2026

Opus Longevity Guidebook

What to take, what to try and which brands to trust, based on science

Top 21 supplements

Top 22 experts

Top 12 products

Top 11 treatments

Top 11 clinics

Top 12 innovations

Top 11 tests

OPUS LONGEVITY

2026

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OPUS LONGEVITY

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How to use this book

This book tells you what to take, what to try and which brands to trust, based on science, with the doses and the prices.

We'll update it every year. We want it to be the definitive, up-to-date guide for everyone interested in longevity.

The book has seven parts. Read them in any order.

- **Part 1, supplements.** The top 21, ranked, then 11 more, and stacks by budget and goal.
- **Part 2, experts.** 22 people worth following: who they are, what they do and recommend, and where to start.
- **Part 3, products.** 12 things worth owning, most with a budget pick.
- **Part 4, treatments.** 11 chapters, from sauna to plasma exchange, with the protocol, the cost and where to get it.
- **Part 5, clinics.** 11 longevity clinics: what a visit looks like and what it costs.
- **Part 6, innovations.** The 12 most exciting things coming soon, and how to get in early where you can.
- **Part 7, tests.** 11 tests that show how fast you're aging, and the number to aim for.

How to read a chapter

Every supplement chapter opens with **quick facts**. Then come the science, how to take it and the brands.

Sulforaphane, spermidine and NMN also get **the lab results**.

Watch for the boxes: **Top pick**, **Also good**, **ConsumerLab** (what its tests found) and **Good to know** (side effects, and who should skip it).

What the short citations mean

When you see (Laukkanen 2015), that's the study behind the sentence: the first author's last name and the year it came out.

Every chapter ends with a short list of the studies it cites. Most carry a PMID, the number that pulls the paper up on PubMed.

The 10-minute version

If you read nothing else, read this. It's the best of every part.

Part 1: Supplements

Start with the top 7. Each one's number is its chapter.

Picture: Katherine Jenswold, Unsplash

1. Sulforaphane: BROQ. Less inflammation and steadier blood sugar. Broccoli sprouts for 10 weeks cut IL-6, a key inflammation signal, by more than half. $4.30 a day on subscription.

2. Spermidine: SPMD-99. People who ate the most spermidine had the death risk of people 5.7 years younger. $1.25 a day on subscription.

3. NMN: NMN-99. 1,000 mg a day for 14 days raised blood NAD+ to about double the placebo group. $1.79 a day on subscription.

4. Urolithin A: Mitopure. Adults aged 40 to 65 got 12% stronger in the hamstrings in 4 months. $2.97 a day on subscription.

5. Omega-3: Momentous. 1 g a day for 3 years slowed three different DNA aging clocks. 50 cents a day on subscription.

6. Fisetin: Renue By Science LIPO Fisetin. Of 10 plant compounds tested, it was the most powerful at clearing out zombie cells. 72 cents a day.

7. Vitamin D3 and K2: Thorne. Over 4 years, telomeres shrank 20 base pairs on 2,000 IU of D3 a day, against 160 on a placebo. About 11 cents a day.

Next, two cheap ones: **creatine** for muscle, brain and bone (chapter 8) and **magnesium** (chapter 9).

Thorne Creatine

Thorne Magnesium Bisglycinate

Part 2: Experts

Five to follow first:

- **Peter Attia**, for fitness, muscle and your heart. Start with his book *Outlive*. Chapter 1.
- **Andrew Huberman**, for free daily protocols: morning light, sleep, cold. Start with his episode “Master Your Sleep & Be More Alert When Awake”. Chapter 2.
- **Rhonda Patrick**, for sauna, omega-3 and sulforaphane. Start with her sauna page at foundmyfitness.com. Chapter 3.
- **Bryan Johnson**, who measures everything and publishes it all. Start with his free protocol. Chapter 5.
- **Mary Claire Haver**, for women in midlife. Start with *The New Menopause*. Chapter 11.

Part 3: Products

Five worth owning, from the cheapest up:

- **A sleep mask.** Manta Sleep Mask, $39. Chapter 8.
- **A home blood pressure cuff.** Omron Platinum BP5465, $90.99. Chapter 4.
- **A continuous glucose monitor.** Dexcom Stelo, $99 for a month, no prescription. Chapter 3.
- **A walking pad.** WalkingPad P1, $349. Chapter 12.

- **A smart ring.** Oura Ring 5, $399 to $499, plus $5.99 a month. Chapter 1.

Picture: Manta Sleep

Omron Platinum BP5465

Dexcom Stelo

WalkingPad P1

Oura Ring 5

Part 4: Treatments

- **End your shower cold.** 30 to 90 seconds of cold meant 29% fewer sick days off work. *It costs nothing.* Chapter 4.
- **Take a sauna 4 to 7 times a week.** Finnish men who did had a 40% lower risk of dying from any cause than men who went once a week. Chapter 1.
- **Ask your doctor about a GLP-1 drug if you carry extra weight.** In people with heart disease and extra weight but no diabetes, weekly semaglutide meant 20% fewer heart attacks, strokes and heart deaths. Chapter 2.

Picture: HUUM, Unsplash

- **Rapamycin, by prescription.** The only drug that has extended life in every major lab animal tested. From $65 a month at AgelessRx, blood work included. Chapter 3.
- **Skip the $1,000 NAD+ drip.** NMN capsules raise NAD+ for far less. Chapter 7.

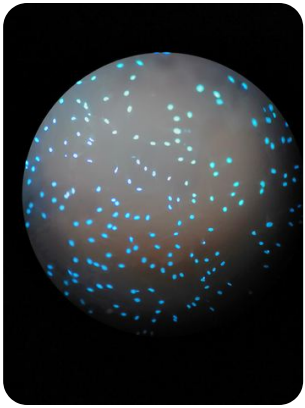
Part 5: Clinics

- **Function Health**, $365 a year: 160+ lab tests a year, the cheapest serious start. Chapter 5.
- **Prenuvo**: a whole-body MRI in about an hour, $2,499. Memberships from $1,199, with a 30-minute scan. Chapter 6.
- **Next Health**: walk-in IVs, cryotherapy, sauna and hyperbaric oxygen under one roof. Memberships from $99 a month. Chapter 4.
- **Fountain Life**, about $21,500 a year: everything measured in one four-hour visit, then a care team all year. Chapter 1.
- **Clinique La Prairie**, CHF 14,900 for 7 days in Montreux, Switzerland: the world's most famous longevity clinic since 1931. Chapter 8.

Picture: Prenuvo

Part 6: Innovations

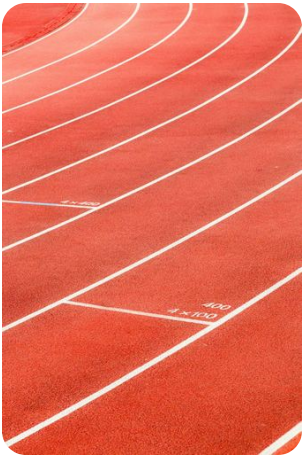
- **Senolytics.** Clearing zombie cells made mice live up to 27% longer. Two plant senolytics, fisetin and quercetin, are supplements you can buy today. Chapter 2.
- **The next GLP-1 drugs.** Retatrutide took off 25.0% of body weight in 80 weeks (Part 4, chapter 2). Chapter 5.
- **Making old cells young again.** In the first human trial, 2 of 3 patients could see more within 8 weeks. Chapter 1.
- **One shot to lower cholesterol for life.** One infusion cut LDL by about half in the first people treated. Chapter 6.
- **Organ clocks.** Nearly 1 in 5 adults has one organ aging much faster than the rest. Chapter 11.



Picture: Lorenzo2697, CC BY 4.0, via Wikimedia Commons

Part 7: Tests

- **Strength, balance and walking, free.** Can you stand on one leg for 10 seconds? 1 in 5 people aged 51 to 75 couldn't, and they were nearly twice as likely to die over the next 7 years. Chapter 6.
- **VO2 max, free on a smartwatch.** The least fit quarter had 5 times the death risk of the fittest. Chapter 2.
- **Then the blood tests.** ApoB and Lp(a), HbA1c and fasting insulin come first. Chapters 3 and 4.



Picture: Lysander Yuen, Unsplash

Your starter routine at three budgets

Every price is each chapter's cost a day, on subscription where there is one.

BUDGET	THE STACK	COST A DAY
About $2	SPMD-99, Thorne Creatine, Thorne Vitamin D + K2 Liquid	$1.85
About $8	BROQ, SPMD-99, NMN-99, Momentous Omega-3, Thorne Vitamin D + K2 Liquid	$7.95
About $12	The top 7 (chapters 1 to 7): BROQ, SPMD-99, NMN-99, Mitopure, Momentous Omega-3, Renue By Science LIPO Fisetin, Thorne Vitamin D + K2 Liquid	$11.64

BROQ

SPMD-99

NMN-99

Momentous Omega-3

Thorne Vitamin D + K2 Liquid

Mitopure

Renue By Science LIPO Fisetin

"Putting it together", at the end of Part 1, has stacks by goal and when to take each one.

"Your one-page checklist", at the back of the book, has the daily and weekly habits and when to test.

Whatever you start, test before and again at 4 months. "The blood tests that show it's working", at the end of Part 1, says what to test.

Omega-3 Index

Function Health

TruAge

1

PART 1

The Top 21 Longevity Supplements

The 21 supplements with the best science for a longer, healthier life, with the dose that worked and the brand to buy.

When an independent 3rd-party lab tested the 21 top-selling sulforaphane supplements, 11 of them delivered less than 1 mg per serving. The studies used 30 to 70 mg a day.

To reach even the low end, you'd need more than 30 servings of any of those 11. The top result of the 21 was 25 mg a serving (chapter 1), so two servings a day put you in that range.

So the brand you buy decides whether you get the dose that worked.

How we chose

Each of the 21 supplements in this part passed three tests.

It does something you want, from more energy to more good years.

There's science behind it. Human trials first, then big studies that followed people for years, then animal and cell work. We checked every study against PubMed.

You can buy a good version: the form and dose from the studies, from a brand with outside testing, named in each chapter.

Chapters 1 to 7 are the top 7: if you could only take 7 - these are the ones.

For 1 to 3, the pick had the most of the active compound when a lab tested the top sellers. For 4 to 7, it's the form and dose from the trials, from a brand with outside testing.

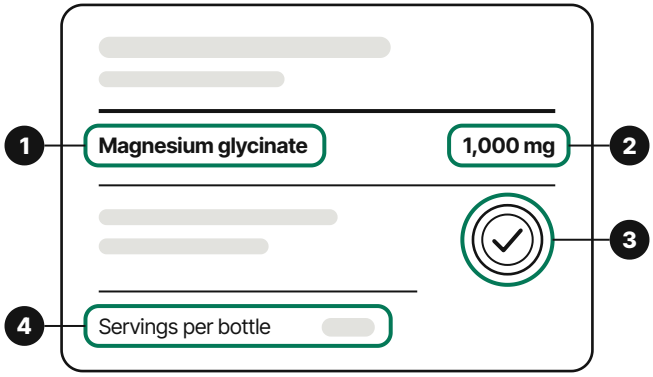
Chapters 1 to 3 come first because there the brand you pick changes what you get: in those lab tests, 7 of the 21 sulforaphane supplements had none found, the most spermidine was more than 30 times the least, and four of the six NMN supplements contained 500 mg or less a serving, half the 1,000 mg trial dose or less.

For 8 to 21, the pick is the best mix of the studied form, outside testing and price a day. One or two more follow under **Also good**.

The 4 things to check on any label

1. Form. Your body uses some forms far better than others. Only about 4% of magnesium oxide gets absorbed.

2. Dose against the studies. Hold the amount of the active compound up to the dose that worked. For fish oil, add up the EPA and the DHA.



3. Testing. Look for a seal from an outside tester (NSF Certified for Sport, NSF Contents Certified, USP Verified or Informed Choice), or a certificate of analysis the brand posts.

4. Price a day. Divide the price by the days the bottle lasts at the dose that worked. Thorne's vitamin D3 and K2 drops are $34 for 1,200 drops, about 11 cents a day at 4 drops.

Why lab tests matter

A label tells you what a brand meant to put in. Only a lab can tell you what's really there.

An independent 3rd-party lab received the 21 top-selling sulforaphane supplements, six of the top-selling spermidine supplements and six of the top-selling NMN supplements, each in unopened retail packaging, and tested how much sulforaphane each one delivers, or how much spermidine or NMN each one contains.

These three were tested because their labels tell you least: ConsumerLab hasn't reviewed sulforaphane or spermidine supplements, and when one maker tested NMN in 2021, 14 of 22 held less than 1% of the NMN on their label (chapter 3).

Every brand's result is in chapters 1 to 3.

All 21 at a glance

Cost a day is from each chapter, at the subscription price where there is one.

SUPPLEMENT	BEST FOR	DAILY DOSE	TOP PICK	COST A DAY
1. Sulforaphane	Inflammation, heart, blood sugar	30 to 70 mg	BROQ	$4.30
2. Spermidine	Cell renewal, a longer life, hair and skin	20 mg	SPMD-99	$1.25
3. NMN	DNA repair, energy, stamina	1,000 mg	NMN-99	$1.79
4. Urolithin A	Muscle strength, stamina, cell energy	500 mg	Mitopure by Timeline	$2.97
5. Omega-3	Slower aging, heart, brain	800 mg to 1 g of EPA plus DHA	Momentous Omega-3	$0.50
6. Fisetin	Clearing zombie cells, inflammation	100 to 150 mg	Renue By Science LIPO Fisetin	$0.72
7. Vitamin D3 and K2	Telomeres, immunity, bones	2,000 IU of D3, with K2	Thorne Vitamin D + K2 Liquid	about $0.11
8. Creatine	Muscle, memory, mood	3 to 5 g	Thorne Creatine	$0.49
9. Magnesium	Heart, blood pressure, sleep	200 to 400 mg elemental	Thorne Magnesium Bisglycinate	$0.87 to $1.30
10. Taurine	Blood pressure, blood sugar, endurance	1.5 to 3 g	NOW Foods Taurine	about $0.21

SUPPLEMENT	BEST FOR	DAILY DOSE	TOP PICK	COST A DAY
11. Ca-AKG	A younger biological age, bone	1 g	Rejuvant LifeAKG	$2.67
12. GlyNAC	Strength, walking speed, thinking	About 7 g glycine and 9 g NAC	ProHealth Longevity Glycine + NAC Pack	about $3.15 to $4
13. CoQ10	Heart, energy, statin users	100 to 200 mg	Pharma Nord Bio-Quinone Active Q10 Gold	$1.60 to $2.00
14. Resveratrol and pterostilbene	Memory, bones, blood pressure	150 mg to 1 g of resveratrol	partiQlar Pure Resveratrol	$0.62
15. Quercetin	Blood pressure, recovery, fewer colds	250 mg phytosome 2 to 3 times	Thorne Quercetin Phytosome	$1.53
16. Astaxanthin	Muscle strength, endurance, skin	4 to 12 mg	BioAstin Hawaiian Astaxanthin 12 mg	$0.56
17. Berberine	Blood sugar, cholesterol, liver fat	500 mg 2 or 3 times	Thorne Berberine	$2.93
18. Ergothioneine	Memory, sleep, heart	5 to 25 mg	Life Extension Essential Youth L-Ergothioneine	$3
19. Collagen	Skin, bone density, joints	2.5 to 15 g	Momentous Collagen Peptides	$1.83
20. Glucosamine	A longer life, knee cartilage, joint pain	1,500 mg crystalline sulfate	Dona Crystalline Glucosamine Sulfate	about $1.33
21. Akkermansia	Insulin sensitivity, keeping weight off	1 capsule	The Akkermansia Company, Akkermansia Essential	about $2.17

Mitopure by Timeline

Momentous Omega-3

Renue By Science LIPO Fisetin

Thorne Vitamin D + K2 Liquid

Thorne Creatine

Thorne Magnesium Bisglycinate

NOW Foods Taurine

Rejuvant LifeAKG

ProHealth Longevity Glycine + NAC Pack

Pharma Nord Bio-Quinone Active Q10 Gold

partiQlar Pure Resveratrol

Thorne Quercetin Phytosome

BioAstin Hawaiian Astaxanthin 12 mg

Thorne Berberine

Life Extension Essential Youth L-Ergothioneine

Momentous Collagen Peptides

Dona Crystal-line Glucos-amine Sulfate

The Akkermansia Company, Akkermansia Essential

"Putting it together", at the end of this part, builds these into daily stacks by goal and budget, with when to take each one.

1 Sulforaphane

WHAT IT IS	a natural compound from broccoli, richest in broccoli sprouts
BEST FOR	less inflammation, your body's own detox and antioxidant defenses, heart, blood sugar, brain
TYPICAL DOSE	30 to 70 mg a day, the range the studies used
TOP PICK	BROQ
COST A DAY	$4.30 for 2 servings (4 capsules, 50 mg) on subscription

Picture: Artelle Creative, Unsplash

Less inflammation and steadier blood sugar, from a compound in broccoli sprouts.

It switches on your cells' own antioxidant and detox genes.

1. More than 3,000 published studies have looked at sulforaphane.
2. In a 12-week trial of 291 people, it helped the body flush out 61% more benzene, a toxic air pollutant (Egner 2014).
3. Worms given sulforaphane lived more than 50% longer and scored about 20% younger on an aging clock (Sedore 2025, bioRxiv).

What it does for you

Sulforaphane is a natural compound found in broccoli. Here's what the studies in this chapter found.

AREA	WHAT IT DOES
Inflammation	Lowered IL-6 and CRP, two inflammation markers, in overweight adults.
Detox	Helped the body flush out 61% more benzene, a toxic air pollutant.
Heart	A broccoli bred for more of the raw material lowered LDL cholesterol.
Brain	Raised glutathione, the body's master antioxidant, in the brain.
Energy	Restored mitochondria and exercise capacity in old mice.
Blood sugar	Lowered fasting blood sugar and HbA1c in type 2 diabetes that was hardest to control.

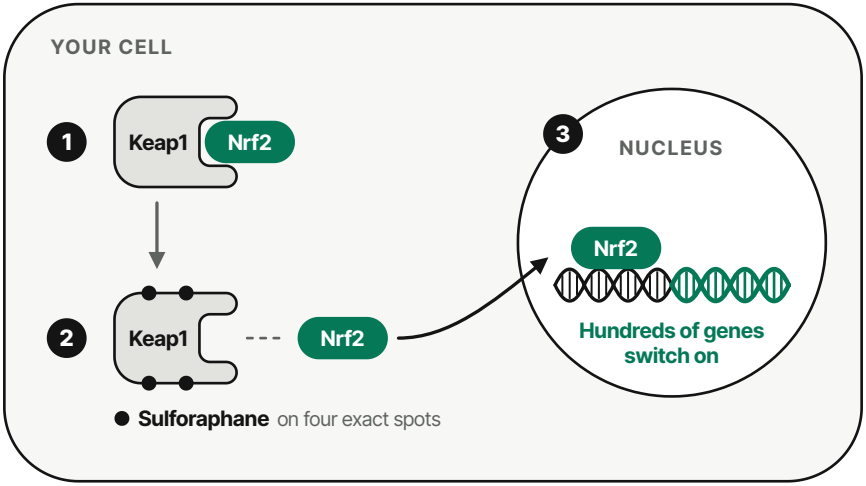
How it works

Sulforaphane is the most potent trigger for something called Nrf2, your master switch for antioxidant and detox genes. A protein called Keap1 holds Nrf2 back. Sulforaphane sets it free to turn on hundreds of genes that protect your cells (Dinkova-Kostova 2002).

That makes it different from vitamin C, which mops up one harmful molecule and is spent. Sulforaphane gets your cells to make their own antioxidants, so the protection outlasts the sulforaphane.

How sulforaphane works

Nrf2 is your master switch for antioxidant and detox genes.



1. A protein called Keap1 holds Nrf2 back.
2. Sulforaphane latches onto four exact spots on Keap1, and Nrf2 is set free.
3. Nrf2 moves into the nucleus and turns on hundreds of genes that protect your cells.

Broccoli holds the raw material, plus an enzyme that turns it into sulforaphane when you chew it raw. Cooking destroys the enzyme.

Sprouts are the richest source, with 10 to 100 times more of the raw material than the grown plant (Fahey 1997). So how a supplement is made decides how much sulforaphane you get.

What the science says

IN PEOPLE

It calmed inflammation. 40 overweight adults ate 30 g of broccoli sprouts a day for 10 weeks. IL-6, a key inflammation signal, dropped from 4.76 to 2.11 pg/mL, and CRP, the blood test for inflammation, fell too (López-Chillón 2019).

It lowered "bad" cholesterol. In two 12-week trials with 130 people, a broccoli bred for about three times the usual raw material lowered LDL by 7.1% and 5.1%. Ordinary broccoli didn't (Armah 2015).

It steadied blood sugar. In a 12-week trial, 97 people with type 2 diabetes took about 27 mg of sulforaphane a day or a placebo. It lowered fasting blood sugar and HbA1c in those whose blood sugar was hardest to control (Axelsson 2017).

It raised the brain's own antioxidant. After 7 days of sulforaphane, healthy adults had more glutathione, the body's master antioxidant, in their blood and brain (Sedlak 2018).

IN ANIMALS

Old hearts and muscles, restored. In old mice, 12 weeks of sulforaphane restored mitochondria, heart function, exercise capacity and blood sugar control (Bose 2020).

How to take it

Take 30 to 70 mg a day, on an empty stomach or 30 minutes after food. That's the range most of the studies with health benefits used. With the top pick, at 25 mg a serving (2 capsules), 2 servings (50 mg) is in that range.

The blood sugar trial above used about 27 mg a day, close to one 25 mg serving.

Take it in the morning. The blood sugar and cholesterol results above were measured after 12 weeks.

