched into a claim about all medicine, though some of the exercise advice women receive is extrapolated. **What to do about it:** two practical things. Read effect sizes from male-heavy research as a sensible default rather than a precise number for you. When a doctor quotes a risk score, it is reasonable to ask whether it was validated in women, since the heart-risk scores in common use were mostly built on men.

> **IN SHORT**
>
> The pillars and the targets are the same. Iron runs in opposite directions by sex, commonly low in women who menstruate and accumulating in men who take it untested. The very high protein intakes marketed at menopause rest on low-quality evidence.

Sources: protein in postmenopausal women, Black & Matkin-Hussey 2024 (narrative review, low certainty; older-adult anchor Bauer 2013); iron needs and upper limits, NIH Office of Dietary Supplements; female under-representation, Patel 2021 (scoping review, 250 studies, ~18% female recruitment).

Make it yours

The evidence gives you the smart default. Your own body gives the final answer, and knowing how much of the variation is yours changes what you do with a disappointing month.

> **REMEMBER THIS** **Start from the guideline, change one thing at a time, and give it six to eight weeks before you judge it.**

Why the guideline is a starting point

People differ, and the food evidence shows it plainly

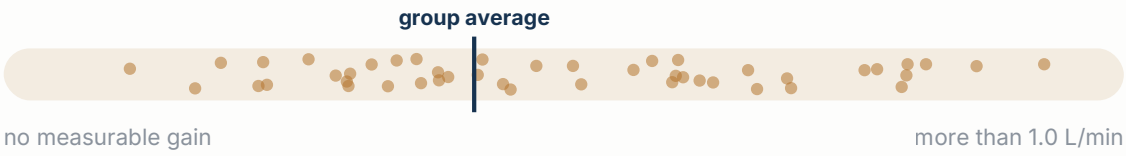
The Zeevi study put glucose monitors on 800 people and logged 46,898 meals. The same foods produced sharply different blood-sugar responses from person to person, enough that the authors suggested universal dietary advice may have limited utility (**Zeevi 2015**). The study also ran a small randomized arm where the algorithm beat expert-designed diets on the glucose curve. What varied there was one acute marker, the blood-sugar curve after a meal, rather than health. No trial has shown a personalized plan beating standard dietary advice on weight, events or mortality. The industry that grew up afterward claims far more than this one study showed.

> **HOW TO USE IT**
> Keep the plate advice as your default. If you suspect one staple doesn't suit you, test that one thing on its own and leave the rest of the plate alone.

Training response varies too, and families cluster

Across 98 families, HERITAGE put 481 sedentary adults through the same supervised 20-week endurance program. Heritability of trainability came out around 47% (**Bouchard 1999**). All of them were white, so that figure is measured in white families and assumed everywhere else, and that caveat matters as much as the finding. Across the group, the gain in aerobic capacity ranged from almost nothing to more than a liter per minute. Families clustered together far more than strangers did, on one protocol at one dose. Two things are true here and they are easy to confuse. Families cluster on how much they gained, which is what this study measured. Whether individuals truly differ in trainability is a separate question, and newer work that models measurement error finds far less true difference than the raw spread suggests. A poor result on one program tells you little about how you respond to exercise in general.

THE SAME 20-WEEK PROGRAM, 481 PEOPLE, THE SPREAD OF RESULTS SCHEMATIC



In HERITAGE, the gain in aerobic capacity ran from almost nothing to more than a liter per minute on an identical supervised program. Relatives responded alike, far more than strangers did. The spread is drawn to scale; the dots are illustrative.

> **HOW TO USE IT**
> If three months of one kind of training moves nothing, change the stimulus, the intensity or the modality before deciding your body is the problem.

How to test something on yourself

The formal version of this is the n-of-1 trial, recognized as legitimate evidence for one person's decisions (**AHRQ n-of-1 guide, Kravitz & Duan 2014**). Borrow the spirit of it, without the rigor: change one thing, give it a fair run of six to eight weeks, and judge it against something you can observe. It works for reversible things with quick feedback, a supplement, a bedtime, a training style, and not for anything whose payoff takes a decade.

Sources: individual variation, Zeevi 2015 (n=800, 46,898 meals) & Bouchard 1999 (HERITAGE, n=481); self-experiment method, AHRQ n-of-1 guide 2014.

What I left out, and why

A short book is defined as much by what it leaves out as by what it keeps. Almost always it means one of three things: not proven yet, a doctor’s call, or already covered by a basic that does the same job for free.