The brands

TOP PICK

BROQ. In the independent lab tests, it delivered 25.0 mg of sulforaphane per serving (2 capsules), the most of the 21 tested, against a 25 mg minimum on its label. It's a delayed-release capsule, which opens in your intestines rather than your stomach. $64.60 a month on subscription ($2.15 a serving), or $76.00 one-time, at opus.life.

Picture: Opus Longevity

An independent 3rd-party lab received each of the 21 top-selling sulforaphane supplements, in unopened retail packaging, and tested how much sulforaphane they deliver.

BRAND	LABEL SAYS	LAB FOUND
BROQ	25 mg minimum	**25.0 mg**
SM Nutrition	50 mg (Amazon listing)	**16.0 mg**
Pure TheraPro Rx OncoProtect ES	16 mg	**14.0 mg**
Avmacol Extra Strength	none stated	**9.0 mg**
KOYAH Broccoli Sprout Powder	none stated	**9.0 mg**
XYMOGEN OncoPLEX	none stated	**7.1 mg**
Peak Revival-X	5 mg (Amazon listing)	**6.6 mg**
Designs for Health BroccoProtect	24 mg (own site)	**6.0 mg**
HumanX	none stated	**5.3 mg**

BRAND	LABEL SAYS	LAB FOUND
Mara Labs BrocElite Plus	10 mg	**1.9 mg**
Pure TheraPro Rx Nrf2 Boost	none stated	**0.6 mg**
Bein Doux	none stated	**0.5 mg**
Carlyle	0.4 mg (Amazon listing)	**0.3 mg**
Jarrow Formulas BroccoMax	none stated	**0.1 mg**
AKI	none stated	**none found (under 0.1 mg)**
Thorne Crucera-SGS	none stated	**none found (under 0.1 mg)**
Rosmolo	800 mg (Amazon listing)	**none found (under 0.1 mg)**
Dr. Mercola	0.14 mg (Amazon listing)	**none found (under 0.1 mg)**
NeuroBrocc	none stated	**none found (under 0.1 mg)**
Osasuna	150 mg (retailer listing)	**none found (under 0.1 mg)**
Standard Process	none stated	**none found (under 0.1 mg)**

Per serving, as each brand defines a serving. “None stated” means no sulforaphane amount on the label, listing or brand site, only the raw material or a blend weight. For delayed-release capsules, the result is the lab’s test in water, because they’re made to open after the stomach, not in its acid; for the rest, the average of its tests in acid and in water. Each result is from the pack the lab received.

11 of the 21 delivered less than 1 mg per serving, so reaching the studies’ 30 mg a day would take more than 30 servings of any of them.

SM Nutrition
16.0 mg

Pure TheraPro Rx OncoProtect ES
14.0 mg

Avmacol Extra Strength
9.0 mg

KOYAH Broccoli Sprout Powder
9.0 mg

XYMOGEN OncoPLEX
7.1 mg

Peak Revival-X
6.6 mg

Designs for Health Brocco-Protect
6.0 mg

HumanX
5.3 mg

Mara Labs BrocElite Plus
1.9 mg

Pure TheraPro Rx Nrf2 Boost
0.6 mg

Bein Doux
0.5 mg

Carlyle
0.3 mg

Jarrow Formulas BroccoMax
0.1 mg

AKI
none found (under 0.1 mg)

Thorne Crucera-SGS
none found (under 0.1 mg)

Rosmolo
none found (under 0.1 mg)

Dr. Mercola
none found (under 0.1 mg)

NeuroBrocc
none found (under 0.1 mg)

Osasuna
none found (under 0.1 mg)

Standard Process
none found (under 0.1 mg)

ALSO GOOD

Pure TheraPro Rx OncoProtect ES. Its label says 16 mg of sulforaphane, and the lab found 14.0 mg, the third most of the 21. amazon.com

Picture: Pure TheraPro Rx

CONSUMERLAB

ConsumerLab, the independent testing company, has not reviewed sulforaphane supplements (checked October 2026).

Can I just eat broccoli instead? You can, and you should. But a 25 mg dose carries as much sulforaphane as about 3.5 pounds of raw broccoli, and cooking greatly reduces the amount you get.

GOOD TO KNOW

Consult a medical doctor before taking this or any other supplement if you are pregnant, nursing, have a medical condition or are taking any medications. At very high doses, 300 mg twice a day, some people felt queasy: 16.7% on sulforaphane against 2.0% on a placebo (Zolnourian 2025).

SOURCES **1** Fahey 1997, PMID 9294217 · **2** Dinkova-Kostova 2002, PMID 12193649 · **3** Egner 2014, PMID 24913818 · **4** Armah 2015, PMID 25851421 · **5** Axelsson 2017, PMID 28615356 · **6** Sedlak 2018, PMID 29888232 · **7** López-Chillón 2019, PMID 29573889 · **8** Bose 2020, PMID 33067900 · **9** Sedore 2025, PMID 40462948 · **10** Zolnourian 2025, PMID 39028412 · **11** Lab results: independent 3rd-party lab reports, autumn 2024

2 Spermidine

WHAT IT IS	a natural compound in every cell of your body, and in foods like wheat germ
BEST FOR	cellular renewal (autophagy), a longer life, heart, brain, immunity, hair and skin
TYPICAL DOSE	20 mg a day
TOP PICK	SPMD-99
COST A DAY	$1.25 for 2 capsules (20 mg) on subscription

Picture: Dylann Hendricks, Unsplash

Linked to nearly 6 years of longer life.

It switches on autophagy, the cell cleanup that fasting is famous for.

1. In a 20-year study in Italy, the people who ate the most spermidine had the death risk of people 5.7 years younger (Kiechl 2018).
2. Mice that started spermidine late in life still lived about 10% longer (Eisenberg 2016).
3. In a placebo-controlled trial, it drove more hair follicles into active growth in 3 months (Rinaldi 2017).

What it does for you

Spermidine switches on autophagy, your cells' own cleanup. Here's what it does, and what the studies in this chapter found.

BENEFIT	WHAT IT DOES
Longevity	Scientists tracked 146 compounds over 20 years. Spermidine ranked first for its link to a longer life.
Cellular renewal	Switches on autophagy, the cell cleanup that fasting also triggers.
Hair	In a placebo-controlled trial, more hair follicles moved into active growth.
Heart	In old mice, hearts stayed younger, with less thickening and better relaxation between beats.

BENEFIT	WHAT IT DOES
Skin	Supports collagen production and the skin's moisture barrier.
Brain	In old mice, it crossed into the brain and improved learning.
Immunity	In a placebo-controlled trial in older adults, it switched on autophagy genes in immune cells.

How it works

As cells age, worn-out proteins and broken parts build up inside them.

Autophagy is how a cell breaks that debris down and recycles it, and fasting is the best-known way to trigger it. Autophagy slows with age, so more of the debris stays. The 2016 Nobel Prize in medicine went to the discovery of how autophagy works.

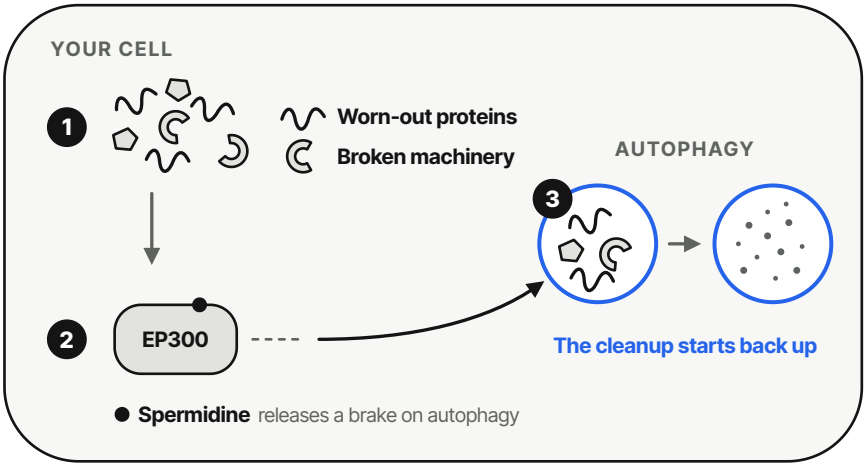
Your spermidine falls with age too.

Spermidine releases a brake on autophagy, and the cleanup starts again (Pietrocola 2015).

Fasting runs through it too. When yeast, flies, mice and people fasted, their spermidine went up. The study's title says the rest: "Spermidine is essential for fasting-mediated autophagy and longevity" (Hofer 2024).

How spermidine works

Autophagy is the process by which every cell in your body takes out the trash.



1. Autophagy slows with age, and the junk it once cleared piles up.
2. Spermidine releases a brake on autophagy, a protein called EP300.
3. The cleanup starts back up.

Spermidine switches on your cells' own cleanup crew.

What the science says

IN PEOPLE

The 20-year study. Researchers followed 829 people in Bruneck, Italy, aged 45 to 84, for 20 years, and tracked what they ate.

The more spermidine people ate, the fewer of them died. After allowing for age, sex and calories, 48 in 100 died in the third who ate the least, and 41 in the middle third.

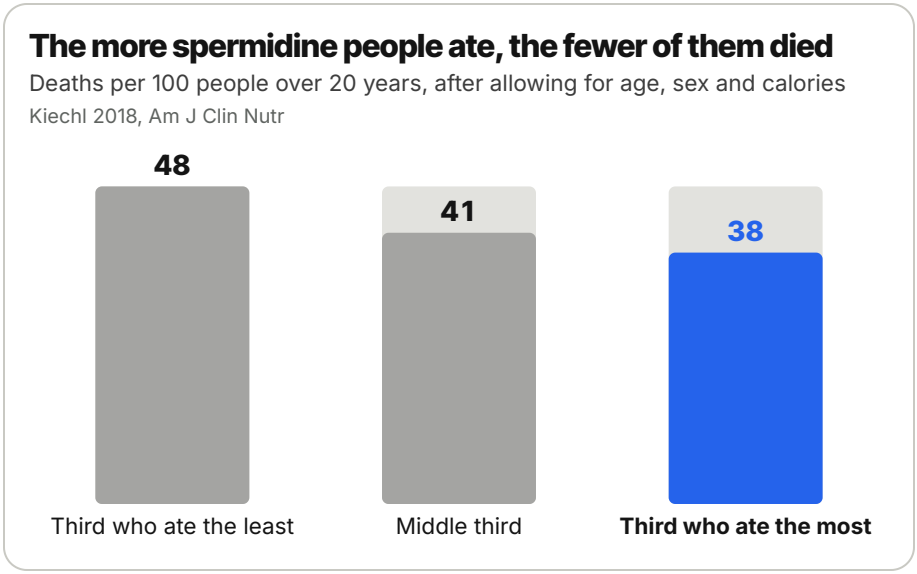
In the third who ate the most, it was 38 in 100. That gap was worth 5.7 years of age (Kiechl 2018).

Across the US, too. In 23,894 American adults, the quarter who ate the most spermidine had a 30% lower death rate and a 32% lower rate of heart deaths than the quarter who ate the least (Wu 2022).

Hair, in 90 days. In a placebo-controlled trial, hair roots in the late growth stage rose from about 25 to about 37 per 100 on spermidine. *On the placebo, they fell from about 26 to about 20* (Rinaldi 2017).

Autophagy and immunity, seen in people. In a 13-week placebo-controlled trial in 40 adults aged 65 to 81, spermidine switched on autophagy genes in their immune cells, and the paper reports stronger vaccine responses (Alsaleh 2026).

Memory. In a placebo-controlled pilot trial in older adults with memory complaints, memory improved on spermidine (Wirth 2018). A larger 12-month trial at a low 0.9 mg a day saw no change in memory (Schwarz 2022).



The gap between the top and bottom thirds was worth 5.7 years of age.

IN ANIMALS

Longer life in mice, even started late. Started at 18 months, late middle age for a mouse, spermidine raised median lifespan by about 10%. Their hearts stayed younger, with less thickening and better relaxation between beats (Eisenberg 2016).

A sharper brain. In old mice, spermidine crossed into the brain and improved learning (Schroeder 2021).

How to take it

Take 20 mg a day. Start with half (1 capsule of the top pick) with food, then the full dose after a few days. You can take up to 40 mg a day.

Take it with your last meal, or at any time of day.

The hair trial saw its result after 3 months (Rinaldi 2017), and the immune trial after 13 weeks (Alsaleh 2026).

From food, a 30 g portion of wheat germ contains about 10 mg. A 20 mg serving contains twice that.

The brands

TOP PICK

SPMD-99. In the independent lab tests, it contained 21.9 mg of spermidine per serving (2 capsules), the most of the six tested, against 20 mg on its label. It's pure (99+%) spermidine, not wheat germ extract, with no wheat or gluten. $37.40 a month on subscription ($1.25 a serving), or $44.00 one-time, at opus.life.

Picture: Opus Longevity

An independent 3rd-party lab received six of the top-selling spermidine supplements, each in unopened retail packaging, and tested how much spermidine they contain.

BRAND	LAB FOUND
SPMD-99	21.9 mg
Renue By Science	19.0 mg
Nutricost	11.0 mg

BRAND	LAB FOUND
Double Wood	10.4 mg
OMRE	9.4 mg
Longevity Labs spermidineLIFE	0.7 mg

Per serving, as each brand's label defines a serving. Each result is from the pack the lab received.

Renue By Science
19.0 mg

Nutricost
11.0 mg

Double Wood
10.4 mg

OMRE
9.4 mg

Longevity Labs spermidineLIFE
0.7 mg

Pure spermidine, not extract. Most spermidine supplements use wheat germ extract, which is roughly 1% spermidine by weight. Plant material

varies from harvest to harvest. A pure molecule does not, so every serving holds the same dose.

In the table, Renue By Science and Double Wood also use a pure form, spermidine trihydrochloride.

ALSO GOOD

Renue By Science Liposomal Spermidine. In the same tests it contained 19.0 mg per serving, the second most of the six. amazon.com

Picture: Renue By Science

CONSUMERLAB

ConsumerLab, the independent testing company, has not reviewed spermidine supplements (checked October 2026).

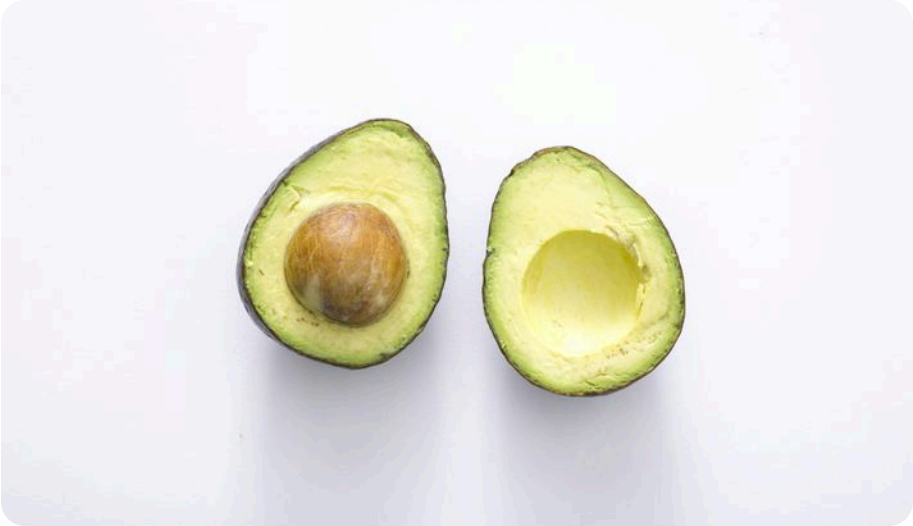
GOOD TO KNOW

Consult a medical doctor before taking any supplement if you are pregnant, nursing, have a medical condition or are taking any medications. Most spermidine supplements are wheat germ extracts, so if you avoid wheat or gluten, read the label.

SOURCES **1** Pietrocola 2015, PMID 25526088 · **2** Eisenberg 2016, PMID 27841876 · **3** Rinaldi 2017, PMID 29214104 · **4** Kiechl 2018, PMID 29955838 · **5** Wirth 2018, PMID 30388439 · **6** Schroeder 2021, PMID 33852843 · **7** Schwarz 2022, PMID 35616942 · **8** Wu 2022, PMID 36249217 · **9** Hofer 2024, PMID 39117797 · **10** Alsaleh 2026, PMID 42169618 · **11** Lab results: independent 3rd-party lab reports, 17 September 2026

3 NMN

WHAT IT IS	nicotinamide mononucleotide, the molecule your body uses to rebuild NAD+
BEST FOR	DNA repair, energy, healthy aging, stamina, blood sugar
TYPICAL DOSE	1,000 mg a day
TOP PICK	NMN-99
COST A DAY	$1.79 for 2 capsules (1,000 mg) on subscription



Picture: Thought Catalog, Unsplash

More NAD+, the molecule your cells need for energy and DNA repair.

Your body turns NMN straight into NAD+, which falls with age.

1. In 65 healthy adults, 1,000 mg a day for 14 days raised blood NAD+ to about double the placebo group (Christen 2026).
2. In a 60-day trial, the blood biological age of people on a placebo went up. On NMN, it held steady (Yi 2023).
3. Mice on NMN through a year of normal aging stayed leaner, more active and better at handling sugar (Mills 2016).

What it does for you

NAD+ is a molecule your cells need for DNA repair, for making energy and for the sirtuins, enzymes linked to longer life.

Your body makes less of it every year. It begins to drop around 25, a quarter of it is gone by 35, and half of it is gone by 50.

Your body uses NMN to rebuild NAD+.

BENEFIT	WHAT NAD+ DOES
Longevity	NAD+ fuels sirtuins, enzymes linked to longer life. They slow down when NAD+ drops.
DNA repair	NAD+ powers the enzymes that repair tens of thousands of DNA breaks a day.
Cellular energy	NAD+ is how your mitochondria make energy and recycle themselves when they wear out.
Brain	NAD+ fuels your neurons and the repair pathways that keep them working.

BENEFIT	WHAT NAD+ DOES
Heart	Heart muscle runs on the energy your mitochondria make with NAD+.
Cellular renewal	NAD+ powers autophagy, the system your cells use to clear debris and rebuild.
Skin	NAD+ supports the cells that produce collagen and elastin.

How it works

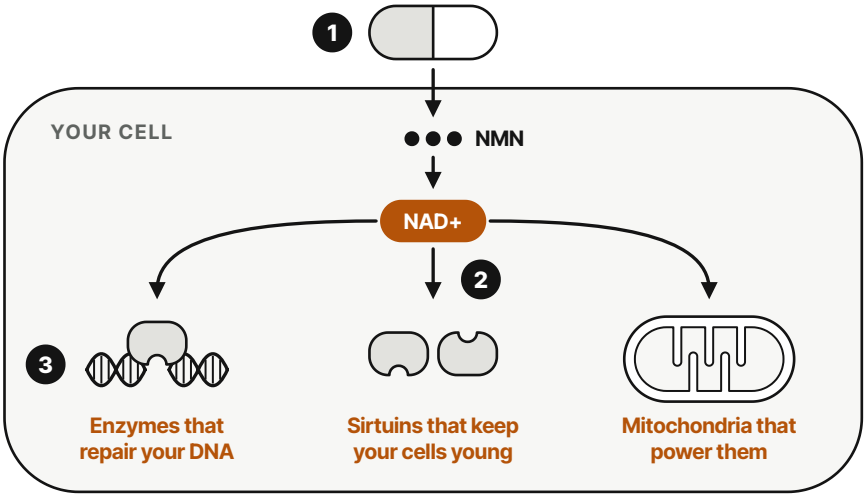
Your body makes NMN to build NAD+, and when you take NMN, your body turns it into NAD+.

That NAD+ fuels the enzymes that repair your DNA, the sirtuins, and the mitochondria that make your cells' energy.

In old mice, raising NAD+ made their mitochondria work like a young mouse's (Gomes 2013).

How NMN works

Your body makes NMN for one purpose: to rebuild NAD+.



1. When you take NMN, your body directly converts it into NAD+.
2. Fresh NAD+ goes straight to work, all at once.
3. It fuels the enzymes that repair your DNA, the sirtuins that keep your cells young, and the mitochondria that power them.

As NAD+ runs low, your cells age faster and lose energy. NMN rebuilds it.

What the science says

IN PEOPLE

About twice the NAD+ of the placebo group, in two weeks. In a 14-day trial of 65 healthy adults, 1,000 mg a day raised blood NAD+ to about double the placebo group's (Christen 2026).

Farther walks. In a 60-day trial of 80 healthy adults aged 40 to 65, the 900 mg group's six-minute walk went from 323 to 480 meters. The placebo group's went from 325 to 330 (Yi 2023).

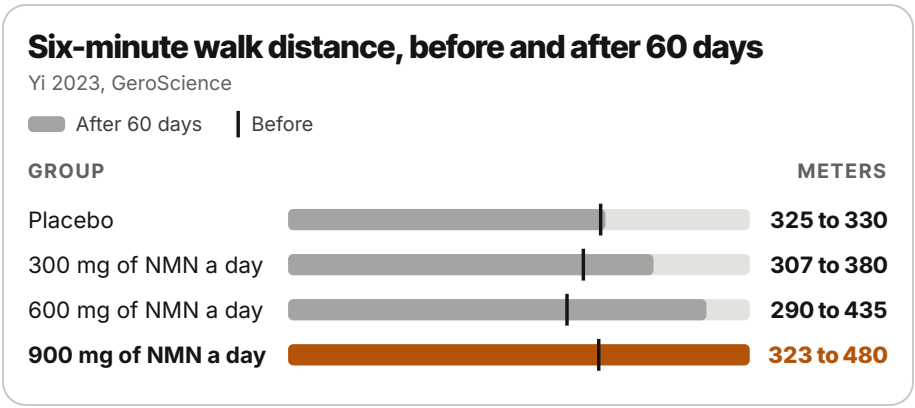
More NAD+, steadier insulin. In a 60-day trial of 66 healthy adults, 300 mg a day of Uthever NMN raised NAD+ by 38%, against 14.3% on the placebo. Insulin resistance climbed 30.6% on the placebo and barely moved, 0.6%, on NMN (Huang 2022).

Better blood sugar control. In women with prediabetes, 10 weeks of 250 mg a day made their muscles respond better to insulin. On the placebo, nothing changed (Yoshino 2021).

Walking speed and sleep. In 60 older adults, 12 weeks of NMN sped up their walking and improved their sleep, against a placebo (Morifuji 2024).

It's well tolerated. A 2026 review of 15 placebo-controlled trials, at 250 to 2,000 mg a day, found no more side effects on NMN than on a placebo (Yang 2026).

The rise fades when you stop. NAD+ was back where it started 4 weeks after people stopped (Okabe 2022).



The 900 mg group went from 323 to 480 meters, while the placebo group went from 325 to 330.

IN ANIMALS

Longer life. NMN raised female mice's median lifespan by 8.5%, and mice of both sexes were less frail (Kane 2024, bioRxiv).

Younger arteries. In old mice, 8 weeks of NMN brought artery function from 60% to 86%, as good as young mice (de Picciotto 2016).

A sharper brain. In old mice, two weeks of NMN restored blood flow in the brain and improved memory (Tarantini 2019).

How to take it

Take 1,000 mg a day (2 capsules of the top pick), with or without food. Doses up to 2,000 mg a day have been studied in controlled trials.

Morning is best, but any time of day works.

Blood NAD+ rises within the first two weeks (Christen 2026).

The brands

TOP PICK

NMN-99. In the independent lab tests, it contained 1,139.6 mg of NMN per serving (2 capsules), the most of the six tested, against 1,000 mg on its label. It's 99+% pure beta-NMN, made with Uthever, the NMN used in a placebo-controlled trial (Huang 2022). $53.55 a month on subscription ($1.79 a serving), or $63.00 one-time, at opus.life.

Picture: Opus Longevity

In a 2021 test by Niagen Bioscience (the maker of Tru Niagen), 14 of 22 NMN supplements contained less than 1% of the NMN on the label.

An independent 3rd-party lab received six of the top-selling NMN supplements, each in unopened retail packaging, and tested how much NMN they contain.

BRAND	LABEL SAYS	LAB FOUND
NMN-99	1,000 mg	**1,139.6 mg**
Black Forest	1,000 mg	**905.0 mg**
Renue By Science	500 mg	**481.0 mg**
partiQlar	500 mg	**466.8 mg**
Nutricost	500 mg	**455.1 mg**
Genex Formulas	250 mg	**260.7 mg**

Per serving, as each brand's label defines a serving. Each result is from the pack the lab received.

The trials in this chapter that showed benefits used 250 to 1,000 mg a day, and the 14-day trial that raised NAD+ to about double the placebo group used 1,000 mg (Christen 2026). Four of the six are sold as 500 mg or less a serving, and the lab found about that, so to match that trial you'd need two servings or more.

Black Forest
905.0 mg

Renue By Science
481.0 mg

partiQlar
466.8 mg

Nutricost
455.1 mg

Genex Formulas
260.7 mg

ALSO GOOD

Black Forest NMN 1000 mg. In the same tests it contained 905.0 mg per serving, the second most of the six, against 1,000 mg on its label. amazon.com

Picture: Black Forest

The other NAD+ booster: NR. Nicotinamide riboside, or NR, is NMN's close cousin, and your body turns it into NAD+ too. In a trial of healthy adults aged 55 to 79, 1,000 mg of NR a day for 6 weeks raised NAD+ in their immune cells by about 60% compared with a placebo (Martens 2018).

You can take either NMN or NR - and the best research says NMN is the one.

ALSO GOOD

If you'd rather take NR, Tru Niagen is the clear winner. $49.00 for 30 capsules of 300 mg, or $39.20 on subscription, at truniagen.com.

Picture: Niagen Bioscience

CONSUMERLAB

ConsumerLab tested 13 NAD boosters (NAD, NADH, NR and NMN) in 2021, 2022 and 2025. Most held the amount on their labels, with no contamination. Many were expensive, and prices varied so much that comparing could save as much as 67%. Tru Niagen 300 mg passed, with 303 mg of NR found in a capsule.

GOOD TO KNOW

Consult a medical doctor before taking any supplement if you are pregnant, nursing, have a medical condition or are taking any medications. In one trial, NAD+ was back where it started 4 weeks after people stopped.

SOURCES **1** Gomes 2013, PMID 24360282 · **2** de Picciotto 2016, PMID 26970090 · **3** Mills 2016, PMID 28068222 · **4** Martens 2018, PMID 29599478 · **5** Tarantini 2019, PMID 31015147 · **6** Yoshino 2021, PMID 33888596 · **7** Huang 2022, PMID 35821806 · **8** Okabe 2022, PMID 35479740 · **9** Yi 2023, PMID 36482258 · **10** Kane 2024, PMID 38979132 · **11** Morifuji 2024, PMID 38789831 · **12** Christen 2026, PMID 41540253 · **13** Yang 2026, PMID 42514320 · **14** Lab results: independent 3rd-party lab reports, 17 September 2026

4 Urolithin A

WHAT IT IS	a compound your gut bacteria make from pomegranates, berries and walnuts, if you have the right bacteria
BEST FOR	muscle strength, stamina, cell energy, a younger immune system, lower inflammation
TYPICAL DOSE	500 mg a day (1,000 mg in the stamina and immune trials)
TOP PICK	Mitopure by Timeline
COST A DAY	$2.97 for 2 softgels (500 mg) on a monthly subscription ($2.30 on the 12-month plan)

Your gut bacteria make urolithin A from compounds called ellagitannins, found in pomegranates, berries and walnuts.

Picture: Mockup Graphics, Unsplash

Stronger muscles and more stamina, from a compound most people can't make on their own.

It clears out your cells' worn-out power plants.

1. Adults aged 40 to 65 on 500 mg a day got 12% stronger in the hamstrings in 4 months. The placebo group got 9.8% weaker (Singh 2022).

2. Only 12 in 100 adults had any urolithin A in their blood to start. A 500 mg supplement gave more than 6 times the exposure of a glass of pomegranate juice (Singh 2022).

3. Worms on urolithin A lived more than 45% longer, and old mice had 42% more running endurance (Ryu 2016).

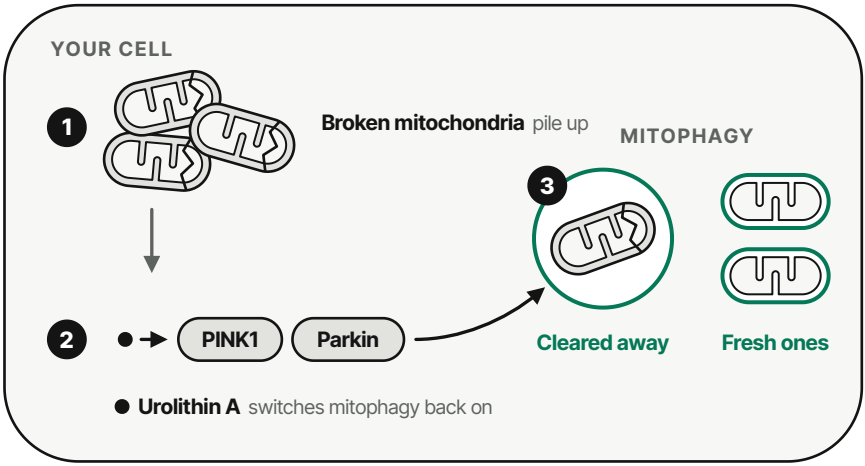
What it does for you

Every cell runs on tiny power plants called mitochondria. With age, your cells get slower at recycling worn-out mitochondria, and the broken ones pile up.

Urolithin A clears out the worn-out ones so fresh ones can take their place.

How urolithin A works

Every cell in your body runs on tiny power plants called mitochondria.



1. Mitochondria wear out, like old batteries, and the broken ones pile up.
2. Urolithin A switches mitophagy back on, through two proteins called PINK1 and Parkin.
3. The broken mitochondria get cleared away, and the cell builds fresh ones.

Urolithin A clears them out so fresh ones can take their place.

What the science says

Stronger legs in 4 months. 88 inactive adults aged 40 to 65 took 500 mg, 1,000 mg or a placebo every day for 4 months. Hamstring strength rose 12% on 500 mg and 9.8% on 1,000 mg, and fell 9.8% on the placebo (Singh 2022).

On 1,000 mg, CRP, a blood marker of inflammation, fell too (Singh 2022).

More stamina after 65. 66 adults aged 65 to 90 took 1,000 mg a day or a placebo for 4 months. By 2 months, a hand muscle managed 95 more contractions before tiring, against 12 more on the placebo.

Their blood markers of healthy mitochondria improved, and CRP fell (Liu 2022).

Younger immune cells. In 50 adults aged 45 to 70, 1,000 mg a day raised their young-type immune cells, the ones that fight new infections, within 4

weeks (Denk 2025).

Both 4-month trials missed their main goal: peak power on a bike in the strength trial, and how far people walked in 6 minutes in the stamina trial.

Mitopure's maker, Amazentis, funded most of the trials.

How to take it

Take 500 mg a day, the dose that raised strength. The stamina and immune trials used 1,000 mg, and there's no shown benefit above that.

Change in hamstring strength after 4 months

Singh 2022, Cell Rep Med, 88 inactive adults aged 40 to 65

Placebo	500 mg	1,000 mg
-9.8%	**+12%**	**+9.8%**
Taken every day.	Urolithin A, taken every day.	Urolithin A, taken every day.
Hamstring strength fell.	Hamstring strength rose.	Hamstring strength rose.

On 500 mg, hamstring strength rose 12%. On the placebo, it fell 9.8%.

Any time of day works, with or without food. Peter Diamandis adds Mitopure to his protein shake on lifting days.

Give it at least 4 months, as Timeline advises.

The brands

TOP PICK

Mitopure by Timeline. It's the urolithin A used in nearly all the human trials, from the company that ran them. Two softgels give 500 mg, the dose that raised strength. They're NSF Certified for Sport, the only urolithin A we found with that seal, and Clean Label Certified. $89 a month on subscription ($2.97 a day), or $99 one-time, at timeline.com.

Picture: Timeline

A bottle holds 30 servings of 2 softgels. One-time, that's $3.30 a day, and the 12-month plan is $827.92 ($2.30 a day).

ALSO GOOD

Toniiq Urolithin A Complex, for less than half the cost a day. $34.97 for 90 capsules, taken 3 a day with a meal. That's $1.17 a day, and the brand states 99.4% purity. It isn't Mitopure, so it's not the form used in the trials. toniiq.com

GOOD TO KNOW

Consult a medical doctor before taking any supplement if you are pregnant, nursing, have a medical condition or are taking any medications. Ask first before surgery, too. In the trials, up to 1,000 mg a day for 4 months had side effects no different from placebo.

SOURCES **1** Ryu 2016, PMID 27400265 · **2** Singh 2022, PMID 34117375 · **3** Singh 2022, PMID 35584623 · **4** Liu 2022, PMID 35050355 · **5** Denk 2025, PMID 41174221 · **6** Diamandis P, Longevity Guidebook (2025 edition)

5 Omega-3

WHAT IT IS	EPA and DHA, the long-chain omega-3 fats in oily fish and in the algae fish eat
BEST FOR	slower biological aging, a longer life, heart, muscle, brain, skin, mood
TYPICAL DOSE	1 g (1,000 mg) of EPA plus DHA a day
TOP PICK	Momentous Omega-3
COST A DAY	50 cents for 1 softgel (800 mg, close to the trial dose) on subscription (67 cents one-time)

EPA and DHA are long-chain omega-3 fats. You get them from oily fish like salmon, sardines, anchovies and mackerel.
Picture: Abstral Official, Unsplash

In a 3-year trial, it slowed biological aging.

1 In 777 adults aged 70 and over, 1 g a day for 3 years slowed three different DNA aging clocks, DunedinPACE among them (Bischoff-Ferrari 2025).

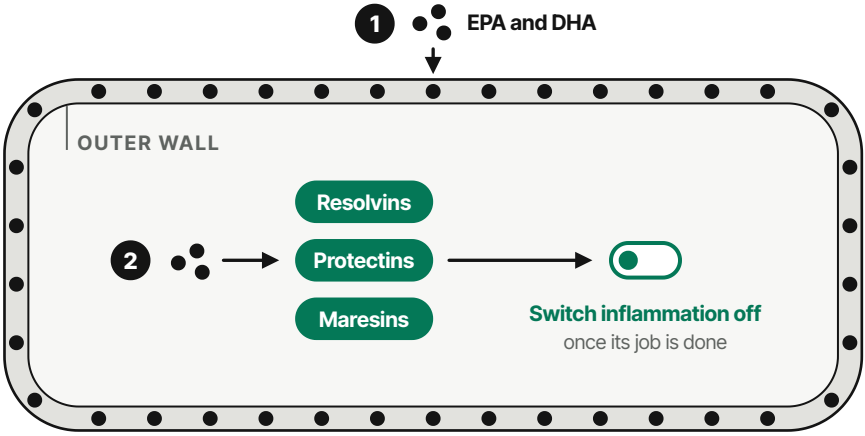
2 People with an Omega-3 Index above 6.8% had a 34% lower risk of dying from any cause and 39% fewer heart events than people below 4.2% (Harris 2018).

What it does for you

The omega-3s in oily fish build themselves into the walls of every cell you have. They also lower triglycerides, a fat in your blood.

How omega-3 works

EPA and DHA are long-chain omega-3 fats.



1. EPA and DHA build into the outer wall of every cell and make it more flexible.
2. Your body turns them into resolvins, protectins and maresins, the signals that switch inflammation off once its job is done.

Omega-3s build themselves into the walls of every cell in your body.

What the science says

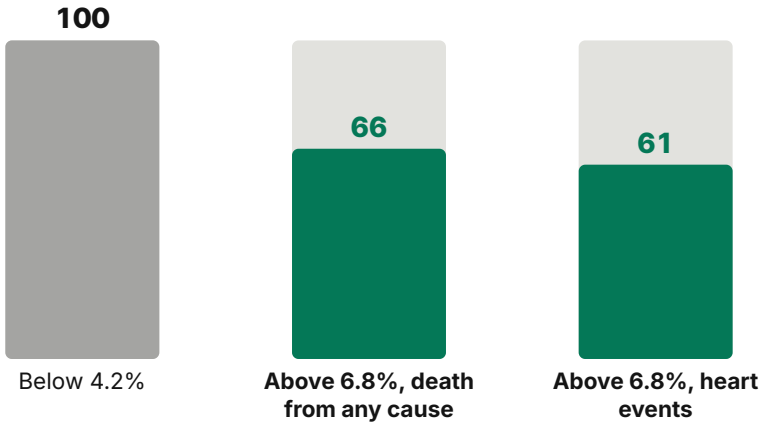
Heart. In VITAL, 25,871 adults took 1 g of fish oil a day or a placebo for about 5 years. Heart attacks fell 28%, though the trial missed its main goal: fewer major heart events overall (Manson 2019).

The Framingham Heart Study followed about 2,500 adults for 7.3 years. Those with an Omega-3 Index above 6.8% had 39% fewer heart events and a 34% lower risk of dying than those below 4.2% (Harris 2018).

Risk over 7.3 years, Omega-3 Index above 6.8% compared with below 4.2%

Risk for people below 4.2% is set at 100.

Harris 2018, J Clin Lipidol, Framingham Heart Study, 2,500 adults



People with an Omega-3 Index above 6.8% had a 34% lower risk of death and 39% fewer heart events than people below 4.2%.

Muscle. Adults aged 60 to 85 took fish oil or corn oil for 6 months. On fish oil, thigh muscle grew 3.6% and grip strength rose 2.3 kg (Smith 2015).

Brain. In 215,083 UK adults, people who took fish oil had 13% less dementia (Liu 2022).

Skin. 4 g of EPA a day for 3 months meant about a third more sun before skin burned (Rhodes 2003).

Mood. Across 26 trials, EPA-rich formulas (60% or more EPA) at 1 g a day or less eased depression. DHA-rich ones didn't (Liao 2019).

How to take it

Take 1 g of EPA plus DHA a day, with a meal that has some fat. For blood pressure and triglycerides, studies used 2 to 3 g.

Pick the triglyceride form (natural, or re-esterified, labelled rTG). Vegan? Take algae oil. For mood, pick an EPA-rich formula.

After 3 to 4 months, test your Omega-3 Index, the share of omega-3 in your red blood cells, and aim for 8% or more.

Fish oil can go stale. Look for freshness testing (IFOS), and keep the bottle cool and sealed.

The brands

TOP PICK

Momentous Omega-3. Two softgels give 800 mg EPA plus 800 mg DHA, 1,600 mg in all. It's wild fish oil from Norway, NSF Certified for Sport. One softgel gives 800 mg, close to the trial dose, so a bottle of 60 lasts 2 months. $29.99 on subscription (50 cents a softgel), or $39.99 one-time, at livemomentous.com.

Picture: Momentous

ALSO GOOD

Carlson Elite Omega-3 Gems, nearly the same EPA plus DHA as 2 Momentous softgels, for less: $28.20 for 30 servings at carlsonlabs.com. Two softgels give 1,400 mg of EPA plus DHA, for $0.81 to $0.94 a day depending on the bottle size, and the brand tests it for freshness. Thorne Super EPA is EPA-rich, the kind that helps mood: $45 for 90 gelcaps at thorne.com. One gelcap gives 695 mg of EPA plus DHA, for $0.50 a day, and it's NSF Certified for Sport. Vegan? Momentous Vegan Omega-3 gives 1,000 mg from algae, the source and dose of the aging-clock trial, $54.99 at livemomentous.com. That's $1.83 a day, and it's NSF listed.

Carlson Elite Omega-3 Gems

Thorne Super EPA

Momentous Vegan Omega-3 (algae)

CONSUMERLAB

ConsumerLab tested 18 omega-3 supplements in 2026, and all but one passed (that one failed for freshness). Momentous, the top pick, wasn't in its tests. From Carlson, it tested Elite EPA Gems, an EPA-only softgel, which passed with 1,003 mg of EPA found against 1,000 mg on the label. From Thorne, it tested the stronger Super EPA Pro, which passed and was a top pick, at $1.55 for 2 gelcaps.

GOOD TO KNOW

Consult a medical doctor before taking any supplement if you are pregnant, nursing, have a medical condition or are taking any medications. Above 1 g a day, the risk of atrial fibrillation (an irregular heartbeat) was 49% higher in 7 trials, against 12% at 1 g or less (Gencer 2021). On a blood thinner, or having surgery? Ask your doctor first. Allergic to fish or shellfish? Take algae oil.

SOURCES **1** Rhodes 2003, PMID 12771037 · **2** Smith 2015, PMID 25994567 · **3** Harris 2018, PMID 29559306 · **4** Manson 2019, PMID 30415637 · **5** Liao 2019, PMID 31383846 · **6** Gencer 2021, PMID 34612056 · **7** Liu 2022, PMID 35124466 · **8** Bischoff-Ferrari 2025, PMID 39900648

6 Fisetin

WHAT IT IS	a plant compound (a flavonoid) found in strawberries, apples, persimmons and onions
BEST FOR	clearing out aging “zombie” cells, lower inflammation, blood sugar, arteries, brain
TYPICAL DOSE	100 to 150 mg a day, or short high-dose bursts
TOP PICK	Renue By Science LIPO Fisetin
COST A DAY	$0.72 for 1 capsule (150 mg)

Strawberries are the richest food source.
Picture: Sandy Millar, Unsplash

The most powerful plant compound tested for clearing out aging cells.

In mice, it extended life even when started late.

1. Of 10 plant compounds tested, fisetin was the most powerful at killing senescent ("zombie") cells (Yousefzadeh 2018).
2. Mice started on fisetin at an age "roughly equivalent to age 75 years in humans" still lived longer (Yousefzadeh 2018).
3. 10 people averaging 70 who took 100 mg a day for about 2 months had 27% fewer zombie-marked immune cells, with no placebo comparison (Hambright 2024).

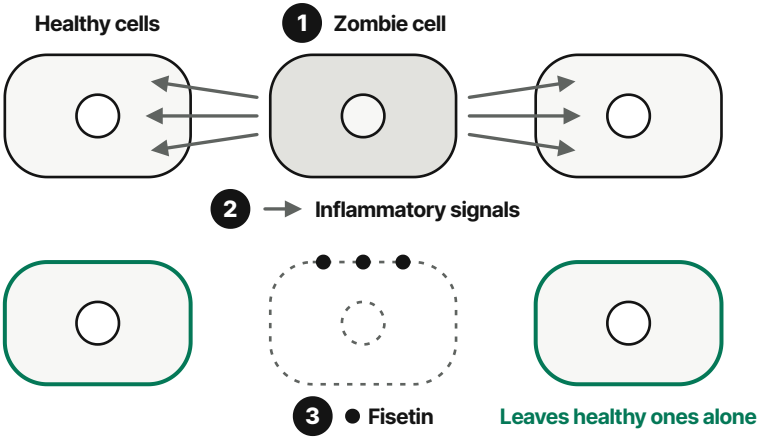
What it does for you

Some of your aging cells refuse to die. Fisetin pushes many of them to self-destruct and leaves healthy ones alone (Zhu 2017).

That "hit and run" effect is why you can take it in short bursts.

How fisetin works

As you age, some of your cells stop dividing but refuse to die.



1. Scientists call them senescent cells. Most people call them zombie cells.
2. They give off a mix of inflammatory signals that ages the tissue around them.
3. Fisetin pushes many of these cells to self-destruct while it leaves healthy ones alone.

They pile up and leak inflammation into the healthy tissue around them. Fisetin clears them out.