Left out	The honest reason
Weight-loss drugs (GLP-1)	Prescription medicine, and among the strongest evidence of anything named on this page: semaglutide cut cardiovascular events in 17,604 people with obesity and established heart disease (SELECT, Lincoff 2023), and tirzepatide is licensed in the United States for moderate-to-severe sleep apnea in adults with obesity, on the back of SURMOUNT-OSA, though not everywhere and not for sleep apnea on its own. I leave it out because I have nothing to add to a prescribing decision, not because it is weak. If you meet the prescribing criteria where you are, that conversation matters more than any supplement question in this book.
Mind and connection	Not dismissed, and strong ties predict about 50% higher survival odds (Holt-Lunstad 2010). Associational, and relative: what that is worth in absolute terms depends heavily on your age and health. Book a recurring in-person block, and treat stress as recovery load.
Breathwork	Real for calming in the moment, though long-term outcome evidence is thin, and it lives in the wind-down.
Meditation & mindfulness	Useful for stress, and the effect on tracked outcomes is modest, so it is folded into managing stress.
Stretching & mobility	Helps a specific restriction; static stretching is oversold for injury and health.
Hormone therapy (HRT, TRT)	A medical decision from blood work and history. Worth knowing that the risk picture for HRT was revised after the original WHI reporting, and current menopause-society guidance treats it as favorable for most healthy women under 60 starting within ten years of menopause. That is a clinician conversation with evidence behind it, not a frontier topic. Covered on the pages from 71.
Fasting & eating windows	Benefit tracks with eating less, and the clock timing is incidental. If a window helps you eat less, use one.
Cold, heat & red light	None of them is foundational, and sauna has the best evidence of the three, though only observational. Cold can blunt gains after lifting, and red light I could not grade at all, because I found no review I would stand behind.
Supplement of the month	Berberine, collagen and greens powders are mostly oversold, though a few earn a narrow place only if you are low.
Biological-age & scans	Not decision-grade yet; scans mostly surface harmless findings and worry.
Named diets	Graded by what they deliver: protein, plants, unrefined, less ultra-processed.
Peptides & the frontier	Fast-moving, mostly early, often sold ahead of the evidence. Screen any of them through the four questions in situation 7.
Mental health beyond a bad stretch	Sleep and exercise both have real evidence for mood, and both are in this book. Depression and anxiety themselves are a doctor’s ground, not a lifestyle chapter’s, and I would rather point you there than write a thin version.
Smoking, and how much alcohol	Not smoking carries more weight than anything in this book, and there is nothing useful I can add to “do not.” On alcohol I give timing for sleep and the evidence that the moderate-drinking benefit is a study artifact. National limits differ between countries and several have been revised downward. A weekly limit is a disease-risk question and belongs with your clinician.
Screening, vaccination, blood pressure treatment	Cancer screening, immunization and treating high blood pressure are among the best-evidenced things in medicine, and none of them is a lifestyle lever.

One thing to be clear about. If I cut something you swear by, it may still work for you. What I could not do was tell everyone it works when the evidence will not carry that. Absence here means “not proven for most,” never “forbidden.”

Look it up

Every term and topic in one A to Z: what it means where it is not everyday English, and the pages that teach it rather than every page that mentions it. Study designs are in here too; the grades themselves are defined on page 8.

alcohol		6, 9, 12, 18, 19, 20, 21, 24, 26, 75
apnea, sleep	The airway closes repeatedly in the night. Common, treatable, usually undiagnosed.	9, 15, 18, 20, 55, 63, 67, 69, 75
ApoB	A blood test counting the particles that drive artery plaque.	24, 27, 44, 45, 61, 67, 71, 72
balance		9, 37, 38, 40, 64
blood pressure		10, 24, 27, 29, 37, 44, 45, 47, 61, 67, 72, 75
bone density		71, 72
caffeine		6, 9, 18, 21, 53, 69, 72
CBT-I	A short talk therapy for insomnia. First-line, ahead of pills.	14, 16, 53, 67, 68
Cohort study	A group followed over time. Shows what goes together, not what causes what.	8
cold water immersion		2, 35, 41, 47, 69
Confounding	Something else explaining the result. The usual reason to distrust a finding.	8
creatine		35, 46, 47, 68, 69, 70, 72
Creatine kinase	A muscle-damage blood test. Ask for it with muscle pain on a statin.	68
Cross-sectional	A snapshot. Weakest of the three designs, and cannot show direction.	8
deload	An easier week, on purpose, to let the body catch up.	42
Dose-response	More of it, more effect. Good evidence a link is real.	8
driving		57, 62, 67
DXA	A low-dose scan measuring bone density, and body composition too.	72
Effect size	How big a difference is, separate from how sure the evidence is.	8
eGFR	A blood-test estimate of kidney filtering. Below 30, several supplements stop being safe.	13, 47, 69, 72
falls		9, 10, 37, 38, 39, 40, 64
fermented food		5, 9, 31, 32
Ferritin	The blood test for iron stores. Ask for it before buying iron.	29, 67, 73
fiber	Plant carbohydrate you cannot digest. Your gut bacteria eat it.	23, 24, 25, 27, 28, 29, 30, 31, 32, 70
g/kg	Grams per kilogram you weigh. 1.4 g/kg at 70 kg (154 lb) is about 98 g a day.	23, 27, 28, 42, 64, 73
GLP-1 drugs		47, 69, 75
gut microbiome	The bacteria living in your gut.	31
HbA1c	Average blood sugar over about three months.	15, 44, 61, 67
Healthy-user bias	People who do the healthy thing differ in other ways too.	46
HRT		13, 21, 68, 69, 72, 75
HRV	Beat-to-beat variation in heart rate. Only useful against your own baseline.	45
INR	How fast your blood clots, monitored if you take warfarin.	68
insomnia		6, 14, 16, 20, 62, 67, 71
Insulin sensitivity	How well your body handles sugar. Falls with short sleep.	15, 44
iron		29, 55, 63, 67, 68, 71, 73
jet lag		13, 21, 57
Ketoacidosis	A dangerous buildup of blood acids. On gliflozins, possible at normal blood sugar.	68
levothyroxine		68
Lp(a)	A mostly inherited cholesterol marker. Measure at least once.	44, 45, 61, 72
magnesium		13, 15, 20, 21, 29, 46, 47, 53, 68, 69, 70, 72