Strawberries are the richest food source, but *you'd need about 2 pounds a day to match one 150 mg capsule* (Arai 2000).

About 2 pounds of strawberries a day matches one 150 mg capsule.

What the science says

Lower blood sugar and inflammation. 44 men with obesity took 200 mg a day for 12 weeks. Two inflammation signals fell, and so did fasting blood sugar and insulin, most of all with exercise (Alipour 2026).

The form matters. Plain fisetin barely reached the blood. A form bound to fenugreek fiber (FF-20) gave about 27 times more (Krishnakumar 2022).

In 74 adults with knee arthritis, two-day high-dose bursts were no better than placebo (NCT04210986, ClinicalTrials.gov).

IN MICE

Longer life, even started late. Old mice fed fisetin lived longer, and old mice given 5 days of it had fewer zombie cells in many tissues (Yousefzadeh 2018).

Younger arteries. On-and-off fisetin improved artery function in old mice (Mahoney 2024).

A sharper brain. In Alzheimer's mice, it prevented learning and memory loss (Currais 2014).

A second lifespan study, in a different strain of mice, saw no gain at the dose tested (Harrison 2024).

How to take it

Every day. Three human studies used 100 mg a day, the immune-cell study among them (Hambright 2024). The 12-week blood sugar trial used 200 mg. Renue's label is 1 capsule (150 mg) a day.

In bursts. Mayo Clinic's trials and the knee trial used about 20 mg per kg of body weight a day for 2 days in a row (about 1,400 mg for a 154 lb person), repeated a month later. A small pilot used 500 mg a day for 1 week each month.

Pick a form your body can absorb: liposomal (Renue), fenugreek fiber (FF-20) or an oil blend. Take it with a meal that has some fat.

The brands

TOP PICK

Renue By Science LIPO Fisetin. Each capsule holds 150 mg of fisetin in liposomes, tiny fat bubbles, for better absorption. An independent lab's certificate on Renue's product page found 151.6 mg a capsule, with heavy metals far below limits and no E. coli or Salmonella. $64.95 for 90 capsules ($0.72 a day), at renuebyscience.com.

Picture: Renue By Science

BRAND	FISETIN PER CAPSULE	COST A DAY
Renue By Science LIPO Fisetin	**150 mg, liposomal**	**$0.72**
Doctor's Best Fisetin	100 mg (Novusetin)	$0.77
Double Wood Fisetin	100 mg, low cost per 100 mg	$22.95 a bottle
Life Extension Bio-Fisetin	8 mg, with fenugreek fiber	$0.38

Doctor's Best Fisetin

100 mg (Novusetin)

Double Wood Fisetin

100 mg

Life Extension Bio-Fisetin

8 mg, with fenugreek fiber

ALSO GOOD

Doctor's Best Fisetin with Novusetin gives 100 mg a capsule, the daily dose in three human studies: $22.99 for 30 at drbvitamins.com. Double Wood Fisetin gives 100 mg a capsule from smoke tree stems, $22.95 a bottle at doublewoodsupplements.com.

GOOD TO KNOW

Consult a medical doctor before taking any supplement if you are pregnant, nursing, have a medical condition or are taking any medications. The human trials, high-dose bursts included, saw no serious side effects. Ask first if you take blood thinners or other prescription drugs, or have liver or kidney disease. And as Peter Diamandis points out, senescent cells also help wounds heal, so the goal is fewer of them, not none.

SOURCES **1** Arai 2000, PMID 10958819 · **2** Currais 2014, PMID 24341874 · **3** Zhu 2017, PMID 28273655 · **4** Yousefzadeh 2018, PMID 30279143 · **5** Krishnakumar 2022, PMID 36304817 · **6** Mahoney 2024, PMID 38062873 · **7** Hambright 2024, PMID 38708778 · **8** Harrison 2024, PMID 38041783 · **9** Alipour 2026, PMID 42218768 · **10** ClinicalTrials.gov NCT04210986 · **11** Diamandis P, Longevity Guidebook (2025 edition)

7 Vitamin D3 and K2

WHAT IT IS	vitamin D3, the vitamin your skin makes from sunlight, paired with vitamin K2, which sends calcium into your bones
BEST FOR	slower aging of your telomeres, a longer life, brain, immune system, blood sugar, bones and arteries
TYPICAL DOSE	2,000 IU of D3 a day, with K2
TOP PICK	Thorne Vitamin D + K2 Liquid
COST A DAY	about 11 cents for 4 drops (2,000 IU)

Vitamin D3, the vitamin your skin makes from sunlight.
Picture: CHUTTERSNAP, Unsplash

Younger telomeres, a stronger immune system, a longer life.

For about 11 cents a day.

1. In a 4-year trial of 1,031 adults, the telomeres of people on 2,000 IU of D3 a day shrank by 20 base pairs. On a placebo, they shrank by 160 (Zhu 2025).

2. A genetic study of 307,601 people found that running low on vitamin D raises your risk of dying early (Sutherland 2022).

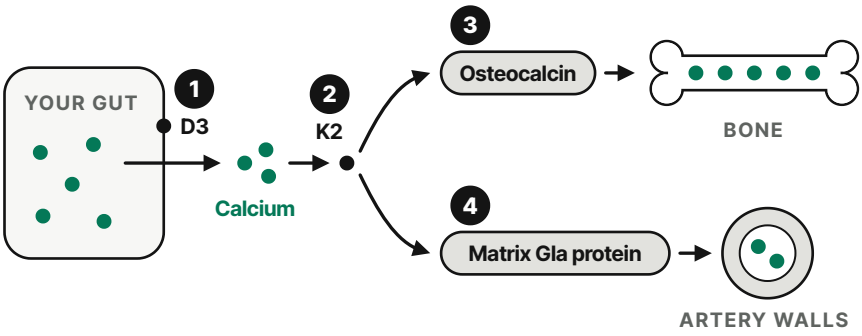
3. Among 12,388 older adults, the ones who took vitamin D had 40% fewer new cases of dementia (Ghahremani 2023).

What it does for you

D3 helps your gut absorb calcium, and it calms an overactive immune system. K2 switches on two proteins that make sure that calcium ends up in your bones, not your arteries.

How vitamin D3 and K2 work

D3 brings calcium in, and K2 tells it where to go.



1. Once your body activates vitamin D3, it helps your gut absorb calcium.
2. K2 is the switch for two proteins that handle calcium.
3. Osteocalcin builds calcium into bone.
4. Matrix Gla protein keeps calcium from settling in your artery walls.

Over 4 years in a big trial, vitamin D3 slowed down the shortening of your telomeres, the caps on the ends of your chromosomes (Zhu 2025). The researchers said that's the equivalent of nearly 3 years less aging.

What the science says

Immune system. In the VITAL trial, 25,871 adults took 2,000 IU a day or a placebo for about 5 years. The D3 group had 22% fewer autoimmune diseases, like rheumatoid arthritis (Hahn 2022).

Blood sugar. In three trials of people with prediabetes, vitamin D cut new cases of diabetes by 15% (Pittas 2023).

VITAL missed its main targets, including heart problems (Manson 2019), and big monthly doses haven't helped people live longer (Neale 2022).

K2 for bones and arteries. In 244 healthy women after menopause, 180 mcg of K2 (MK-7) a day for 3 years slowed bone loss at the spine and hip and kept arteries more flexible than a placebo (Knapen 2013; Knapen 2015).

How to take it

Take 2,000 IU (50 mcg) of D3 every day, with a meal that has some fat. In Thorne D + K2 Liquid, that's 4 drops.

Stay at or under 4,000 IU a day from all sources, the NIH upper limit, unless your doctor is testing you.

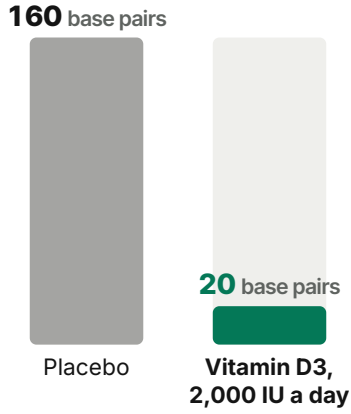
A 25-hydroxyvitamin D blood test shows where you are. The danger zone is below 20 ng/mL (Sutherland 2022). In prediabetes, the biggest benefit came at 50 ng/mL or higher (Pittas 2023).

For K2, the bone and artery trials used 180 mcg of MK-7 a day.

Take magnesium too. Vitamin D can't do its job without it (Dai 2018).

Telomere length lost over 4 years

Zhu 2025, Am J Clin Nutr, 1,031 adults, VITAL trial



On 2,000 IU of D3 a day, telomeres shrank by 20 base pairs. On a placebo, they shrank by 160.

The brands

TOP PICK

Thorne Vitamin D + K2 Liquid. Two drops give 1,000 IU of D3 and 200 mcg of K2, so 4 drops give the 2,000 IU dose. It's the top rated one: ConsumerLab's top pick for D with MK-4, and NSF Contents Certified, so what's on the label is in the bottle. $34 for 1,200 drops (about 11 cents a day) at thorne.com.

Picture: Thorne

Each drop is 500 IU, so it's easy to get your dose right. Its K2 is MK-4. If you'd rather have MK-7, the form in the bone and artery trials, the next one is a good choice.

ALSO GOOD

NOW Foods Vitamin D-3 & K-2. Two capsules give the trial dose of 2,000 IU, with K2 as MK-7. It's a low-cost MK-7 option, about $15 to $20 for 120 capsules. Each capsule has 45 mcg of MK-7, and 2 capsules cost about 25 to 33 cents a day. nowfoods.com

1,000 IU (1 capsule), 45 mcg MK-7

CONSUMERLAB

ConsumerLab tested 31 vitamin D and 15 vitamin K products from 2024 to 2026. Thorne's D + K2 liquid passed (1,312.6 IU of D3 found against 1,000 on the label) and was ConsumerLab's top pick for D with MK-4. ConsumerLab's MK-7 pick was Carlson Super Daily D3 + K2. Sports Research D3 + K2 wasn't approved: 7,720 IU of D3 found against 5,000 on its label. NOW's D-3 & K-2 wasn't in its tests.

Carlson Super Daily D3 + K2, ConsumerLab's MK-7 pick.

Picture: Carlson Laboratories

GOOD TO KNOW

On warfarin (Coumadin)? Ask your doctor first, since vitamin K changes how it works; Thorne's label says to avoid the combination. Newer blood thinners like apixaban and rivaroxaban don't work through vitamin K. Vitamin D interacts with orlistat, statins, steroids and thiazide diuretics, and too much of it over time can raise your blood calcium. Consult a medical doctor before taking any supplement if you are pregnant, nursing, have a medical condition or are taking any medications.

SOURCES **1** Knapen 2013, PMID 23525894 · **2** Knapen 2015, PMID 25694037 · **3** Dai 2018, PMID 30541089 · **4** Manson 2019, PMID 30415629 · **5** Hahn 2022, PMID 35082139 · **6** Neale 2022, PMID 35026158 · **7** Sutherland 2022, PMID 36279545 · **8** Ghahremani 2023, PMID 36874594 · **9** Pittas 2023, PMID 36745886 · **10** Zhu 2025, PMID 40409468

8 Creatine

WHAT IT IS	a natural compound your body makes and stores in your muscles and brain as quick-release energy
BEST FOR	muscle and strength, memory and focus, mood, blood sugar, bones, healthy aging
TYPICAL DOSE	3 to 5 g a day
TOP PICK	Thorne Creatine
COST A DAY	49 cents

Creatine is the most-studied supplement in sports science.
Picture: HowToGym, Unsplash

More muscle, a sharper brain, stronger bones.

For less than 50 cents a day.

1. Aged mice fed creatine had a 9% longer healthy life, and did better on brain tests (Bender 2008).
2. One big dose during a sleepless night sharpened thinking and processing speed within hours (Gordji-Nejad 2024).
3. In type 2 diabetes, creatine plus exercise took HbA1c, the 3-month blood sugar marker, from 7.4% to 6.4% in 12 weeks. On a placebo with the same exercise, it went from 7.5% to 7.6% (Gualano 2011).

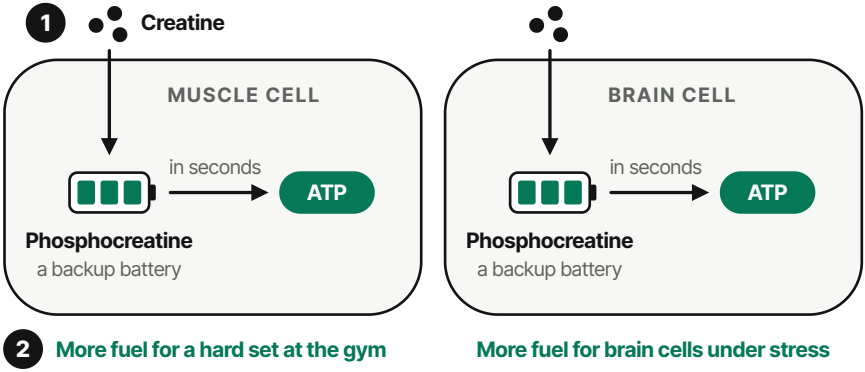
What it does for you

Your muscles and brain keep a backup battery. Creatine fills it.

It's the most-studied supplement in sports science, and now a longevity supplement too.

How creatine works

Your cells run on ATP, their energy currency.



1. Creatine is stored as phosphocreatine, a backup battery that recharges ATP in seconds.
2. More stored creatine means more fuel for a hard set at the gym, and for brain cells under stress.

What the science says

Muscle and strength. In a pooled analysis of 357 older adults who did strength training, creatine added more lean mass, more strength and better chair-stand scores than training alone (Devries 2014).

Bones after menopause. For a year, women after menopause did weight training with creatine or a placebo. Hip bone density fell 1.2% on creatine and 3.9% on placebo, and *their bench press rose 64%, against 34%* (Chilibeck 2015).

Memory and focus. Across 16 trials and 492 people aged 21 to 76, creatine improved memory, attention and processing speed (Xu 2024).

Mood. 52 women with major depression took an antidepressant with 5 g of creatine or a placebo for 8 weeks. The creatine group improved more, starting at week 2 (Lyoo 2012).

How to take it

Take 3 to 5 g of plain creatine monohydrate a day, any time of day. It's the most-studied form, and no other form has beaten it head to head (Jagim 2012; Spillane 2009).

To fill up faster, load with 20 g a day, in four 5 g doses, for 5 to 7 days, then drop to 3 to 5 g. Your muscle stores fill in about a week with loading, and about a month without (Hultman 1996).

Pair it with strength training, since the muscle and bone results came with it. Strength and muscle gains show at 8 to 12 weeks, and bone effects at 1 to 2 years.

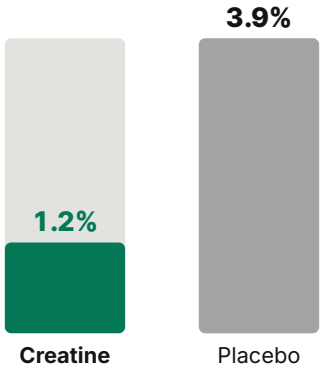
Some brain trials used more: 20 g a day for 1 to 8 weeks.

Mix it fresh, because creatine breaks down in liquid over time.

Hip bone density lost over 12 months

Women after menopause who did weight training.

Chilibeck 2015

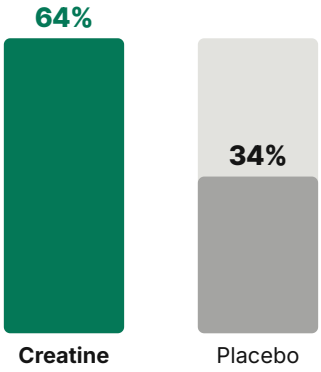


Hip bone density fell 1.2% on creatine and 3.9% on placebo.

Bench press gained over 12 months

Women after menopause who did weight training.

Chilibeck 2015



Their bench press rose 64%, against 34%.

The brands

TOP PICK

Thorne Creatine. One scoop is 5 g of creatine monohydrate and nothing else, the most-studied form, and no other form has beaten it head to head. It's NSF Certified for Sport, ConsumerLab found 5.19 g in a 5 g scoop, and it's the powder Peter Diamandis mixes into his protein shake. $44 for 90 servings (49 cents a day) at thorne.com.

Picture: Thorne

ALSO GOOD

Momentous Creatine. Vegan, NSF Certified for Sport, and the lowest certified price a day with a subscription. $42.99 for 90 servings at livemomentous.com. It's creatine monohydrate, at 48 cents a day, or 35 cents with a subscription.

creatine monohydrate, vegan

Be careful with gummies. In 2025 tests reported in the press, two of six creatine gummies sold on Amazon had no detectable creatine, and in Australia, PUSH gummies held about 0.1 g of a claimed 5 g.

In the same 2025 tests, Create Creatine Gummies held 4.59 g against the 4.5 g on their label, and Peter Diamandis takes them when he travels. But in 2026, ConsumerLab didn't approve them: it found creatinine, a breakdown product, at 4.7% of the creatine, against its 0.1% limit.

Picture: Push

CONSUMERLAB

In 2026, ConsumerLab tested 12 creatine supplements for how much creatine each held and for signs of breakdown. Thorne and Momentous passed, with 5.19 g and 5.18 g found in a 5 g scoop. Create's gummies were the only product that wasn't approved. ConsumerLab's top pick was BulkSupplements Creatine Monohydrate, at 13 cents a serving.

BulkSupplements Creatine Monohydrate, ConsumerLab's top pick.

Picture: BulkSupplements

GOOD TO KNOW

In studies of up to about 5 years, creatine monohydrate was safe for healthy people, with no harm to the kidneys (Kreider 2017). It raises creatinine on a blood test, which can look like a kidney problem when there isn't one, so tell your doctor you take it. With kidney disease, ask your doctor first. Expect 1 to 2 kg of extra weight early on, mostly water in your muscles. In 20 rugby players, DHT, a hormone tied to hair loss, rose during loading, but no study has measured hair loss itself (van der Merwe 2009). Consult a medical doctor before taking any supplement if you are pregnant, nursing, have a medical condition or are taking any medications.

SOURCES **1** Hultman 1996, PMID 8828669 · **2** Bender 2008, PMID 17416441 · **3** Spillane 2009, PMID 19228401 · **4** van der Merwe 2009, PMID 19741313 · **5** Gualano 2011, PMID 20881878 · **6** Jagim 2012, PMID 22971354 · **7** Lyoo 2012, PMID 22864465 · **8** Devries 2014, PMID 24576864 · **9** Chilibeck 2015, PMID 25386713 · **10** Kreider 2017, PMID 28615996 · **11** Gordji-Nejad 2024, PMID 38418482 · **12** Xu 2024, PMID 39070254 · **13** Gummy tests, as reported in the press: kansascity.com; abc.net.au

9 Magnesium

WHAT IT IS	a mineral more than 300 enzymes in your body need, from making energy to repairing DNA
BEST FOR	heart, blood pressure, blood sugar, sleep, memory, mood, healthy cell aging
TYPICAL DOSE	200 to 400 mg of elemental magnesium a day
TOP PICK	Thorne Magnesium Bisglycinate
COST A DAY	$1.30 for a scoop and a half (300 mg), or 87 cents for 1 scoop (200 mg)

Eat it too: pumpkin seeds, almonds, cashews, spinach, black beans, dark chocolate, avocado and whole grains.
Picture: Mockupo, Unsplash

A stronger heart, deeper sleep, a sharper memory.

1 79% of US adults don't get the recommended amount of magnesium (Dai 2018).

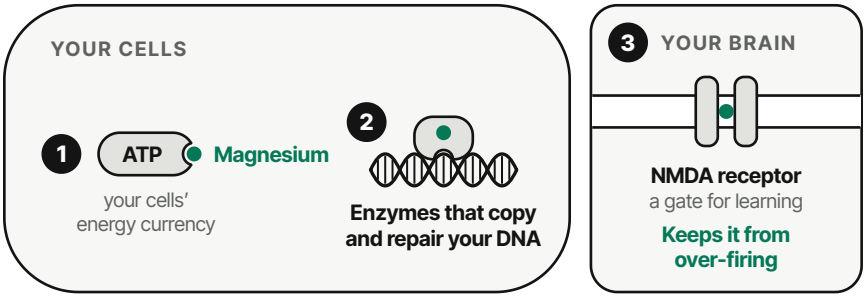
2 Across 40 studies of more than 1 million people, each extra 100 mg of magnesium a day in the diet went with 10% fewer deaths and 22% less heart failure (Fang 2016).

What it does for you

Most of us run short on magnesium. Your cells can't use energy without it.

How magnesium works

A mineral more than 300 enzymes in your body need.



1. Every molecule of ATP, your cells' energy currency, has to be bound to magnesium to work.
2. The enzymes that copy and repair your DNA need it too.
3. In your brain, it sits in the NMDA receptor, a gate for learning, and keeps it from over-firing.

What the science says

Blood pressure. Across 34 placebo-controlled trials, a median 368 mg a day lowered blood pressure by about 2 points, and 300 mg a day for a month was enough (Zhang 2016).

Blood sugar. Across 13 studies of 536,318 people, each extra 100 mg a day went with a 14% lower risk of type 2 diabetes (Dong 2011).

Memory. 44 adults aged 50 to 70 with memory problems took L-threonate (Magtein) or a placebo for 12 weeks. *The magnesium group tested 9.4 years younger on brain age, the placebo group 0.8 years* (Liu 2016).

The first author is from Neurocentria, the company that developed Magtein.

Sleep. 155 poor sleepers took 250 mg of bisglycinate or a placebo for 4 weeks. Their insomnia scores fell 3.9 points, against 2.3 (Schuster 2025).

In 80 adults, 1 g of L-threonate a day for 21 days improved deep and REM sleep scores on their Oura rings (Hausenblas 2024).