Look it up: melatonin to Zone 2

melatonin		13, 14, 15, 20, 21, 57, 68, 69, 70, 71, 72
menopause		19, 27, 41, 44, 45, 47, 67, 71, 72, 73, 75
Meta-analysis	Many studies pooled into one estimate.	8
Muscle protein synthesis	The building process training triggers and protein feeds.	26
N2, light sleep	About half the night. Files motor and skill memory.	5, 12, 13, 17, 23, 24, 34, 35
naps		16, 62
One-rep max	The heaviest you could lift once. Used to describe how hard a set is.	39
pregnancy		7, 9, 13, 19, 67, 68, 69, 71, 72
protein		5, 23, 24, 26, 27, 28, 30, 41, 42, 73
Randomized trial	People assigned by chance to one thing or another. The strongest design.	8
REM sleep	Dreaming sleep. Back-loaded, mostly in your last two hours.	20, 21
salt and sodium		29
sauna		19, 46, 47, 69, 75
shift work		14, 57, 62
Slow-wave, deep sleep	The heavy repair sleep of the first third of the night.	5, 12, 13, 18, 19, 34, 35, 38
Spindles	Short bursts of brain activity in N2 that file the day.	12, 13, 17, 23
statins		68
steps, daily		8, 35, 36, 37, 38, 40
strength training	Lifting. Anything that makes muscles work against a load.	27, 28, 34, 35, 36, 37, 38, 39, 40, 72, 73
supplements		2, 27, 46, 47, 59, 60, 69, 71, 73, 75
Surrogate outcome	An easy-to-measure stand-in, like a blood marker in place of a heart attack.	8
TSH	The thyroid blood test. Ask for it if you take levothyroxine and something changes.	68
TyG index		44
ultra-processed food	Industrially formulated food you could not make in a kitchen.	6, 22, 23, 24, 25, 26, 27, 29, 59, 75
Umbrella review	A review of reviews.	25
Visceral fat	Fat around the organs rather than under the skin. What the waist stands in for.	44, 72
vitamin B12		29, 68
vitamin D		24, 29, 46, 47, 69, 71, 72
VO_2max	How much oxygen you can use at full effort. The best single fitness number.	5, 6, 12, 23, 34, 35, 39, 61
waist		9, 10, 24, 27, 44, 61
wake time		6, 9, 13, 16, 17, 20, 21, 54, 58, 63
warfarin		13, 68
wind-down		6, 9, 12, 13, 14, 15, 18, 19, 72, 75
Zone 2		39

Sources and references

Every study named in this book, by area. Each one checked for existence and year, with the journal where the entry names one, and evidence-graded. This is the whole list. If a claim in the book has no study behind it here, that is a gap, and I would rather hear about it.

THE SYSTEM: HOW THE PILLARS CONNECT

1 · Nutrients → Fitness. Morton et al., BJSM 2018 (49 RCTs, n≈1,900). Protein augments resistance-training gains. Full entry under Eat. Strong

2 · Deep sleep → Recovery. Van Cauter, Leproult & Plat, JAMA 2000. Growth hormone is released in slow-wave sleep. Van Cauter is correlational and in men, but suppressing slow-wave sleep does lower the overnight pulse and enhancing it raises it, so the direction has been tested. Established

3 · Nutrients ↔ Gut. Wastyk et al., Cell 2021. Fermented food shifted the microbiome. Primary immune endpoint null; n≈18 per arm. Emerging

4 · Deep sleep → Nutrients. Tasali, JAMA Intern Med 2022 (RCT, n=80). Extending sleep cut intake by ~270 kcal a day. The behavioral result is solid; the ghrelin and leptin story usually told alongside it is not, and a 2025 meta-analysis of six trials found no change in either. Established

5 · The day's practice → Light·N2. Laventure et al., PLOS Biol 2016. N2 spindles consolidate motor-skill learning. A small lab experiment on finger-tapping, not on fitness. Emerging