Mood. In 126 adults with mild to moderate depression, 248 mg a day for 6 weeks lowered depression scores 6 points and anxiety 4.5, compared with 6 weeks off it (Tarleton 2017).

Migraine. In 81 people with migraines, 600 mg a day for 12 weeks cut attacks by 41.6%, against 15.8% on a placebo (Peikert 1996).

DNA. In 172 healthy middle-aged adults, more magnesium in the blood went with less DNA damage (Dhillon 2024).

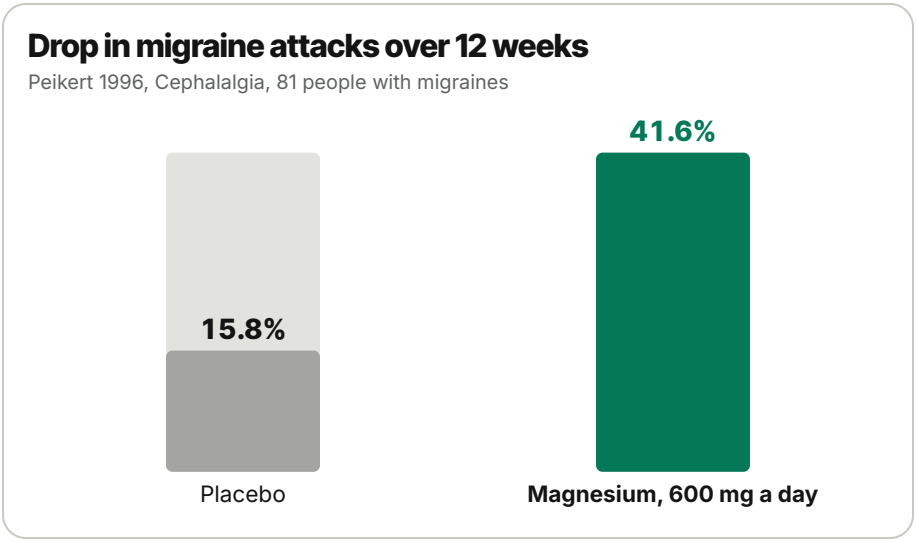
How to take it

Glycinate (bisglycinate) is gentle on your stomach and the best-studied pick for sleep and an everyday top-up. Read the label: 1,000 mg of magnesium glycinate is not 1,000 mg of magnesium.

L-threonate (Magtein) was made to reach the brain, and won't fill a shortfall alone.

Citrate is well absorbed (Walker 2003). **Skip oxide:** only about 4% gets absorbed (Firoz 2001).

The recommended amount from all sources is 400 to 420 mg for men and 310 to 320 mg for women. The NIH upper limit from supplements is 350 mg a day. Magnesium from food doesn't count toward it.



In 81 people with migraines, 600 mg a day for 12 weeks cut attacks by 41.6%, against 15.8% on a placebo.

For sleep, take glycinate or threonate 30 to 60 minutes before bed. Split bigger doses to avoid loose stools.

Taking vitamin D (number 7)? Take magnesium too. Your body needs it to turn vitamin D into its active form (Dai 2018).

The brands

TOP PICK

Thorne Magnesium Bisglycinate. One scoop gives 200 mg of magnesium as bisglycinate, the gentle form from the newest sleep trial (which used 250 mg). A scoop and a half gives 300 mg, the dose that lowered blood pressure within a month. It's NSF Certified for Sport. $52 for 60 servings ($1.30 a day at a scoop and a half), at thorne.com.

Picture: Thorne

ALSO GOOD

Momentous Magnesium L-Threonate, for your brain: Magtein, the form from the memory and sleep-tracker trials. $49.99 for 30 servings at livemomentous.com. Three capsules give 2 g of Magtein (145 mg of magnesium), for $1.67 a day, or $1.24 with a subscription. Every batch is NSF Certified for Sport.

ALSO GOOD

Life Extension Neuro-Mag. The same 2 g of Magtein for about a third less. $31.50 for 90 capsules (30 servings) at lifeextension.com. Three capsules give 144 mg of magnesium, for $1.05 a day. It has no NSF mark.

CONSUMERLAB

ConsumerLab tested magnesium supplements in 2024 and 2025. Life Extension Neuro-Mag passed, with 175.9 mg of magnesium found against 144 mg on its label, and was ConsumerLab's top pick for L-threonate (the only one it tested). Thorne, the top pick, and Momentous weren't in its tests. ConsumerLab's glycinate top pick was Deva Vegan Magnesium Glycinate, at 17 cents for a 100 mg tablet.

Momentous Magnesium L-Threonate

145 mg magnesium (2 g Magtein, 3 capsules)

Life Extension Neuro-Mag

144 mg magnesium (2 g Magtein, 3 capsules)

Deva Vegan Magnesium Glycinate

ConsumerLab's glycinate top pick, 17 cents a tablet

GOOD TO KNOW

Diarrhea and an upset stomach are the most common side effects, mostly with oxide, citrate and high doses. With kidney disease, ask your doctor first, since your kidneys clear the extra. Magnesium binds some antibiotics (tetracyclines and quinolones) and osteoporosis drugs (bisphosphonates), so take them at least 2 hours apart. Consult a medical doctor before taking any supplement if you are pregnant, nursing, have a medical condition or are taking any medications.

SOURCES **1** Peikert 1996, PMID 8792038 · **2** Firoz 2001, PMID 11794633 · **3** Walker 2003, PMID 14596323 · **4** Dong 2011, PMID 21868780 · **5** Fang 2016, PMID 27927203 · **6** Liu 2016, PMID 26519439 · **7** Zhang 2016, PMID 27402922 · **8** Tarleton 2017, PMID 28654669 · **9** Dai 2018, PMID 30541089 · **10** Dhillon 2024, PMID 38864865 · **11** Hausenblas 2024, PMID 39252819 · **12** Schuster 2025, PMID 40918053 · **13** NIH Office of Dietary Supplements, Magnesium fact sheet: ods.od.nih.gov

10 Taurine

WHAT IT IS	an amino acid your body makes and gets from seafood and dark meat
BEST FOR	blood pressure, blood sugar, cholesterol, inflammation, endurance, muscle and bone
TYPICAL DOSE	1.5 to 3 g a day
TOP PICK	NOW Foods Taurine
COST A DAY	about 21 cents for 3 capsules (3 g), less as powder

Picture: Content Pixie, Unsplash

A longer, healthier life in mice. Lower blood pressure, blood sugar and inflammation in people.

For pennies a day.

1. Mice given taurine from middle age lived 10 to 12% longer. Columbia University put that at about seven or eight human years (Singh 2023).

2. Middle-aged monkeys on taurine for six months gained less weight and had lower blood sugar, denser bones and healthier immune systems (Singh 2023).

3. In 120 people with high-normal blood pressure, 1.6 g a day cut systolic pressure 7.2 points in 12 weeks, against 2.6 on a placebo (Sun 2016).

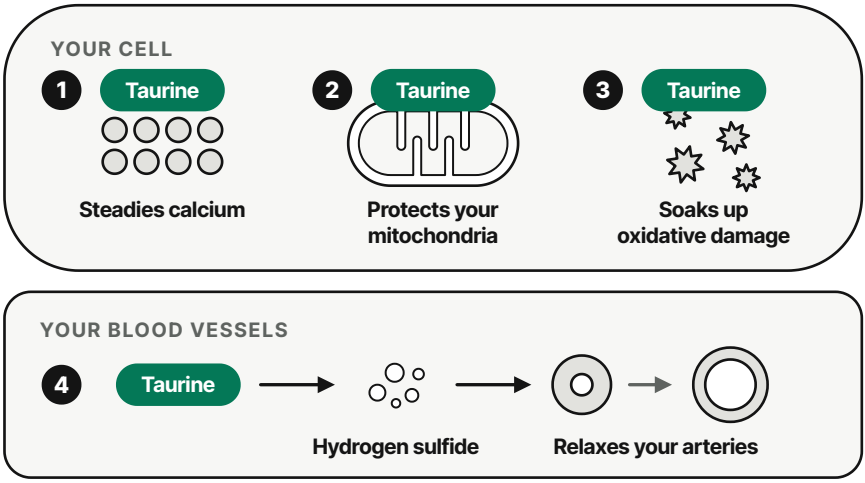
What it does for you

Every heartbeat runs on calcium. Taurine steadies that calcium, protects your mitochondria (the parts of your cells that make energy) and soaks up oxidative damage.

In people, the strongest proof is for your heart and metabolism.

How taurine works

Taurine works all over your body.



1. It steadies calcium, which every heartbeat and every muscle contraction runs on.
2. It protects your mitochondria, the parts of your cells that make energy.
3. It soaks up oxidative damage.
4. It raises hydrogen sulfide, a gas that relaxes your arteries.

Taurine is one of the most plentiful small molecules in your heart, muscles, brain and eyes.

What the science says

IN PEOPLE

34 trials, pooled. Across 34 randomized trials, taurine lowered blood sugar, cholesterol, triglycerides, CRP (a key marker of inflammation) and liver enzymes, and cut systolic blood pressure by more than 4 points (Nie 2026).

Blood pressure, around the clock. In 120 people with high-normal blood pressure, 12 weeks on 1.6 g a day brought pressure down over a full 24 hours. On the placebo, it barely moved (Sun 2016).

Endurance. Across 10 studies, 1 to 6 g before exercise improved endurance, whatever the dose (Waldron 2018).

IN ANIMALS

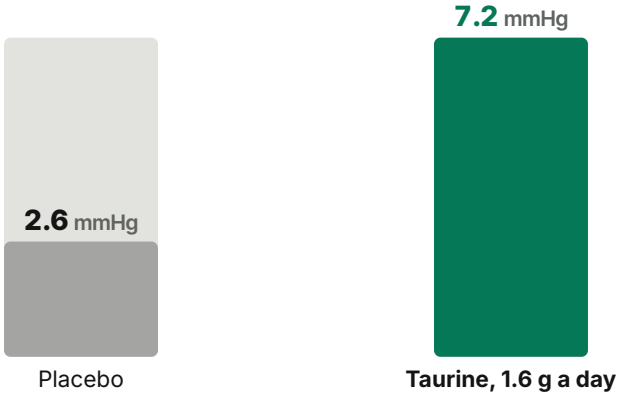
Healthier lives in mice. Started at about 45 in human years, mice on taurine had denser bones, stronger muscles, a better insulin response and younger immune systems a year later. Columbia called them “healthier in almost every way” (Singh 2023).

How to take it

Take 1.5 to 3 g a day, the range that worked best across 34 trials.

Drop in systolic blood pressure after 12 weeks

Sun 2016, Hypertension, 120 adults with high-normal blood pressure



Plain L-taurine is all you need. Powder is the cheapest, at about a quarter teaspoon per gram (check your scoop).

Take it any time of day, with or without food. On workout days, take it before you start.

In the trials, blood pressure dropped within 8 weeks. Blood sugar and cholesterol took 8 weeks or more.

The brands

TOP PICK

NOW Foods Taurine. Each capsule holds 1,000 mg, and the powder makes 3 g a day easy. It's the lowest price per gram from a big, long-established maker, and NOW's 500 mg capsules were a ConsumerLab top pick. About $17 to $18 for 250 capsules, or $11 to $12 for 227 g of powder, at nowfoods.com.

Picture: NOW Foods

BRAND	PER SERVING	PRICE	COST PER GRAM	TESTING
NOW Foods Taurine	**1,000 mg capsule, or powder**	**about $17 to $18 (250 capsules); about $11 to $12 (227 g powder)**	**about $0.07**	**NOW's own lab**
ProHealth Longevity Pure Taurine	1,000 mg capsule	$19.95 (120 capsules)	$0.17	Certificate of analysis posted
Double Wood L-Taurine	1,000 mg per 2 capsules	$19.95 (90 servings)	about $0.22	Outside-lab report, each lot
BulkSupplements Taurine Powder	powder	about $26 to $30 (1 kg)	about $0.03	Certificate on request

ALSO GOOD

ProHealth Longevity Pure Taurine, which posts its certificate of analysis, at prohealth.com. Double Wood L-Taurine, with outside-lab results for every lot, at doublewoodsupplements.com.

NOW Foods Taurine powder

227 g powder

ProHealth Longevity Pure Taurine

1,000 mg capsule

Double Wood L-Taurine

1,000 mg per 2 capsules

Bulk-Supplements Taurine Powder

powder

CONSUMERLAB

In 2018, ConsumerLab tested 9 taurine supplements for people and pets, and all passed. NOW's 500 mg capsules passed and were a top pick for capsules, at 6 cents each. ProHealth and Double Wood weren't in its tests. ConsumerLab's top pick overall was BulkSupplements' taurine powder, at about 1 cent per 500 mg, though the maker changed the formula in 2025 and ConsumerLab hasn't tested the new one.

GOOD TO KNOW

Taurine is very well tolerated. A safety review set 3 g a day as the observed safe level for healthy adults (Shao 2008). On blood pressure medicine, your numbers can drop further. If you take lithium, have kidney disease or are pregnant, ask your doctor first.

SOURCES **1** Shao 2008, PMID 18325648 · **2** Sun 2016, PMID 26781281 · **3** Waldron 2018, PMID 29546641 · **4** Singh 2023, PMID 37289866 · **5** Columbia University, "Taurine and Aging: Can It Extend Lifespan?" · **6** Nie 2026, PMID 41275513

11 Ca-AKG

WHAT IT IS	calcium alpha-ketoglutarate, a molecule your own cells make to turn food into energy
BEST FOR	a younger biological age, more healthy years, bone, fertility, less inflammation
TYPICAL DOSE	1 g a day
TOP PICK	Rejuvant LifeAKG
COST A DAY	$2.67 for 2 tablets on subscription (or $0.84 for 2 ProHealth capsules)

Picture: Supliful, Unsplash

More healthy years, and a younger biological age.

From a molecule your body already makes.

1. Mice started on Ca-AKG in late middle age lived about 12% longer, and their measures of health rose by more than 40% (Asadi Shahmirzadi 2020).

2. In 42 people on the Ca-AKG formula Rejuvant for about 7 months, biological age fell an average of 8 years (Demidenko 2021).

3. In 4,260 health enthusiasts, Rejuvant users averaged 1.8 years younger biologically than expected (Pabis 2026).

What it does for you

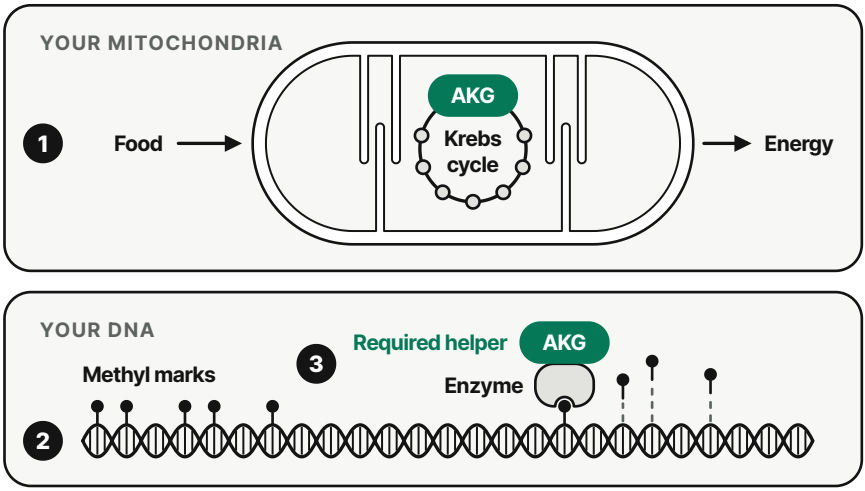
The AKG in your blood can drop up to 10-fold as you age (Buck Institute).

AKG sits at the center of the Krebs cycle, the chain of reactions your mitochondria use to turn food into energy.

DNA clocks read your age from chemical tags called methyl marks, and the enzymes that strip those marks off need AKG.

How AKG works

A molecule your own cells make to turn food into energy.



1. AKG sits at the center of the Krebs cycle, the chain of reactions your mitochondria use to turn food into energy.
2. Over the years, chemical tags called methyl marks drift on your DNA.
3. The enzymes that strip those marks off can't work without AKG. It's their required helper.

The AKG in your blood can drop up to 10-fold as you age.

What the science says

IN PEOPLE

8 years younger, on a DNA clock. 42 people took Rejuvant, which is Ca-AKG with vitamins, for about 7 months. Their biological age fell an average of 8 years, and older people gained the most (Demidenko 2021).

Neither human study had a placebo group, and Rejuvant's maker has ties to the teams behind the 2021 study and the first mouse study below.

IN ANIMALS

Longer, healthier lives in mice. Started in late middle age, Ca-AKG shortened the sick stretch at the end of life and calmed chronic inflammation (Asadi Shahmirzadi 2020). Old females looked younger, too (Buck Institute).

Bones and fertility. In aging mice, AKG raised bone mass (Wang 2020) and kept the ovaries working, with more eggs and better ones (Zhang 2021).

How to take it

Take 1 g of Ca-AKG a day, the dose in Rejuvant (2 tablets once a day) and in ABLE, a placebo-controlled trial under way in Singapore (Sandalova 2023).

Look for sustained or delayed release if you can. In the 4,260-person study, only the delayed-release product was significantly linked to a younger biological age.

Take it once a day, with or without food.

Each gram of Ca-AKG carries about 200 mg of calcium, so count it in your daily total.

The brands

TOP PICK

Rejuvant LifeAKG. Controlled-release Ca-AKG with vitamins, in men's and women's formulas, 2 tablets a day (1 g of Ca-AKG). It's the only Ca-AKG product with published human biological-age results, and it comes with a 120-day money-back guarantee. $99.95 for 30 days ($3.33 a day), or $79.95 a month on subscription ($2.67 a day), at rejuvant.com.

Picture: Ponce de Leon Health

ALSO GOOD

ProHealth Longevity Calcium AKG Longevity, for about a quarter of Rejuvant's price, at prohealth.com. Two capsules give 1,000 mg, and 30 days cost $25.25 ($0.84 a day). Its certificate of analysis is posted. It isn't sustained release. A 100 g powder is $24.98. And DoNotAge Ca-AKG, popular with biohackers, at donotage.org. Two capsules give 800 mg, from $49.00 for 30 days ($1.63 a day), and DoNotAge says every batch is tested in-house and by third parties.

Also on the shelf: Renue By Science LIPO CaAKG, 300 mg capsules, 90 for $48.95 renuebyscience.com, and Partiqlar Pure Ca AKG, $29.99 partiqlar.com.

ProHealth Longevity Calcium AKG Longevity
1,000 mg (2 capsules)

DoNotAge Ca-AKG
800 mg (2 capsules)

ProHealth Longevity Calcium AKG Longevity powder
100 g, $24.98

Renue By Science LIPO CaAKG
300 mg capsules, 90 for $48.95

Partiqlar Pure Ca AKG
$29.99

Check the label for "calcium." Some products sell plain AKG, which isn't the form used in the studies.

GOOD TO KNOW

Because Ca-AKG carries calcium, count it if you have kidney stones or high blood calcium, or take a drug that raises calcium. If you're pregnant or have kidney disease, ask your doctor first.

SOURCES **1** Asadi Shahmirzadi 2020, PMID 32877690 · **2** Buck Institute press release, 1 September 2020 · **3** Wang 2020, PMID 33154378 · **4** Zhang 2021, PMID 33450127 · **5** Demidenko 2021, PMID 34847066 · **6** Sandalova 2023, PMID 37217632 · **7** Pabis 2026, PMID 42166733

12 GlyNAC

WHAT IT IS	glycine plus NAC (N-acetylcysteine), two amino acids your body turns into glutathione, its main antioxidant
BEST FOR	strength, walking speed, waistline, thinking, blood sugar, inflammation
TYPICAL DOSE	Baylor's dose is about 7 g of glycine and 9 g of NAC a day for a 154 lb adult
TOP PICK	ProHealth Longevity Glycine + NAC Pack
COST A DAY	about $4 for Baylor's dose (7 glycine and 15 NAC capsules), or about $3.15 with Life Extension NAC and glycine powder

Picture: Joanna Kosinska, Unsplash

Stronger, faster, leaner and sharper, in older adults.

By refilling your body's main antioxidant.

1 Older adults had 76% less glutathione in their red blood cells than young adults. 24 weeks of GlyNAC tripled it (Kumar 2021).

2 It brought older adults' walking speed back up to young adults' level and took 4 cm off their waists (Kumar 2021).

3 Mice given GlyNAC from late middle age lived 23.7% longer, males and females alike (Kumar 2022).

What it does for you

Your body's main antioxidant, glutathione, has a three-ingredient recipe: glycine, cysteine and glutamate.

With age, your cells run short of the first two. GlyNAC puts both back.

What the science says

The placebo-controlled trial. At Baylor, 24 older adults took GlyNAC or a placebo for 16 weeks. On GlyNAC, they walked faster, got stronger, lost waist and had lower blood pressure. On the placebo, they didn't (Kumar 2023).

The first study. 8 older adults on GlyNAC for 24 weeks improved their grip, their 6-minute walk and every thinking test (Kumar 2021).

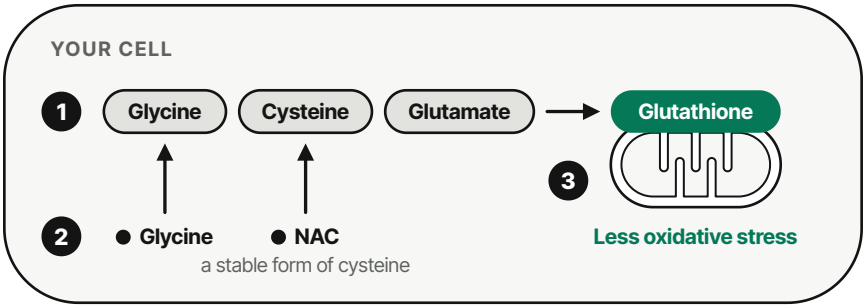
Inflammation and insulin resistance fell sharply. *A marker of DNA damage fell 66%*.