6 · Deep ↔ Light·N2. Ng et al., eLife 2025. Slow-wave and spindle coupling (small effect). Emerging

7 · Fitness → Deep sleep. Kredlow et al., J Behav Med 2015 (meta). Exercise increases slow-wave sleep. Confidence is good; the gain is single-digit minutes, largest in poor sleepers. Established

8 · Nutrients → Deep sleep. St-Onge et al., JCSM 2016. Higher fiber predicts more slow-wave sleep (small). Emerging

9 · Sleep ↔ Gut. Smith, PLOS One 2019; Holzhausen, Sleep 2024. Sleep tracks with microbiome diversity (cross-sectional). Emerging

10 · Fitness ↔ Gut. Allen et al., MSSE 2018. Exercise enriches the fiber-fed bacteria in 32 humans over six weeks, reversing on detraining; the helpful fatty acids they make rose in lean participants only. No gut-to-strength effect: PROMOTe RCT 2024 was null. Emerging

11 · Light·N2 → Nutrients. Vallat et al., Cell Rep Med 2023 (n>600, replicated in >1,900). Spindle coupling predicts next-day fasting glucose. Observational, a surrogate outcome, and no human trial has manipulated spindles to test it. Emerging

12 · Deep → REM. Ohayon et al., Sleep 2004 (meta, 65 studies, n=3,577); Park & Weber 2020. Normative stage percentages across the lifespan: deep sleep 10 to 20% of the night and falling with age, REM 20 to 25%. REM is back-loaded, so cutting the end of a night takes REM first. That distribution is settled sleep-lab measurement. The circuit-level account of why rests partly on rodent work. Established

SLEEP

Scheer et al., PNAS 2009 (n=10). With the body clock deliberately pushed out of step with the day, glucose, appetite hormones, and blood pressure all worsened. Tiny, and the reason misalignment is treated separately from short sleep. Emerging

Leary et al., JAMA Neurol 2020 (MrOS n=2,675; WSC n=1,386). Every 5% less REM tracked with ~13% higher all-cause mortality, replicated. Observational, one night of recording, and low REM is also caused by illness, antidepressants and untreated apnea. Moderate

van der Helm et al., Curr Biol 2011 (n=18 with sleep recording). Low prefrontal gamma during REM, not REM duration, tracked with an overnight drop in amygdala response. Small, single lab, correlation described as descriptive only. Emerging

Park & Weber, Front Psychol 2020 (review). Also cited under link 12. Deep sleep and REM alternate through the night. Descriptive, and mostly rodent-derived. Emerging

Buxton et al., Diabetes 2010 (single-arm, n=20 men). A week of five-hour nights cut insulin sensitivity ~11%, measured directly. No control arm, no recovery arm, men only. Emerging

Beals et al., Diabetes Care 2026 (RCT, n=29). Six weeks of sleep extension did not improve insulin sensitivity. A null, and a small one: n=29, six weeks, a surrogate endpoint. Emerging

Benjafield et al., Lancet Respir Med 2019. Modeled global sleep apnea prevalence, ~936m aged 30 to 69. A modeled estimate, not a count, and funded by a maker of sleep apnea devices. Moderate

Angarita et al., Addict Sci Clin Pract 2016. Cannabis lowers REM; quitting brings a vivid-dream rebound. Moderate

Abernethy & Todd, Eur J Clin Pharmacol 1985. Low-dose combined pills lengthen caffeine half-life from about 5.4 to 7.9 hours, roughly half again, by blocking the enzyme that clears it. A small pharmacokinetic study, graded like the others of its kind here. Emerging

Hilli et al., J Clin Pharmacol 2008 (n=29). The combined pill raises melatonin exposure four- to five-fold by the same route. Emerging

SLEEP, CONTINUED

Jaehne et al., Sleep Med Rev 2009 (review, 52 studies). Nicotine use: longer sleep onset, more fragmentation, less slow-wave sleep, and REM suppression in most studies. A narrative review of 52 studies with partly inconsistent methods and results, which is why it sits here rather than higher. Read the direction as the reliable part. Moderate

Stutz, Eiholzer & Spengler, Sports Med 2019 (meta, 23 studies). Evening exercise raised slow-wave sleep by about 1.3 percentage points. Vigorous work close to bed may delay sleep onset instead. Established

Härtter et al., Clin Pharmacol Ther 2000 (n=5 healthy men). Fluvoxamine raised melatonin exposure roughly seventeen-fold. Tiny sample, men only, and the basis for the avoid advice. Emerging

Erland & Saxena, J Clin Sleep Med 2017 (31 products). Melatonin content ran from 83% below to 478% above the label; serotonin in a quarter of products. A laboratory assay of what is on the shelf, not a trial. Emerging

Haghayegh et al., Sleep Med Rev 2019 (17 studies). A bath at 40 to 42.5°C for at least ten minutes, one to two hours before bed, shortens sleep onset. Pooled from small studies, so the direction is firmer than the size. Established