How to take it

Baylor's dose works out to about 100 mg of glycine and 132 mg of NAC per kg of body weight a day. For a 154 lb (70 kg) adult, that's roughly 7 g of glycine and 9 g of NAC.

How GlyNAC works

Glutathione is your body's main antioxidant.



1. Your cells build glutathione from three amino acids: glycine, cysteine and glutamate.
2. With age, they run short of two of them, glycine and cysteine. Give both back, and glutathione production picks back up.
3. In Baylor's model, more glutathione means less oxidative stress. That lets your mitochondria burn fat properly again.

Older people's red blood cells made glutathione about half as fast as young people's, and carried more oxidative damage.

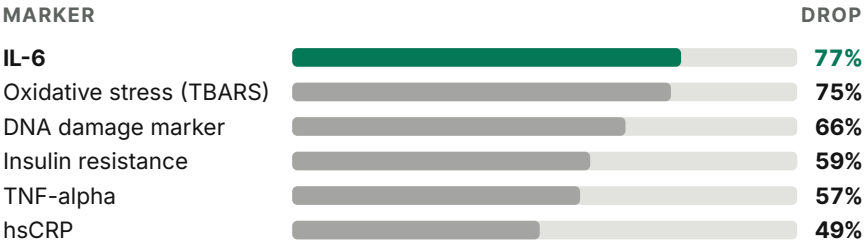
Glycine is a sweet powder. NAC tastes of sulfur, so take it as capsules. Split both across your meals.

For sleep, take 3 g of glycine about an hour before bed (Bannai 2012).

Give it 16 to 24 weeks, the time Baylor's benefits took to build. They faded within 12 weeks of stopping.

Drops after 24 weeks of GlyNAC in older adults

Kumar 2021, Clin Transl Med, 8 older adults



The brands

TOP PICK

ProHealth Longevity Glycine + NAC Pack. Plain glycine (1,000 mg capsules) and NAC (600 mg capsules), with certificates of analysis posted. Baylor's dose for a 154 lb adult is 7 glycine and 15 NAC capsules a day, about $4. The pack is $38.95 for 120 of each. The NAC runs out twice as fast; NAC alone is $22.95 for 120, at prohealth.com.

Picture: ProHealth Longevity

ALSO GOOD

Life Extension N-Acetyl-L-Cysteine 600 mg, a low-cost NAC, at lifeextension.com. It's $11.25 for 60 capsules, about $2.81 a day for 15 capsules (9 g of NAC). Pair it with NOW Foods Glycine Pure Powder, at nowfoods.com (about $22 for 1 lb at Target, about $0.34 a day for 7 g), for Baylor's dose at about $3.15 a day. And Thorne NAC, in 500 mg capsules for finer dose steps, at thorne.com. It's $33 for 90 capsules, about $6.60 a day for 18 capsules (9 g of NAC).

Double Wood sells NAC in 500 mg capsules (210 capsules) for $29.95 at doublewoodsupplements.com and glycine for $19.95 at doublewoodsupplements.com.

Celltrient Cellular Protect, from Nestlé Health Science, is the only GlyNAC licensed from Baylor's patent, at a reported 1.2 g of each, far below Baylor's dose. celltrient.com

Celltrient range. Cellular Protect is the blue packs at the left.
Picture: Nestlé Health Science

CONSUMERLAB

ConsumerLab tested 12 NAC supplements in 2026 and 10 glycine supplements in 2025, and all passed. Life Extension's NAC held 654.6 mg against 600 mg on the label, and Thorne's 562.3 mg against 500 mg. NOW's glycine powder and Double Wood's glycine passed too. ProHealth, the top pick, wasn't in its tests. ConsumerLab's top picks were NOW NAC 600 mg, 13 cents a capsule, and BulkSupplements glycine, 9 cents for 3 g.

Life Extension N-Acetyl-L-Cysteine

600 mg NAC

Thorne NAC

500 mg NAC

NOW Foods Glycine Pure Powder

Powder

ProHealth Longevity NAC

$22.95 for 120

Double Wood NAC

500 mg capsules

Double Wood Glycine

$19.95

NOW NAC 600 mg

ConsumerLab's NAC top pick, 13 cents a capsule

BulkSupplements Glycine

ConsumerLab's glycine top pick, 9 cents for 3 g

GOOD TO KNOW

NAC can cause nausea or a sulfur taste. With asthma, nitroglycerin or a blood thinner, check with your doctor first. NAC sped tumor growth or spread in mice with lung tumors or melanoma (Sayin 2014; Le Gal 2015), so if you've had a tumor diagnosis, smoke, are pregnant or have kidney or liver disease, ask first.

SOURCES **1** Bannai 2012, PMID 22529837 · **2** Sayin 2014, PMID 24477002 · **3** Le Gal 2015, PMID 26446958 · **4** Kumar 2021, PMID 33783984 · **5** Kumar 2022, PMID 35268089 · **6** Kumar 2023, PMID 35975308 · **7** Baylor College of Medicine news, GlyNAC randomized trial

13 CoQ10

WHAT IT IS	coenzyme Q10, the molecule your mitochondria use to turn food into energy, and your body's own fat-soluble antioxidant
BEST FOR	heart, energy, healthy aging, statin users, migraines, skin and fertility
TYPICAL DOSE	100 to 200 mg a day, with a meal
TOP PICK	Pharma Nord Bio-Quinone Active Q10 Gold
COST A DAY	$1.60 to $2.00 for 2 softgels (200 mg, the Swedish trial's dose)

Picture: Edouard Dognin, Unsplash

The spark plug your heart runs on.

Taken with selenium, it cut cardiovascular deaths in older adults by more than half.

1. In the KiSel-10 trial, 443 healthy Swedes aged 70 to 88 took CoQ10 and selenium or a placebo for 4 years. Over 5.2 years, 5.9% of the supplement group died of heart and blood vessel disease, against 12.6% on the placebo (Alehagen 2013).

2. In the Q-SYMBIO trial, 300 mg a day for 2 years halved major heart events in 420 people with heart failure (Mortensen 2014).

3. In the Swedish trial, telomeres, the protective caps on your DNA, held their length on the supplements and shortened on the placebo (Opstad 2022).

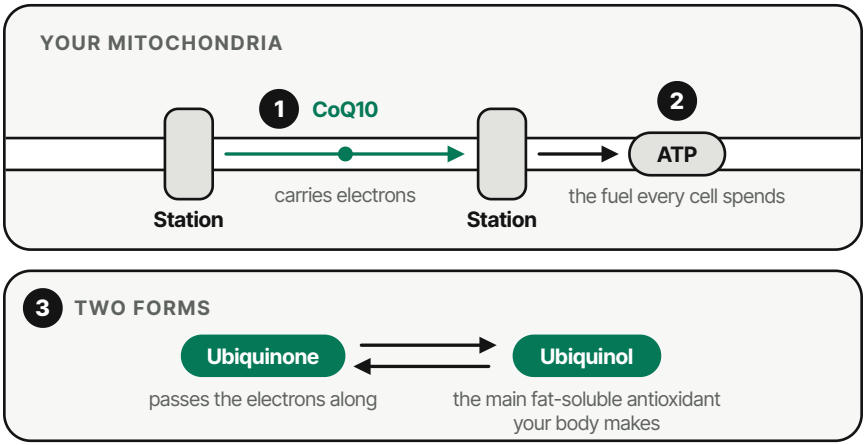
What it does for you

Every cell in your body runs on CoQ10.

Your mitochondria make energy on a kind of assembly line, and CoQ10 carries electrons from one station to the next.

How CoQ10 works

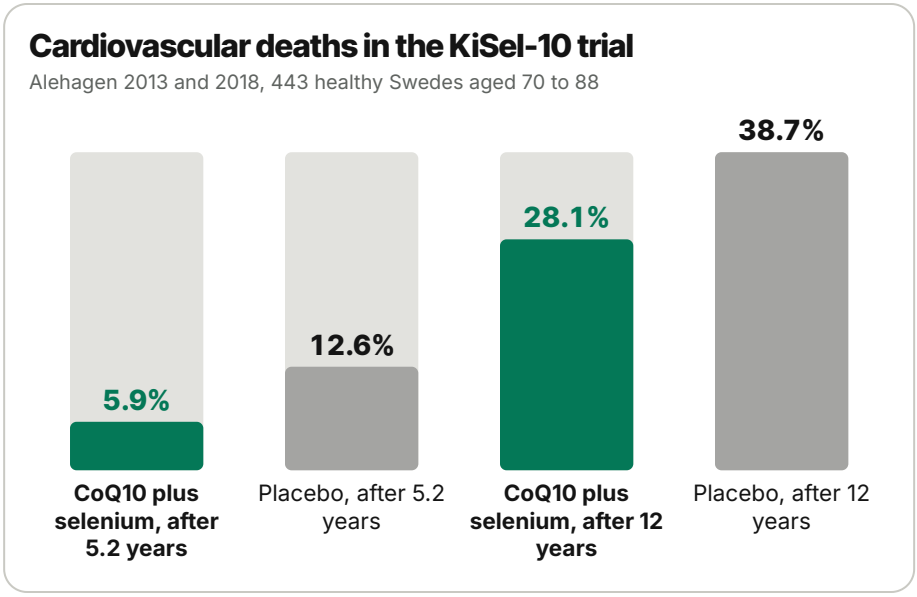
The molecule your mitochondria use to turn food into energy.



1. Your mitochondria make energy on a kind of assembly line. CoQ10 carries electrons from one station to the next.
2. Without it, the line stalls, and your cells run short of ATP, the fuel every cell spends to do its job.
3. CoQ10 flips between two forms. Ubiquinone passes the electrons along. Ubiquinol is the main fat-soluble antioxidant your body makes.

What the science says

The Swedish trial, 12 years on. Fewer heart deaths still showed. At 12 years, 28.1% of the KiSel-10 supplement group had died of cardiovascular disease, against 38.7% on the placebo (Alehagen 2018).



Migraines. In 42 people with migraines, 100 mg three times a day halved attacks in 47.6% of them by month 3, against 14.4% on a placebo (Sándor 2005).

Energy. In a 4-hour cycling test, 300 mg a day for 8 days meant more speed at the end and less fatigue (Mizuno 2008).

On a statin. Your body makes CoQ10 the same way it makes cholesterol, so statins cut both. Across 12 trials, CoQ10 eased statin muscle pain, weakness, cramps and tiredness (Qu 2018).

Skin. In 33 healthy people, 50 or 150 mg a day cut wrinkles in 12 weeks, against a placebo (Žmitek 2017).

Fertility. In 169 women under 35 with few eggs left, 60 days of CoQ10 before IVF gave more eggs and better embryos (Xu 2018).

How to take it

Take 100 to 200 mg a day, with a meal that has some fat. Over 70, the Swedish trial's routine is 200 mg of CoQ10 with 200 mcg of selenium.

For migraines, the trial dose was 100 mg three times a day. For heart failure, Q-SYMBIO used the same, alongside a cardiologist's care.

Pick a softgel, with the CoQ10 dissolved in oil. Your body turns ubiquinone into ubiquinol on its own, so either form works (Mantle 2020).

Above 100 mg, split it between breakfast and lunch. Some people sleep worse when they take it late.

The brands

TOP PICK

Pharma Nord Bio-Quinone Active Q10 Gold. Ubiquinone dissolved in oil, 100 mg per softgel. It's the exact CoQ10 used in both Q-SYMBIO and KiSel-10. For the Swedish trial's routine, take two a day with Pharma Nord SelenoPrecise: 100 mcg tablets, so two give the 200 mcg. Q10 Gold is $59.95 for 60 softgels, or $119.95 for 150 ($0.80 a softgel), at pharmanord.com.

Picture: Pharma Nord

ALSO GOOD

Thorne CoQ10, NSF Contents Certified, $53 for 60, at thorne.com. And Nature Made CoQ10 200 mg, USP Verified, the full 200 mg in one softgel, at naturemade.com.

BRAND	FORM AND DOSE	COST A DAY	TESTING
Pharma Nord Bio-Quinone Active Q10 Gold	**Ubiquinone in oil, 100 mg**	**$1.60 to $2.00 (2 softgels)**	**The CoQ10 in both trials**
Thorne CoQ10	Ubiquinone, 100 mg	$1.77 (2 gelcaps)	NSF Contents Certified

BRAND	FORM AND DOSE	COST A DAY	TESTING
Nature Made CoQ10 200 mg	Softgel, 200 mg	$0.62 (1 softgel)	USP Verified
Life Extension Super Ubiquinol	Kaneka ubiquinol, 100 mg	$1.13 on AutoShip (2 softgels)	Publishes certificates of analysis

If you'd rather take ubiquinol, Life Extension's is $42 for 60, or $34 on AutoShip, at lifeextension.com.

Thorne CoQ10
Ubiquinone, 100 mg

Nature Made CoQ10 200 mg
Softgel, 200 mg

Life Extension Super Ubiquinol
Kaneka ubiquinol, 100 mg

Pharma Nord SelenoPrecise
100 mcg tablets

Member's Mark CoQ10 200 mg
ConsumerLab's top pick, 11 cents a softgel, from Sam's Club

CONSUMERLAB

ConsumerLab tested 20 CoQ10 and ubiquinol supplements in 2024, and every one held the amount on its label. Pharma Nord, the top pick, and Thorne weren't in its tests. From Nature Made, it tested a 100 mg softgel with black pepper extract, which passed with 107.7 mg found. ConsumerLab's top pick was Member's Mark CoQ10 200 mg, from Sam's Club, at 11 cents a softgel.

GOOD TO KNOW

Consult a medical doctor before taking any supplement if you are pregnant, nursing, have a medical condition or are taking any medications. CoQ10 is very safe: 1,200 mg a day caused no more side effects than 60 mg (Hathcock 2006). If you take warfarin, have your INR checked when you start or stop. It can add to the effect of blood pressure drugs.

SOURCES **1** Sándor 2005, PMID 15728298 · **2** Hathcock 2006, PMID 16814438 · **3** Mizuno 2008, PMID 18272335 · **4** Alehagen 2013, PMID 22626835 · **5** Mortensen 2014, PMID 25282031 · **6** Žmitek 2017, PMID 27548886 · **7** Alehagen 2018, PMID 29641571 · **8** Qu 2018, PMID 30414615 · **9** Qu 2018, PMID 30371340 · **10** Xu 2018, PMID 29587861 · **11** Mantle 2020, PMID 32380795 · **12** Opstad 2022, PMID 36014852

14 Resveratrol and pterostilbene

WHAT IT IS	resveratrol, the polyphenol in red grapes and Japanese knotweed root, and pterostilbene, its better-absorbed cousin from blueberries
BEST FOR	brain and memory, bones, blood pressure, blood sugar, waistline and healthy aging
TYPICAL DOSE	150 mg to 1 g of resveratrol a day, or 50 to 250 mg of pterostilbene, with a meal that has some fat
TOP PICK	partiQlar Pure Resveratrol
COST A DAY	$0.62

Resveratrol is why red wine got its reputation, but a glass gives you a few milligrams at most.

Picture: Alexander Schimmeck, Unsplash

Sharper thinking, stronger bones, lower blood pressure.

From the molecule that started modern longevity science.

1. In 125 women past menopause, a year on 75 mg twice a day improved overall thinking by 33% against a year on placebo. Their spines and hips got denser, too (Thaung Zaw 2021; Wong 2020).

2. Mice on a junk-food diet who got resveratrol had a 31% lower risk of death (Baur 2006).

3. In 2003, it made yeast live 70% longer, the first molecule shown to switch on sirtuins, the enzymes tied to longer life (Howitz 2003).

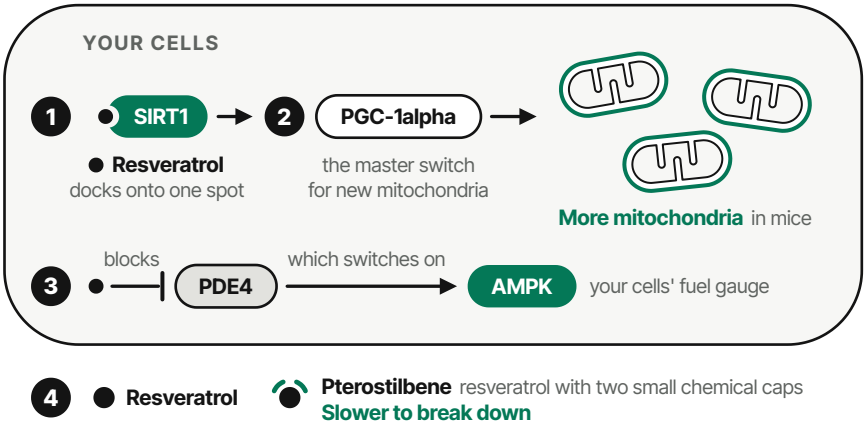
What it does for you

It works best in people who start with a problem: high blood pressure or blood sugar, a few extra pounds, or menopause.

Resveratrol docks onto one of the sirtuins, SIRT1, and speeds it up (Hubbard 2013). Pterostilbene's two small chemical caps make it slower to break down.

How resveratrol and pterostilbene work

The molecule that started modern longevity science.



1. Resveratrol turns up SIRT1. It docks onto one spot on SIRT1 and speeds it up.
2. Through SIRT1 and PGC-1alpha, the master switch for new mitochondria, mice on resveratrol built more mitochondria and ran longer.
3. It also blocks an enzyme called PDE4, which switches on AMPK, your cells' fuel gauge.
4. Pterostilbene is resveratrol with two small chemical caps. Pterostilbene's two caps make it slower to break down.

Resveratrol turns up SIRT1. Pterostilbene's two caps make it slower to break down.

What the science says

The women's trial. The biggest gain was in verbal memory in women 65 and older, and blood flow to the brain rose (Thaung Zaw 2021). The women's 10-year odds of a hip fracture went down (Wong 2020), and they had less chronic pain and fewer menopause symptoms (Thaung Zaw 2020).

Blood pressure and blood sugar. A 2026 review of 45 earlier reviews found systolic pressure about 8 points lower in type 2 diabetes (Sun 2026). In 66 people with type 2 diabetes, 1 g a day for 45 days lowered fasting glucose, HbA1c and insulin (Movahed 2013).

Waist. Across 23 trials, waists shrank 1.93 cm (Setayesh 2026).

How to take it

Buy 98%+ pure trans-resveratrol, the active form. Keep it out of light.

Take it with a meal that has fat, since it barely dissolves in water. David Sinclair takes 1 g every morning with NMN (chapter 3), which raises the NAD+ that sirtuins run on.

The trials that worked used 150 mg to 1 g a day.

For pterostilbene, take 50 to 250 mg a day with food. On its own at 250 mg, it raised LDL by 17.1 mg/dL; with grape extract, it didn't (Riche 2014).

In older men, 250 mg of resveratrol a day blunted the gains from 8 weeks of hard interval training, so some people skip it on training days (Gliemann 2013).

The brands

TOP PICK

partiQlar Pure Resveratrol. One ingredient, 500 mg of 99%+ pure trans-resveratrol per capsule, every batch third-party tested. That's the active form, at a dose inside the 150 mg to 1 g a day that worked in the trials. $36.99 for 60 ($0.62 a day at 500 mg, $1.23 at Sinclair's 1 g), at partiqlar.com.

Picture: partiQlar

ALSO GOOD

Toniiq Resveratrol 98%, 600 mg per 2 capsules, $25.97 for 60 ($0.87 a day, or $0.59 on the 180 count), with every lot third-party tested, at toniiq.com. For pterostilbene, Double Wood Pterostilbene, 100 mg a capsule, $19.95, about $0.33 a day, at doublewoodsupplements.com.

BRAND	WHAT'S IN IT	COST A DAY	TESTING
partiQlar Pure Resveratrol	**500 mg trans-resveratrol, 99%+**	**$0.62**	**Third-party tested, every batch**
Toniiq Resveratrol 98%	600 mg per 2 capsules	$0.87 ($0.59 on the 180 count)	Every lot third-party tested; certificate on the page
Toniiq Resveratrol 98% 1000	1,000 mg per 2 capsules	$1.11	Every lot third-party tested
Double Wood Pterostilbene	100 mg pterostilbene	About $0.33	Lot test on the page: 98.24 mg measured
Elysium Basis	250 mg NR plus 50 mg pterostilbene	$2.17	NSF Certified for Sport

Toniiq Resveratrol 98%
600 mg per 2 capsules

Toniiq Resveratrol 98% 1000
1,000 mg per 2 capsules

Double Wood Pterostilbene
100 mg pterostilbene

Elysium Basis
250 mg NR plus 50 mg pterostilbene

CONSUMERLAB

In 2021, ConsumerLab tested 13 resveratrol supplements, and all passed. Toniiq Resveratrol held 618.2 mg of trans-resveratrol in 2 capsules, against 588 mg on its label. partiQlar, the top pick, wasn't in its tests. One of ConsumerLab's two top picks was Puritan's Pride Resveratrol 100 mg, at 15 cents a capsule. It hasn't reviewed pterostilbene.

One of ConsumerLab's two top picks, 15 cents a capsule

GOOD TO KNOW

Consult a medical doctor before taking any supplement if you are pregnant, nursing, have a medical condition or are taking any medications. Resveratrol was safe for a year at up to 1 g twice a day; nausea and diarrhea were the most common side effects (Turner 2015). At 1 g a day, it changed how fast your liver clears several drugs (Chow 2010), and it slows platelets, so talk to your doctor if you take a blood thinner. It has mild plant-estrogen activity: with a hormone-sensitive condition, ask first.

SOURCES **1** Howitz 2003, PMID 12939617 · **2** Baur 2006, PMID 17086191 · **3** Chow 2010, PMID 20716633 · **4** Gliemann 2013, PMID 23878368 · **5** Hubbard 2013, PMID 23471411 · **6** Movahed 2013, PMID 24073011 · **7** Riche 2014, PMID 25057276 · **8** Turner 2015, PMID 26362286 · **9** Thaung Zaw 2020, PMID 32881835 · **10** Wong 2020, PMID 32564438 · **11** Thaung Zaw 2021, PMID 32900519 · **12** Setayesh 2026, PMID 41455817 · **13** Sun 2026, PMID 41987155 · **14** Sinclair D, Lifespan (2019), his own routine

15 Quercetin

WHAT IT IS	a flavonol from onions, capers, kale, apples and tea. Paired with the prescription drug dasatinib (D+Q), it was the first to clear zombie cells in people.
BEST FOR	blood pressure, exercise recovery, fewer colds, joints and healthy aging; with dasatinib and a doctor, clearing zombie cells
TYPICAL DOSE	500 to 1,000 mg a day of plain quercetin, or 250 mg of the phytosome form 2 to 3 times a day, with food
TOP PICK	Thorne Quercetin Phytosome
COST A DAY	$1.53 for 2 capsules

The best foods are red onions, capers, kale, apples with the skin, and tea.
Picture: K8, Unsplash

Half of the first pair that cleared zombie cells in people.

On its own, it lowers blood pressure and cuts colds after hard training.

1. Old mice, about 75 to 90 in human years, got D+Q for 3 days every 2 weeks. Their median remaining life was 36% longer (Xu 2018).

2. In 31 people with a scarred fatty liver, D+Q improved the scarring in 47%, against 7% on placebo (Koning 2026).

3. After 3 days of hard riding, 1 in 20 trained cyclists on 1,000 mg of quercetin a day caught a cold, against 9 in 20 on placebo (Nieman 2007).

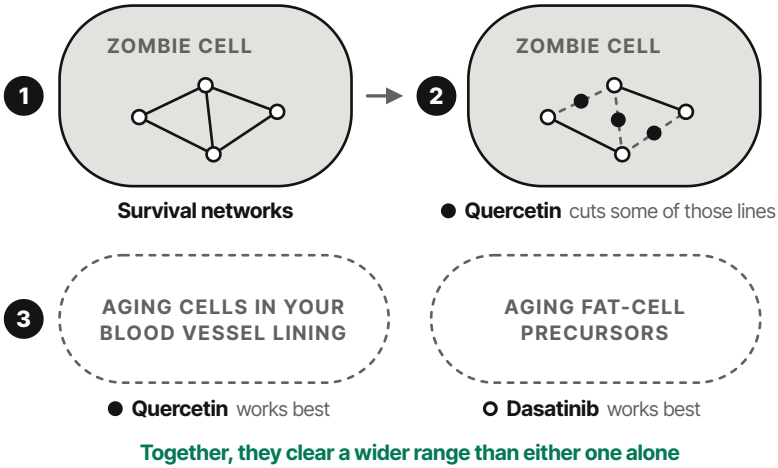
What it does for you

As you age, some cells stop dividing but won't die. These "zombie" cells pump out inflammation that wears down the cells around them.

Quercetin and dasatinib each cut a different survival line that keeps zombie cells alive, so together they clear more kinds than either alone (Zhu 2015).

How quercetin works

Half of the first pair that cleared zombie cells in people.



Together, they clear a wider range than either one alone

1. Zombie cells stay alive by switching on survival networks.
2. Quercetin cuts some of those lines and works best on aging cells in your blood vessel lining.
3. Dasatinib works best on aging fat-cell precursors. Together, they clear a wider range than either one alone.

Both drugs leave your blood within hours, but zombie cells take weeks to build back up.

What the science says

WITH DASATINIB (D+Q)

Liver scarring improved. In the fatty liver trial (median age 56), scarring improved in 47% on D+Q and the disease cleared in 53%, against 7% on placebo for each (Koning 2026).

Zombie cells cleared in 3 days. In 9 people with diabetic kidney disease, 3 days of D+Q cut zombie cells in their fat and skin (Hickson 2019).

QUERCETIN ON ITS OWN

Blood pressure. Across 7 trials, systolic fell 3.04 points, and 4.45 at 500 mg a day or more (Serban 2016).

Recovery. Across 13 trials, mostly at 1,000 mg a day, it eased soreness and brought strength back faster after hard exercise (Rojano-Ortega 2023).

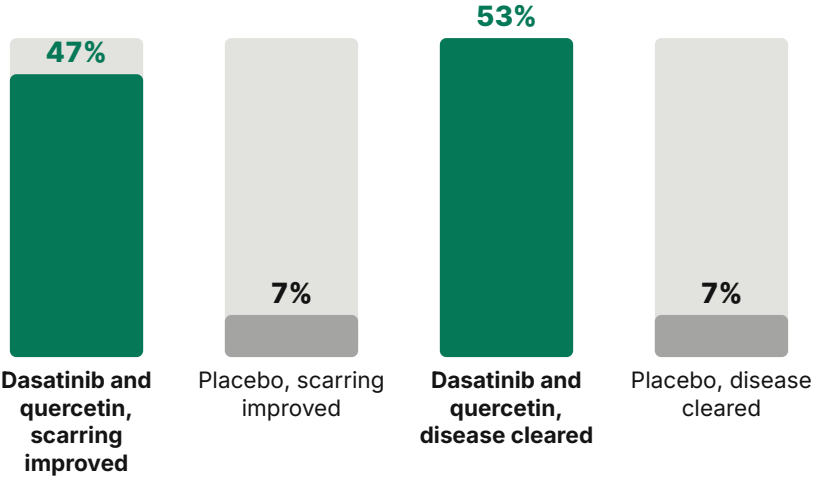
Joints. In 50 women with rheumatoid arthritis, 500 mg a day for 8 weeks cut morning stiffness and pain (Javadi 2017).

How to take it

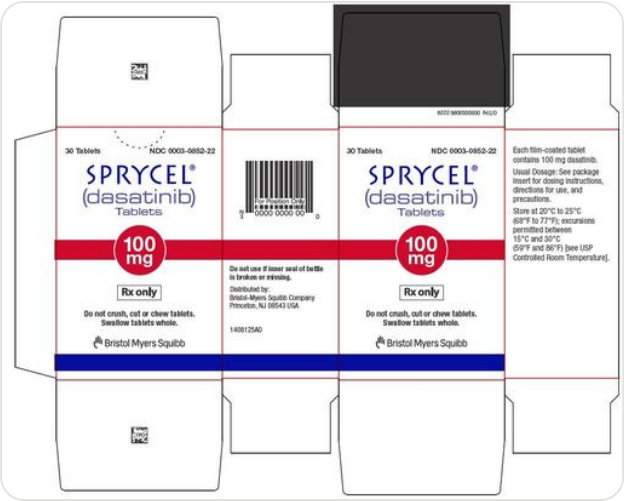
Take 500 to 1,000 mg of plain quercetin a day, with a meal that has some fat. It leaves your blood quickly, so split your dose.

Fatty liver with scarring: dasatinib and quercetin against placebo

Koning 2026, Nat Metab, 31 adults



D+Q is only for use with a doctor. The trials used dasatinib 100 mg with quercetin 1,000 to 1,250 mg for 2 to 3 days in a row, then a week or two off.

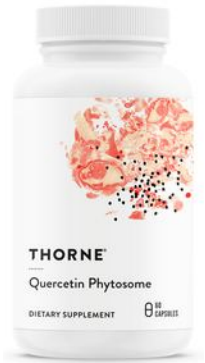


Dasatinib is a prescription drug (Sprycel).
Picture: Bristol Myers Squibb

Diamandis describes 2 to 3 days in a row, once or twice a month, with medical oversight.

The phytosome form (bound to sunflower lecithin) reached up to 20 times the blood levels of plain quercetin (Riva 2019), and LipoMicel 7 to 15 times (Solnier 2023). For either, the label dose is 250 mg 2 to 3 times a day.

The brands



TOP PICK

Thorne Quercetin Phytosome. Quercetin bound to sunflower lecithin, 250 mg per capsule; take 1 capsule 2 to 3 times a day with meals. It's the phytosome form, which reached up to 20 times the blood levels of plain quercetin, against 7 to 15 times for LipoMicel (Riva 2019; Solnier 2023). $46 for 60 ($1.53 a day at 2), at thorne.com.

Picture: Thorne

ALSO GOOD

Natural Factors Quercetin LipoMicel Matrix, 250 mg per softgel. $85.95 for 120 ($1.43 a day at 2), at naturalfactors.com. For trial doses on a budget, Double Wood Quercetin with Bromelain: 1,000 mg of quercetin for $0.42 a day, at 2 capsules from a 120-capsule bottle (the label reads 1200 mg per serving, counting 200 mg of bromelain), at doublewoodsupplements.com. Every batch is third-party tested, and the latest lot measured 972 mg.

Natural Factors Quercetin LipoMicel Matrix

LipoMicel, 250 mg per softgel

Double Wood Quercetin with Bromelain

Plain quercetin, 1,000 mg, plus 200 mg bromelain

CONSUMERLAB

In 2023, ConsumerLab tested quercetin and rutin supplements (rutin is quercetin bound to a sugar). Every quercetin product passed, and only rutin fell short. Thorne, Natural Factors and Double Wood weren't in its tests. ConsumerLab's top pick for capsules was MRM Quercetin 500 mg, plain quercetin at 21 cents a capsule.

MRM Quercetin 500 mg, ConsumerLab's top pick for capsules.
Picture: MRM Nutrition

GOOD TO KNOW

Consult a medical doctor before taking any supplement if you are pregnant, nursing, have a medical condition or are taking any medications. In trials of quercetin alone, up to 1,000 mg a day for 12 weeks, side effects were rare and mild: headache, upset stomach, tingling (Andres 2018). Quercetin can change the levels of some drugs, so ask your doctor if you take warfarin, cyclosporine, tacrolimus or digoxin, or have kidney disease or a hormone-sensitive condition. In the D+Q liver trial, side effects ran 82% against 43% on placebo, all of them passing.

SOURCES **1** Nieman 2007, PMID 17805089 · **2** Zhu 2015, PMID 25754370 · **3** Serban 2016, PMID 27405810 · **4** Javadi 2017, PMID 27710596 · **5** Andres 2018, PMID 29127724 · **6** Xu 2018, PMID 29988130 · **7** Hickson 2019, PMID 31542391 · **8** Riva 2019, PMID 30328058 · **9** Rojano-Ortega 2023, PMID 37398956 · **10** Solnier 2023, PMID 37600550 · **11** Koning 2026, PMID 42823536 · **12** Diamandis P, Longevity Guidebook (2025 edition), Chapter 5

16 Astaxanthin

WHAT IT IS	the red pigment that turns salmon, shrimp and flamingos pink, made by a tiny red alga
BEST FOR	muscle strength, endurance, skin, eyes, cholesterol and blood sugar, a longer life
TYPICAL DOSE	4 to 12 mg a day, with a meal that has some fat
TOP PICK	BioAstin Hawaiian Astaxanthin 12 mg
COST A DAY	56 cents

Picture: Elizabeth Gottwald, Unsplash

Stronger muscles, better skin and a longer life in mice.

From the pigment that makes salmon pink.

1 In the US government's own lifespan testing program, the gold standard, male mice on astaxanthin lived 12% longer (Harrison 2024).

2 People aged 65 to 82 doing walking workouts gained 14.4% in leg strength on a formula of astaxanthin, tocotrienol and zinc, against 2.9% on a placebo (Liu 2018).

3 Cyclists on 4 mg a day for 28 days rode a 20 km time trial 121 seconds faster, against 19 seconds faster on a placebo (Earnest 2011).

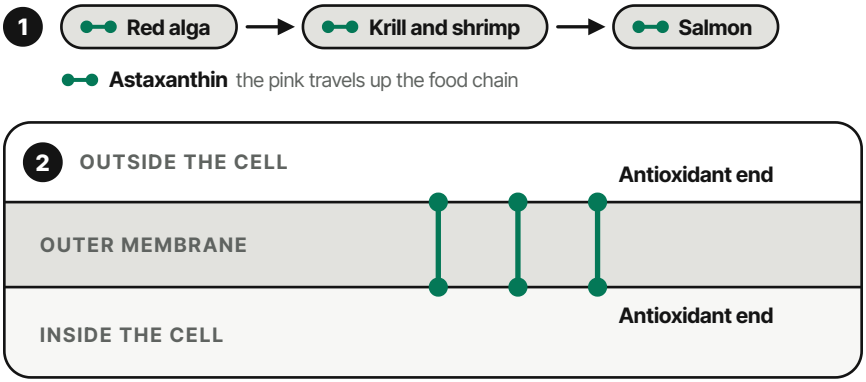
What it does for you

Astaxanthin helps your muscles get more out of every workout.

The molecule is long enough to span a cell's whole outer membrane, with an antioxidant end at each surface, so it guards the cell inside and out.

How astaxanthin works

Its shape is what makes it special.



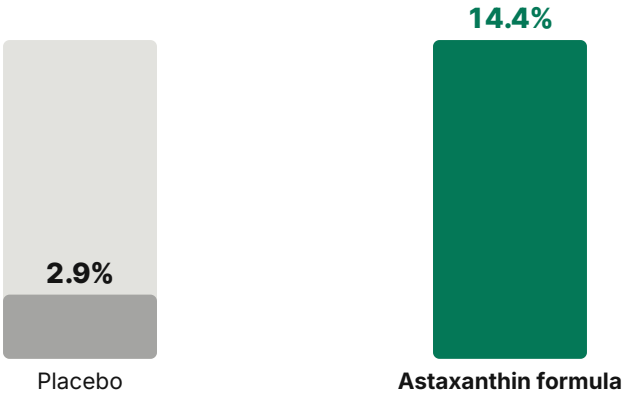
1. Astaxanthin is made by a red alga. Krill and shrimp eat the algae, salmon eat the krill, and the pink travels up the food chain.
2. It's long enough to span a cell's outer membrane, with an antioxidant end at each surface, so it guards the cell from the inside and the outside.

What the science says

Rise in maximal leg strength

4 months on the formula, with 3 months of walking training.

Liu 2018, J Cachexia Sarcopenia Muscle, 42 adults aged 65 to 82



Skin. Across 9 trials, astaxanthin improved skin moisture and elasticity (Zhou 2021).

Eyes. In early macular degeneration, a formula with 4 mg of astaxanthin kept vision steady for 2 years: a score of 81.4, against 76.8 without it (Piermarocchi 2012).

Blood sugar and blood fats. Across 9 trials in people with prediabetes or type 2 diabetes, it lowered fasting sugar by 16.1 mg/dL, triglycerides by 20.9 mg/dL and total cholesterol by 12.2 mg/dL (Molani-Gol 2026).

A longer life, in mice. In the government's test, males lived 12% longer at the median; females saw no effect (Harrison 2024).

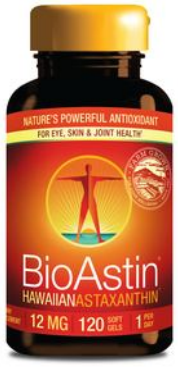
How to take it

Take 4 to 12 mg a day, with a meal that has some fat. The muscle trials used 12 mg, and the cycling trial 4 mg.

Nearly all the human trials used natural algal softgels. The mouse lifespan study used synthetic beadlets, like AX3 and ZanthoSyn.

Give it time: 4 weeks for endurance, 6 to 10 weeks for skin (Tominaga 2012), 12 weeks for blood fats, and 3 to 4 months of training for muscle.

The brands



TOP PICK

BioAstin Hawaiian Astaxanthin 12 mg, from Nutrex Hawaii. It's natural algal astaxanthin, grown in Kona, Hawaii, 12 mg a softgel, the dose in the muscle trials. It's verified by USP and Informed Choice, and ConsumerLab found 13.2 mg against 12 mg on its label. $67.49 for 120 softgels (56 cents a day) at nutrex-hawaii.com.

Picture: Nutrex Hawaii

BRAND	FORM AND DOSE	PRICE	COST A DAY
BioAstin Hawaiian Astaxanthin	**Algal, 12 mg softgel**	**$67.49 (120 softgels)**	**56 cents**
BioAstin Vegan	Algal, 4 mg softgel	$37.49 (120 softgels)	31 cents
AX3 Astaxanthin	Synthetic beadlets, 12 mg a day	$60.00 (60 capsules)	$2.00
Sports Research Astaxanthin	Astalif algal, 12 mg softgel	about $25 to $40 (60 softgels)	about 42 to 67 cents
Life Extension Astaxanthin with Phospholipids	AstaReal algal, 4 mg softgel	about $12 (30 softgels)	about 40 cents

BioAstin Vegan
Algal, 4 mg softgel

AX3 Astaxanthin
Synthetic beadlets, 12 mg a day

Sports Research Astaxanthin
AstaLif algal, 12 mg softgel

Life Extension Astaxanthin with Phospholipids
AstaReal algal, 4 mg softgel

ALSO GOOD

AX3 Astaxanthin, the synthetic beadlet type the government lifespan study used, at ax3.life. Sports Research Astaxanthin, 12 mg of Astalif algal astaxanthin from Iceland for well under a dollar a day, at sportsresearch.com.

CONSUMERLAB

All 9 astaxanthin supplements ConsumerLab tested in 2026 held at least their listed amount. BioAstin, the top pick, held 13.2 mg against 12 mg on its label. AX3 held 12.9 mg and Sports Research 12.8 mg, each against 12 mg, and Life Extension's 4 mg softgel held 4.5 mg. ConsumerLab's top pick for a high dose was Nutricost Astaxanthin, at 32 cents for a 12 mg softgel.

Nutricost Astaxanthin, ConsumerLab's top pick for a high dose.

Picture: Nutricost

GOOD TO KNOW

The EU's food safety authority judged 8 mg a day from supplements safe for adults (Turck 2020), and trials used up to 28 mg a day for weeks without serious problems. It can turn your stool orange. If you take blood thinners or medicine for blood pressure or blood sugar, or you're pregnant, ask your doctor first.

SOURCES **1** Earnest 2011, PMID 21984399 · **2** Piermarocchi 2012, PMID 22009916 · **3** Tominaga 2012, PMID 22428137 · **4** Liu 2018, PMID 30259703 · **5** Turck 2020, PMID 32874213 · **6** Zhou 2021, PMID 34578794 · **7** Harrison 2024, PMID 38041783 · **8** Molani-Gol 2026, PMID 42100673

17 Berberine

WHAT IT IS	a bright-yellow compound from plants like barberry and goldenseal, used for centuries in Chinese and Ayurvedic medicine
BEST FOR	blood sugar, cholesterol and triglycerides, liver fat, weight and waist, gut health
TYPICAL DOSE	500 mg two or three times a day, with meals
TOP PICK	Thorne Berberine
COST A DAY	$2.93 for 4 capsules (one 2-capsule serving with each of two meals)

Picture: Anton Kotov, Unsplash

Lower blood sugar, lower cholesterol, less liver fat.

In a head-to-head trial, it worked about as well as metformin.

1. In newly diagnosed type 2 diabetes, 500 mg three times a day took HbA1c from 9.5% to 7.5% in 3 months, an effect the researchers called “similar to that of metformin” (Yin 2008).

2. In 32 people with high cholesterol, 3 months of berberine cut LDL 25% and triglycerides 35%, through a route statins don’t use (Kong 2004).

3. Old mice on berberine lived 80% longer from the day they started it: 154 days instead of 85.5 (Dang 2020).

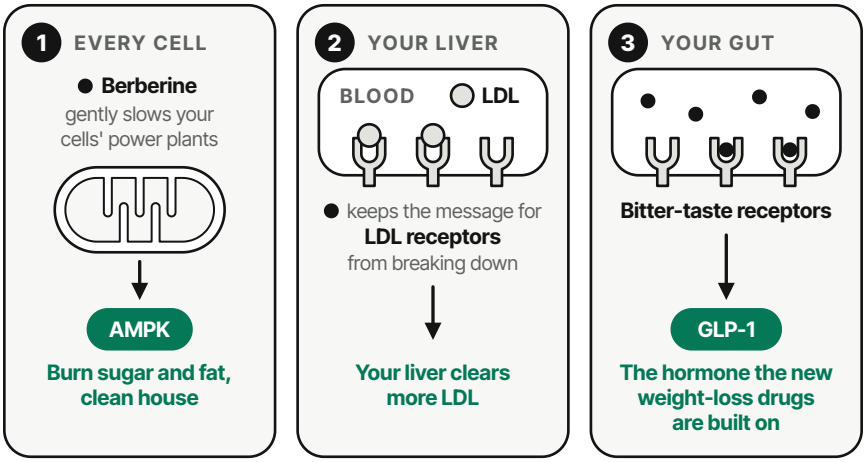
What it does for you

Berberine goes after the numbers your doctor checks every year.

It turns on AMPK, the fuel gauge inside every cell, which tells your cells to burn sugar and fat, much as metformin does.

How berberine works

It works through AMPK, the same fuel switch metformin uses.



1. Berberine gently slows your cells' power plants. That turns on AMPK, which tells your cells to burn sugar and fat and to clean house.
2. Berberine keeps the message for your liver's LDL receptors from breaking down, so your liver clears more LDL.
3. Bitter-taste receptors in your gut release GLP-1, the hormone the new weight-loss drugs are built on.