Downie et al., Cochrane 2023 (blue-light filtering lenses). No benefit for eye strain or visual acuity. On sleep, which is what I cite it for, the review is indeterminate rather than negative, so the direction is not settled and I grade it there. Moderate

Pasquier et al., J Therm Biol 2025 (9 RCTs); Riedy, Sleep Med Rev 2021 (38 articles). Cooling bedding moved no sleep measure. White-noise evidence graded very low, which the reviewers note contradicts its use. Graded on the weaker of the two. Moderate

Wang et al., Sleep Med 2025. Exercise and slow-wave sleep, in people who already have a sleep disorder. Moderate

Gardiner et al., Sleep Med Rev 2024 (meta, 27 studies). REM delayed and shortened dose-dependently from about two drinks. Total sleep time could not be pooled, so fragmentation rests on Ebrahim. Established

Gardiner et al., Sleep Med Rev 2023 (meta). Caffeine harms sleep continuity and duration; REM share largely unaffected. Strong

Carskadon & Dement, Principles and Practice of Sleep Medicine, 6th ed. 2017. Sleep architecture: deep front-loaded, REM builds toward morning. A textbook chapter. Background

Windred et al., Sleep 2024 (UK Biobank, n=60,977). Regularity out-predicted duration; top four quintiles 20 to 48% lower. Observational. Moderate

Cappuccio, Sleep 2010; Yin, JAHA 2017 (meta of cohorts). Duration U-curve, lowest risk near seven hours. Self-reported duration, and the long-sleep arm is partly reverse causation. Moderate

Khalsa et al., J Physiol 2003 (phase-response curve, n=21). Light in the late night and early morning advances the clock; light in the evening delays it. This is the phase-response curve the morning-daylight instruction rests on. It measures clock timing under bright laboratory light, not ten minutes of daylight outside a front door. Graded on what this one study is rather than on the wider literature behind it. The ten minutes is my dose, not theirs. Emerging

Chang et al., PNAS 2015 (crossover, n=12). Evening screen light delayed melatonin and the clock. Twelve people, at a deliberately strong light dose. Emerging

Ebrahim et al., Alcohol Clin Exp Res 2013 (review). Alcohol suppresses REM and fragments the second half of the night. Moderate

Qaseem et al. (ACP), Ann Intern Med 2016. CBT-I is first-line for chronic insomnia, ahead of medication. Guideline

Circadin SmPC (electronic Medicines Compendium). Estrogen, fluvoxamine and quinolones raise melatonin levels. Not for pregnancy or breastfeeding. Guideline

Herxheimer & Petrie, Cochrane 2002 (10 RCTs). 0.5 to 5 mg at the destination bedtime reduces jet lag, most clearly flying east across five or more zones. Above 5 mg is no better. Strong

DVLA, Assessing Fitness to Drive (UK, current edition). Do not drive while sleepiness is uncontrolled. Notify for moderate or severe disease with sleepiness; for mild, if it persists past three months. Guideline

WHO Housing and Health Guidelines, 2018. 18°C as a minimum indoor temperature. Not a sleep target. Guideline

EAT

Te Morenga et al., BMJ 2012 (30 RCTs, 38 cohorts). Cutting sugar ad libitum, −0.80 kg. Swapping it for the same calories of other carbohydrate, +0.04 kg: no effect. Strong

SACN 2015; NDNS 2019 to 2023 (UK); NHANES (US). The 30 g fiber recommendation, and the surveys behind the shortfall: mean intake about 16 g in UK surveys and 17 g in US NHANES, with roughly one adult in twenty reaching the target on either side. Guideline

Hall et al., Cell Metab 2019 (inpatient RCT, n=20). On matched menus, people ate about 500 kcal a day more on the ultra-processed arm. Small, tightly controlled, and the strongest causal evidence in this area. Emerging

Sacks et al., Circulation 2017 (AHA advisory). What you replace saturated fat with is what decides the effect, which is the basis for the book saying the type matters more than the amount. Guideline

McDonald et al., mSystems 2018 (American Gut, cross-sectional). The thirty-plants-a-week figure. Citizen science, a small contrast within it, and no trial. Emerging

Liu et al., NEJM 2022 (RCT, n=139). Time-restricted eating added nothing to the same calorie cut over 12 months. Established

Dicken et al., Nat Med 2025 (crossover, n=55). Minimally processed beat ultra-processed by ~1 percentage point of body weight over eight weeks. All had overweight or obesity and already ate mostly ultra-processed food. No penalty on lipids or glucose. Moderate

Martinez Steele et al., BMJ Open 2016 (NHANES). Ultra-processed food supplied ~57.9% of US dietary energy. Moderate

Zmora & Suez et al., Cell 2018. Probiotic colonization of the gut mucosa is person-specific and often transient. Stool testing does not detect it. Moderate

Morton et al., BJSM 2018 (49 RCTs, n≈1,900). Protein plus training; benefit flattens above ~1.6 g/kg. Strong

Reynolds et al., Lancet 2019 (185 cohorts, ~135m person-years; 58 trials). 15 to 30% lower mortality and less major disease. The authors' own GRADE certainty is moderate, in people without chronic disease. Moderate

Lane et al., BMJ 2024 (umbrella review, 45 pooled analyses, n≈9.9m). Worse outcomes across 32 of 45 endpoints, but GRADE quality low or very low for 41. Observational, very broad exposure. Moderate

Mamerow et al., J Nutr 2014 (crossover, n=8). Even distribution raised 24-hour muscle protein synthesis 25%. Eight people, a surrogate endpoint, and later trials found no difference. Emerging

Zhao et al., JAMA Netw Open 2023. The moderate-drinking 'benefit' is mostly a study artifact. 107 observational cohorts, whose point is that the corpus is confounded. Moderate

ACROSS GENDERS

Kravitz et al., Sleep 2008 (SWAN, n=3,045). Sleep problems rose through the transition; vasomotor symptoms tracked the worse nights. Moderate

ACROSS GENDERS, CONTINUED

Greendale et al., J Bone Miner Res 2012 (SWAN cohort, DXA). Loss accelerated ~1 year before the final period: ~2.5% a year at the spine, ~1.8% at the neck. Moderate

El Khoudary et al., Circulation 2020 (AHA scientific statement). Lipids, blood pressure and visceral fat rise across the transition. A clinical body reading observational data, so I treat it as I treat the other scientific statements here. Guideline

Black & Matkin-Hussey, Physiologia 2024 (narrative review). Concludes at least the RDA, 0.8 g/kg a day. The women-specific evidence is sparse and low quality. Emerging

Bauer et al., JAMDA 2013 (PROT-AGE). The older-adult protein consensus behind the higher target. Guideline

Patel et al., Sports Med Open 2021 (scoping review, 250 studies). Women were ~18% of participants; over half the studies excluded them. Moderate

Leproult & Van Cauter, JAMA 2011 (single-arm, n=10 men). A week at five hours cut daytime testosterone 10 to 15%. One lab, unreplicated. Emerging

EXERCISE & RECOVERY

Thorogood et al., Am J Med 2011 (14 RCTs, n=1,847). Aerobic exercise alone, −1.6 kg at six months. The authors conclude it is not an effective weight-loss therapy. Strong

Lee et al., Circulation 2011 (n=14,345 men). Each 1-MET gain in fitness, 15% lower all-cause mortality. Change in weight added nothing once fitness change was in the model. Moderate

Xiao & Ren, Life 2025 (78 studies); Bonafiglia, Front Physiol 2021 (149 studies). Once measurement error is modeled, no consistent evidence of true differences in trainability. The non-responder is mostly noise. Strong

Leong et al., Lancet 2015 (PURE, n=139,691). Grip strength predicted mortality more strongly than systolic blood pressure. Prospective cohort. Moderate

Shailendra et al., Am J Prev Med 2022 (meta of cohorts). Resistance plus aerobic training tracked with lower mortality than either alone. Observational. Moderate

Han et al., BJSM 2022. VO_2max and mortality, supporting the Mandsager finding. Observational. Moderate

Balachandran et al., JAMA Netw Open 2022 (20 RCTs, n=566, mean age 70). Power training gave a modest edge over strength training for physical function. Small trials and the authors rated it low-certainty. Moderate

Roberts et al., J Physiol 2015 (RCT). Cold water immersion after lifting blunted long-term strength and hypertrophy gains. Established

Currier et al., ACSM Position Stand, Med Sci Sports Exerc 2026 (137 reviews, >30,000 people). Load, full range, 2 to 3 sets and twice a week improve strength. Training to failure, time under tension, equipment and periodization did not consistently matter. Guideline

Mandsager et al., JAMA Netw Open 2018 (retrospective, n=122,007). Higher VO_2max, lower mortality, no ceiling: ~40% between below- and above-average fitness, roughly fivefold from least fit to the top 2%. Patients referred for testing, not a random sample, so confounding by indication is the caveat. Moderate

Ding et al., Lancet Public Health 2025; Paluch, Lancet Public Health 2022. ~47% lower all-cause mortality from 2,000 to 7,000 steps, then a plateau, age-dependent. Authors graded certainty moderate for most outcomes, low for several. Moderate

Sherrington et al., Cochrane 2019 (108 RCTs, n=23,407). Balance and functional exercise cut falls 24% (39 trials, n=7,920, high certainty); adding resistance, 34% (11 trials, n=1,374, moderate certainty). Strong

NHIS 2020 (US National Health Interview Survey). About 32% of adults did muscle-strengthening activity on two or more days a week. A national participation rate, not a trial. Moderate

Momma et al., BJSM 2022 (meta of cohorts). Muscle-strengthening activity and lower mortality, strongest at modest volumes. Moderate

Bull et al., BJSM 2020 (WHO guidelines). 150 to 300 minutes of moderate activity a week, plus strength on two days. Over 65, three or more days combining strength, balance and moving around. Guideline

Buffey et al., Sports Med 2022 (meta of trials). Light walks of two to five minutes break up sitting and blunt the glucose rise against staying seated. Acute crossovers, mostly in adults with overweight. Moderate

Saner et al., J Physiol 2020. Five nights at four hours cut the muscle-building response ~18%. Three interval sessions across the same nights held it at control levels. Eight men per group. Emerging

Stamatakis et al., Nat Med 2022 (n=25,241). Brief vigorous daily bursts track with lower mortality, near-linear dose-response. Prospective cohort. Moderate

DATA AND SUPPORT

Abdelhamid et al., Cochrane 2020 (45 RCTs, n=143,693). Omega-3 supplements: all-cause mortality RR 0.97 and cardiovascular events RR 0.96, both high certainty. A small reduction in coronary deaths is possible, low certainty. Strong

Kazeminasab et al., Nutrients 2025 (69 RCTs, n=1,937). Squat +5.64 kg; leg press, women and over-50s all null. Larger and newer than Wang, and the lower estimate. The disagreement with the postmenopausal review is confined to that subgroup, not the main direction. Strong

Naddafha et al., J Int Soc Sports Nutr 2026 (7 RCTs, n=608, postmenopausal). Leg-press 1RM +7.5 kg (CI +2.2 to +12.8), lean mass +0.37 kg, bone unchanged. Only at 5 g a day with lifting. Seven small trials, which is where the rubric puts it; it also disagrees with the larger review above. Moderate

NIH Office of Dietary Supplements fact sheets. Iron and micronutrient limits. Guideline

Liao et al., Eur J Med Res 2026 (systematic review). Continuous glucose monitoring showed no glycemic benefit in normoglycemic people; the benefit was confined to prediabetes. Moderate

Plews et al., Sports Med 2013 (narrative review). HRV read against your own baseline rather than a norm. Derived from elite endurance athletes managing training load, not from health outcomes. Emerging

Welch, Schwartz & Woloshin, Overdiagnosed, 2011. Overtesting harms. Background reading rather than a study, so it carries no grade. Background

AHA/ATVB scientific statement 2022. Lp(a) is 70 to 90% inherited and high in roughly one in five people, more often in African ancestry and less often in East Asian. Measure at least once; repeat if borderline or after menopause. Guideline

Lopez-Jaramillo et al., Lancet Healthy Longev 2023 (PURE, n=141,243). TyG flags insulin resistance from a standard lipid panel. Moderate

Wang et al., Nutrients 2024 (23 RCTs, adults under 50). Creatine plus training adds strength: lower body +11.35 kg, upper body +4.43 kg. Almost all male, null in the female participants. Graded down one step as the higher of two disagreeing estimates; I lean on the larger review. Established

Laukkanen et al., JAMA Intern Med 2015 (cohort). Sauna use and lower mortality. Finnish men, and healthy-user bias is not excluded. Moderate

Sesso et al., Am J Clin Nutr 2022 (COSMOS, n=21,442). No benefit on cancer, cardiovascular events or mortality in the already-fed. A small cognitive benefit, with no reduction in dementia. Established

GUIDANCE AND FORMULARIES

AASM restless legs guideline, J Clin Sleep Med 2025 (Winkelman). Check ferritin and transferrin saturation in everyone with clinically significant restless legs; treat iron at a much higher threshold than for anemia. A consensus good-practice statement, not a trial-derived cutoff. Guideline

NICE CG61 (irritable bowel syndrome). Discourage insoluble fiber and bran; use ispaghula or oats. Guideline

NICE NG147 (diverticular disease). A balanced diet including whole grains. Nuts, seeds and skins need not be avoided. Guideline

WHO sodium guideline 2012; SACN 2003 (UK); Dietary Guidelines for Americans. Under 5 g of salt a day (WHO), 6 g (UK), or under 2,300 mg of sodium (US). The three differ, so I print the range. Guideline

SACN, Vitamin D and Health, 2016; NHS. 10 µg daily in autumn and winter, year-round with little sun. Upper limit 100 µg (4,000 IU). Guideline

NHS, FSA and NICE NG201 (antenatal care). Caffeine under 200 mg a day, cleared far more slowly by the third trimester; avoid unpasteurized and mold-ripened cheese. Guideline

EFSA, caffeine scientific opinion, 2015. Up to 400 mg a day for adults, 200 mg in pregnancy, single doses to 200 mg. Guideline

ESC/EAS dyslipidaemia guideline 2019. ApoB goals by risk: under 65 mg/dL at very high risk, 80 at high, 100 at moderate. The 1.0 g/L (100 mg/dL) figure on the warning-signs page is the moderate-risk goal, and the usual upper limit of normal in low-risk adults. Guideline

NICE NG133 (hypertension in pregnancy). New hypertension at or above 140/90 after 20 weeks needs secondary-care assessment. The threshold on the warning-signs page. Guideline

NICE NG201 and NHS pregnancy guidance. 400 µg of folic acid daily from before conception to week 12; 5 mg where risk is higher, including diabetes and epilepsy medicine, on clinical consensus rather than trials. Guideline

NICE NG136 (hypertension in adults). 180/120 with symptoms is a same-day referral; without symptoms, organ-damage checks and review within a week. A home average at or above 135/85 is stage 1 hypertension. Guideline

NICE CG100 and CG115 (alcohol-use disorders). Withdrawal in a dependent drinker can cause seizures. The caution on stopping abruptly comes from here. Guideline

NICE NG238 (lipid modification). Muscle symptoms on a statin: measure creatine kinase rather than stopping on your own. Guideline

NICE NG203 (chronic kidney disease). The eGFR bands behind the magnesium advice, extrapolated from CKD practice. Guideline

GUIDANCE AND FORMULARIES, CONTINUED

British Thyroid Association; RCOG Green-top 76. Levothyroxine dose usually rises by 25% to 40% in pregnancy, early. Guideline

British Menopause Society guidance; WHI reanalyses. HRT risk-benefit for healthy women under 60 within ten years of menopause. Guideline

NICE MTG70 (2022). Digital CBT-I recommended for NHS use in adults with insomnia. Guideline

NICE NG28 (type 2 diabetes); MHRA drug safety updates; ESPEN clinical nutrition guidance. The diabetes, metformin and clinical-nutrition points on the adjustment pages. Guideline

BNF and the electronic Medicines Compendium. The intervals on the adjustment pages. Guideline

THE STUDIES BEHIND WHAT I LEFT OUT

Lincoff et al. (SELECT), NEJM 2023 (RCT, n=17,604). Semaglutide cut cardiovascular events in people with obesity and established heart disease. Named on the what-I-left-out page; outside this book's scope, not below its evidence bar. Established

SURMOUNT-OSA, NEJM 2024 (RCTs). Tirzepatide reduced obstructive sleep apnea severity, and is licensed on that basis. Named for the same reason. Established

Holt-Lunstad et al., PLoS Med 2010 (meta). Strong social ties predict ~50% higher survival odds; associational. Named on the what-I-left-out page. Moderate

HABITS & INDIVIDUAL VARIATION

Wood & Rünger, Annu Rev Psychol 2016. Habits are cue-driven and context-dependent. Moderate

Keller et al., Br J Health Psychol 2021 (RCT, n=192). Habit stacking was no better than a plain time-of-day cue. A null result, not proof of equivalence. Moderate

Dai, Milkman & Riis, Manage Sci 2014; Milkman, Minson & Volpp, Manage Sci 2014. Fresh-start dates lift starts after a landmark; temptation bundling raised gym attendance in a controlled study. Both real, both modest, and short-lived. Moderate

Harkin et al., Psychol Bull 2016 (138 studies). Progress monitoring improved goal attainment; writing it down worked best. The behavior-change literature carries publication-bias risk, so read d=0.40 as the top of a range. Capped at Established for that reason. Established

Kravitz & Duan (AHRQ) 2014. N-of-1 trial methods guide. A methods authority rather than a study. Background

Gollwitzer & Sheeran, 2006 (meta, 94 tests). If-then plans close the intention-action gap, pooled d≈0.65. Largest for discrete one-off actions, smaller for sustained change, and not corrected for publication bias, which is endemic in the behavior-change literature. Capped at Established for that reason. Established

Sheeran, Listrom & Gollwitzer, Eur Rev Soc Psychol 2024 (meta, 642 tests). The 2006 finding re-pooled. Publication bias was substantial, and the two standard corrections put the effect at d≈0.35 and d≈0.15. Real, and smaller than the headline. Established

Lally et al., Eur J Soc Psychol 2010. Habit formation ran a median ~66 days in 39 usable curves from 96 volunteers, over 12 weeks. Moderate

Hagger et al., 2016 (Registered Replication). The 'willpower muscle' failed to replicate across 23 labs. Strong

Zeevi et al., Cell 2015 (n=800). Differing glucose responses to identical meals. A short-term marker. Moderate

Bouchard et al., J Appl Physiol 1999 (HERITAGE, n=481). Trainability varies widely and runs in families. Measures familial clustering of observed change, which is a different quantity from true trainability; see Xiao and Bonafiglia under Exercise. A supervised family study, not randomized. Moderate

Koemel et al., eClinicalMedicine 2026 (UK Biobank, n=59,078). Modest concurrent gains in sleep, activity and diet tracked with longer lifespan and healthspan. Moderate

Li et al., Circulation 2018 (n≈123,000). Five habits tracked with ~12 to 14 more years at 50. Observational; sleep is not one of them. Moderate