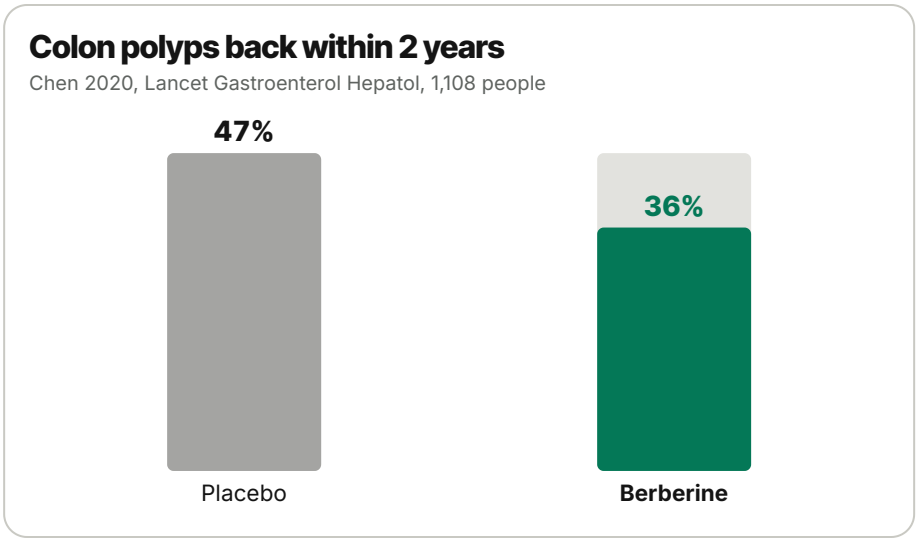
What the science says

Liver fat. In 184 people with fatty liver, adding 500 mg three times a day to 16 weeks of lifestyle changes cut liver fat 52.7%, against 36.4% with lifestyle changes alone (Yan 2015).

Cholesterol. In the largest recent trial, 1 g a day for 6 months lowered LDL 7.7 mg/dL and ApoB 3.4 mg/dL in 337 adults with obesity and fatty liver, but not their liver or belly fat (Lei 2026).

Weight. Across 12 trials, people on berberine lost 2.07 kg on average, with a smaller waist (Asbaghi 2020).

Colon polyps. In 1,108 people who'd had polyps removed, 300 mg twice a day cut the share whose polyps came back within 2 years to 36%, against 47% on a placebo (Chen 2020).



How to take it

Take 500 mg two or three times a day, with meals: 1,000 to 1,500 mg a day, the dose most trials used.

It works fast and wears off fast, so taking it with meals blunts each meal's sugar rise. Start with 500 mg once a day with your biggest meal for a week, then build up.

The sugar effect peaked in the first 90 days (Liang 2019), so some people cycle it on and off.

Dihydroberberine is a form your body absorbs more easily (Moon 2021). The usual dose is 100 to 200 mg, once to three times a day with meals.

The brands

TOP PICK

Thorne Berberine. Each 2-capsule serving pairs 450 mg of berberine with 550 mg of Berberine Phytosome, a form you absorb better. Take a serving with two meals a day to match the trials. It's NSF Contents Certified, so NSF checked that what's on the label is in the bottle. $44 for 30 servings ($2.93 a day at 2 servings), at thorne.com.

Picture: Thorne

BRAND	PER SERVING	PRICE	TESTING
Thorne Berberine	**450 mg berberine plus 550 mg phytosome (2 capsules)**	**$44 for 30 servings ($2.93 a day at 2 servings)**	**NSF Contents Certified**
Double Wood Berberine	500 mg (1 capsule)	$19.95	Every batch lab-tested
Double Wood Dihydroberberine	100 mg GlucoVantage (1 capsule)	$22.95	Every batch lab-tested
Toniiq Berberine 97%	1 capsule, up to 3 a day	$29.97	Tested for potency, heavy metals and microbes
Toniiq Dihydroberberine	200 mg GlucoVantage, plus Ceylon cinnamon and milk thistle (2 capsules)	$24.97 (60 capsules)	Same testing

Double Wood Berberine

500 mg (1 capsule)

Double Wood Dihydro-berberine

100 mg Gluco-Vantage (1 capsule)

Toniiq Berberine 97%

1 capsule, up to 3 a day

Toniiq Dihydro-berberine

2 capsules

Solaray Berberine 500 mg

ConsumerLab's top pick, 30 cents a capsule

ALSO GOOD

Double Wood Berberine: the trial dose, 500 mg, in every capsule, at a low price. doublewoodsupplements.com For better absorption, Double Wood Dihydroberberine, made with GlucoVantage, the ingredient in the absorption study (Moon 2021). doublewoodsupplements.com

CONSUMERLAB

In its review updated in 2026, ConsumerLab said most of the berberine supplements it tested passed, and cautioned that berberine may trigger irregular heart rhythms in some people. Thorne and Double Wood weren't in its tests. ConsumerLab's top pick was Solaray Berberine 500 mg, at 30 cents a capsule. Two goldenseal powders failed for lead. If you want berberine, take a berberine supplement, not goldenseal.

GOOD TO KNOW

The main side effect is an upset stomach, most often constipation. Berberine slows how your liver clears some drugs and adds to diabetes medicine, so if you take cyclosporine, tacrolimus, warfarin, some antidepressants or anything for blood sugar, talk to your doctor first. Avoid it if you're pregnant or breastfeeding.

SOURCES **1** Kong 2004, PMID 15531889 · **2** Yin 2008, PMID 18442638 · **3** Yan 2015, PMID 26252777 · **4** Liang 2019, PMID 30393248 · **5** Asbaghi 2020, PMID 32690176 · **6** Chen 2020, PMID 31926918 · **7** Dang 2020, PMID 31773901 · **8** Moon 2021, PMID 35010998 · **9** Lei 2026, PMID 41543854

18 Ergothioneine

WHAT IT IS	a sulfur-containing amino acid that only fungi and some soil bacteria can make, so you get it from food, mostly mushrooms
BEST FOR	memory, sleep, the heart, energy, healthy aging
TYPICAL DOSE	5 to 25 mg a day
TOP PICK	Life Extension Essential Youth L-Ergothioneine
COST A DAY	$3 for 5 capsules (25 mg, the dose from the biggest memory trial)

Mushrooms are the top source. Across 13 species, porcini had the most.
Picture: Alex Skobe, Unsplash

Sharper memory, better sleep and a longer life in mice.

From a mushroom nutrient your body can't make, and runs low on after 60.

1 In a 16-week double-blind trial, adults aged 55 to 79 with memory complaints who took 25 mg a day got better at remembering to do what they'd planned, and fell asleep more easily (Zajac 2025).

2 In 3,236 Swedes followed for 21 years, each step up in blood ergothioneine came with a 21% lower risk of cardiovascular death and a 14% lower risk of death from any cause (Smith 2020).

3 Male mice given ergothioneine lived 16% longer at the median, and the age by which 90% had died rose 29% (Katsube 2024).

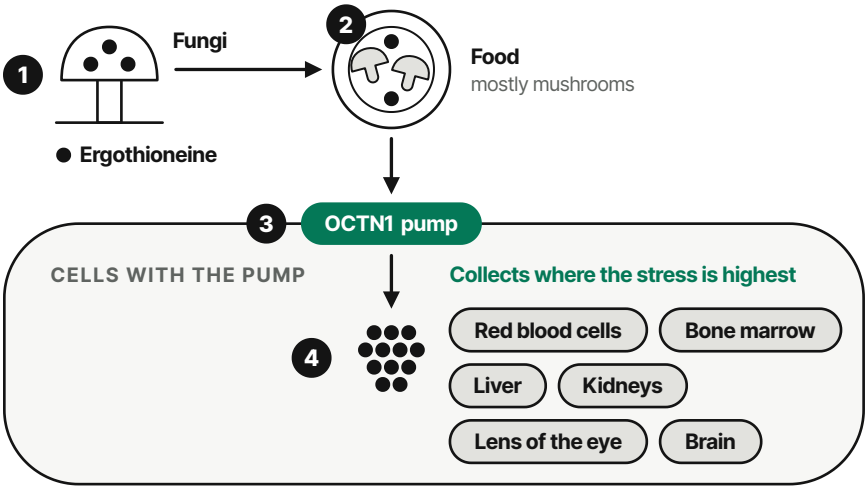
What it does for you

Your body can't make ergothioneine, but it has a dedicated pump to pull it in (Gründemann 2005). Less than 4% of a dose leaves in your urine (Cheah 2017).

And your levels fall after 60 (Cheah 2016). That's why leading scientists have started calling it a vitamin (Ames 2018).

How ergothioneine works

Your body has a pump made just for it.



1. Only fungi and some soil bacteria make ergothioneine.
2. You get it from food, mostly mushrooms.
3. Your body built a dedicated pump to pull it in.
4. It collects where the stress is highest: red blood cells, bone marrow, liver, kidneys, the lens of the eye and the brain.

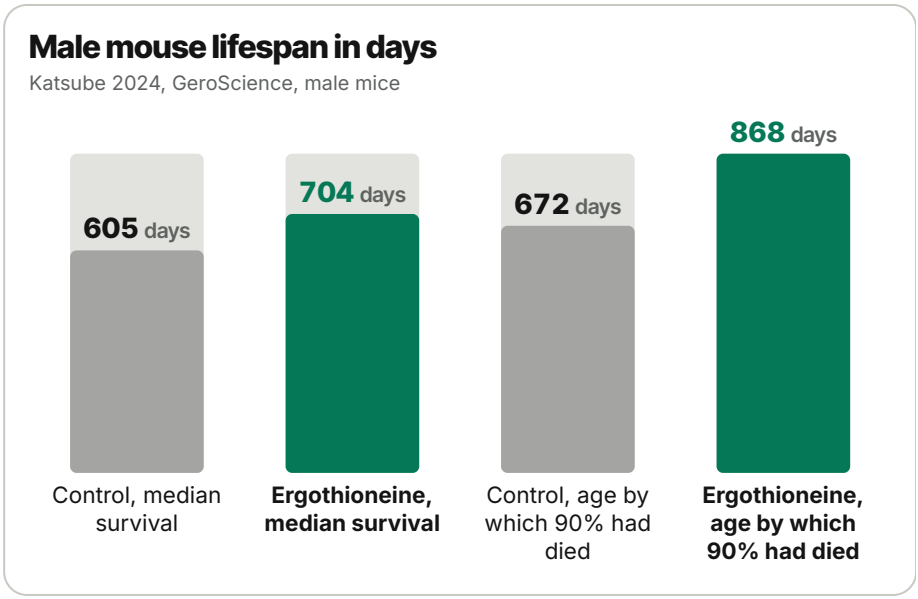
Less than 4% of a dose leaves in your urine.

What the science says

Sleep. In a double-blind trial, just 8 mg a day for 16 weeks improved sleep quality against a placebo (Okumura 2025).

Energy. In mice, it switched on an enzyme in muscle mitochondria that raised energy production and exercise performance (Sprenger 2025).

A longer life in mice. In old age, the mice on ergothioneine had lost less weight and walking speed, their kidney markers rose far less, and they kept their learning and memory (Katsube 2024).



Male mice given ergothioneine lived 16% longer at the median, and the age by which 90% had died rose 29%.

How to take it

Take 5 to 25 mg a day, any time, with or without food. Give it time: 4 to 16 weeks for sleep (Katsube 2022), and 16 weeks to a year for memory.

The trials used 8 mg for sleep, 10 or 25 mg for memory and sleep, and 25 mg three times a week for a year in mild memory loss.

Supplements use L-ergothioneine, usually made by fermentation (ErgoActive is one). It's identical to the form in food.

Eat your mushrooms. They're the top source, and cooking doesn't cut it much (Kalaras 2017). 100 g of white button mushrooms has roughly 4 to 5 mg, and oyster, shiitake and maitake roughly 7 to 15 mg.

Oyster, king oyster, shiitake and maitake mushrooms have roughly 7 to 15 mg per 100 g.
Picture: Odiseo Castrejon, Unsplash

The brands

TOP PICK

Life Extension Essential Youth L-Ergothioneine. It's made with ErgoActive, an L-ergothioneine made by fermentation and identical to the form in food, the exact ingredient that improved memory and sleep in the biggest human trial. Each capsule has 5 mg, so five give that trial's 25 mg. $18 for 30 capsules ($3 a day at 25 mg), at lifeextension.com.

Picture: Life Extension

ALSO GOOD

Toniiq L-Ergothioneine. One 30 mg capsule covers the top trial dose, for about 22 cents a day, and Toniiq tests for identity, potency, heavy metals and microbes. A bottle of 90 capsules costs $19.97. toniiq.com

Double Wood L-Ergothioneine ($19.95) comes from a brand that publishes batch tests by accredited labs on its other products.
doublewoodsupplements.com

Toniiq L-Ergothioneine
30 mg

Double Wood L-Ergothioneine

GOOD TO KNOW

The EU's food safety authority cleared L-ergothioneine as a novel food, including for pregnant and breastfeeding women (Turck 2017). A year of use in older adults left blood counts, kidney and liver markers unchanged (Yau 2024).

SOURCES **1** Gründemann 2005, PMID 15795384 · **2** Cheah 2016, PMID 27444382 · **3** Cheah 2017, PMID 27488221 · **4** Kalaras 2017, PMID 28530594 · **5** Turck 2017, PMID 32625352 · **6** Ames 2018, PMID 30322941 · **7** Smith 2020, PMID 31672783 · **8** Katsube 2022, J Funct Foods 95:105165 · **9** Katsube 2024, PMID 38446314 · **10** Yau 2024, PMID 39544014 · **11** Okumura 2025, PMID 40475978 · **12** Sprenger 2025, PMID 39965563 · **13** Zajac 2025, DOI 10.3390/nutraceuticals5030015

19 Collagen

WHAT IT IS	the protein that holds your skin, bones, tendons and joints together, taken as small peptides that dissolve in coffee or water
BEST FOR	skin (wrinkles, elasticity, moisture), bone density, joint pain, tendons, and muscle when you lift
TYPICAL DOSE	2.5 g a day for skin; 5 to 15 g for bone, joints, tendons and muscle
TOP PICK	Momentous Collagen Peptides
COST A DAY	$1.83

Picture: Tracey Parish, Unsplash

Fewer wrinkles in 8 weeks. Denser bones in a year.

From one scoop in your morning coffee.

1 Women aged 45 to 65 who took 2.5 g a day for 8 weeks had 20% less wrinkle volume around their eyes than the placebo group (Proksch 2014).

2 In 131 women past menopause with low bone density, 5 g a day for a year raised bone density at the spine and hip, while on the placebo it slipped (König 2018).

3 Men averaging 72 with age-related muscle loss lifted weights for 12 weeks with 15 g of collagen or a placebo. On collagen, they gained 4.2 kg of lean mass against 2.9 kg, and more than twice the leg strength (Zdzieblik 2015).

What it does for you

What happens to collagen after you swallow it?

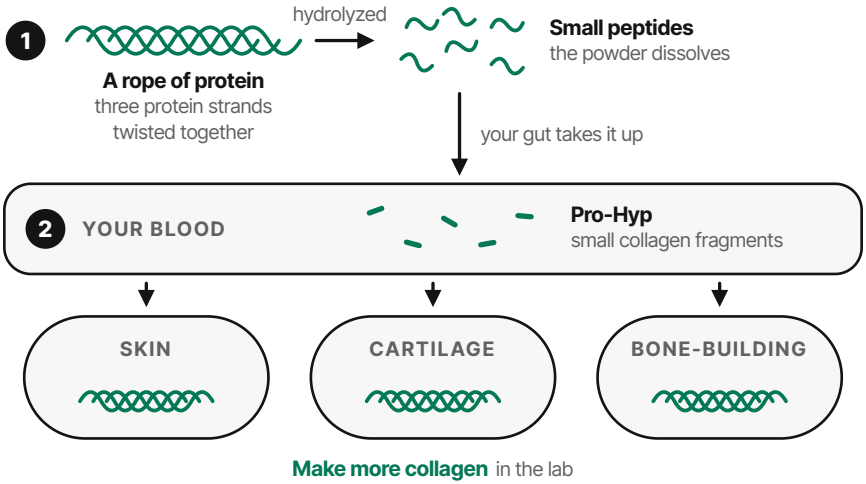
Small fragments of it show up in your blood (Iwai 2005), and in the lab they tell skin, cartilage and bone cells to make more collagen.

What the science says

Skin. Across 26 trials, collagen improved skin moisture and elasticity (Pu 2023). A 2025 analysis of 23 trials found the same gains, except in trials no company paid for (Myung 2025).

How collagen works

One scoop in your morning coffee.



3 ● **Vitamin C** is the spark. Your body can't make collagen without it.

1. Collagen is three protein strands twisted together. Supplements are cut into small peptides, so the powder dissolves and your gut takes it up.
2. Small collagen fragments like Pro-Hyp show up in your blood. In the lab, these fragments tell skin, cartilage and bone-building cells to make more collagen.
3. Vitamin C is the spark. Your body can't make collagen without it.

Collagen is the most abundant protein in your body, the scaffolding of your skin, bones, tendons and cartilage.

Bone. 31 women from the year-long trial kept taking it for 4 years, and their spine bone density kept rising (Zdzieblik 2021).

Change in bone density score (T-score) over 12 months

König 2018, Nutrients, 131 women around age 64

Spine, collagen	Spine, placebo	Hip, collagen	Hip, placebo
+0.10	-0.03	+0.09	-0.01
		Femoral neck	Femoral neck

5 g a day for a year raised bone density at the spine and hip. On the placebo, it slipped.

Joints. In 147 athletes with joint pain, 10 g a day for 24 weeks eased pain more than a placebo (Clark 2008). For knee arthritis, 40 mg a day of UC-II, a different form of collagen, beat a placebo and glucosamine with chondroitin (Lugo 2016).

Tendons. In 40 young men training for 14 weeks, 5 g a day grew their Achilles tendons 11.0%, against 4.7% on a placebo (Jerger 2022).

How to take it

Match the dose to your goal: 2.5 g a day for skin, 5 g for bone and tendons, 10 g for joints and 15 g for muscle with training. Many people take 10 to 20 g.

Stir the powder into coffee, tea, a smoothie or water; capsules hold less than 1 g each.

If you train, take it after your workout, or an hour before with vitamin C. In one trial, gelatin with vitamin C an hour before exercise doubled a blood marker of new collagen (Shaw 2017).

Give it time: 4 to 12 weeks for skin, 12 to 14 weeks of training for tendons and muscle, and 12 months for bone.

Collagen doesn’t replace whey or a complete protein for muscle.

The brands

TOP PICK

Momentous Collagen Peptides. Each serving has 10 g of grass-fed bovine collagen plus 5 g of Fortigel, a joint and tendon peptide from the maker of the trial peptides, plus vitamin C. One serving covers the 10 g joint dose, and it's NSF Certified for Sport. $54.99 for 30 servings ($1.83 a day) at livemomentous.com.

Picture: Momentous

BRAND	PER SERVING	PRICE	TESTING
Momentous Collagen Peptides	**10 g collagen plus 5 g Fortigel, with vitamin C**	**$54.99 for 30 servings ($1.83 a day)**	**NSF Certified for Sport**
Vital Proteins Bioactive Collagen Complex	Verisol, Fortibone and Fortigel, with vitamin C	$59.00 a tub (13.9 oz)	Check the tub for a seal
Vital Proteins Collagen Peptides, Unflavored	20 g bovine collagen	$45.00 (19.3 oz, about 27 servings, $1.67 a day)	Check the tub for a seal
Thorne Collagen Fit	About 15 g collagen, with added nutrients	$56	NSF Certified for Sport

Vital Proteins Bioactive Collagen Complex

Verisol, Fortibone and Fortigel, with vitamin C

Vital Proteins Collagen Peptides, Unflavored

20 g bovine collagen

Thorne Collagen Fit

About 15 g collagen, with added nutrients

Trunature Verisol Collagen

Consumer-Lab's top pick for skin, about 18 cents a day

Healthy Origins UC-II

One of Consumer-Lab's picks for joints, 26 cents a day

ALSO GOOD

Vital Proteins Bioactive Collagen Complex (Daily Foundational Support), the only mainstream scoop we found with all three peptides from the trials. vitalproteins.com For knee arthritis, look for UC-II, a 40 mg capsule sold by many brands.

CONSUMERLAB

ConsumerLab tested collagen supplements in 2023 and 2025. Vital Proteins Collagen Peptides passed, unflavored and chocolate. Momentous, the top pick, Thorne and Vital Proteins' Bioactive Collagen Complex weren't in its tests. ConsumerLab's top pick for skin was Trunature Healthy Skin Verisol Collagen Powder, from Costco, at about 18 cents a day. For joints, one of its picks was Healthy Origins Natural UC-II, at 26 cents a day.

GOOD TO KNOW

Collagen was well tolerated in the trials; a few people feel full or get a mild upset stomach. It comes from fish or cow hide (there's no true vegan collagen), so check the source if you have an allergy. If you're prone to kidney stones, keep the dose moderate.

SOURCES **1** Iwai 2005, PMID 16076145 · **2** Clark 2008, PMID 18416885 · **3** Proksch 2014, PMID 24401291 · **4** Zdzieblik 2015, PMID 26353786 · **5** Lugo 2016, PMID 26822714 · **6** Shaw 2017, PMID 27852613 · **7** König 2018, PMID 29337906 · **8** Zdzieblik 2021, PMID 34520654 · **9** Jerger 2022, PMID 35403756 · **10** Pu 2023, PMID 37432180 · **11** Myung 2025, PMID 40324552

20 Glucosamine

WHAT IT IS	an amino sugar your body makes to build cartilage and the protective lining of your gut; supplements come from shellfish shells or fermented corn
BEST FOR	a longer life, heart, blood sugar, brain, lungs, and knee cartilage and joint pain
TYPICAL DOSE	1,500 mg of crystalline glucosamine sulfate once a day, with a meal
TOP PICK	Dona Crystalline Glucosamine Sulfate
COST A DAY	about $1.33 for 2 caplets (1,500 mg)

Most glucosamine comes from shellfish shells.
Picture: James Tiono, Unsplash

The joint supplement linked to a longer life.

A 15% lower death rate in nearly half a million people.

1. In 495,077 adults in the UK followed for almost 9 years, regular glucosamine users had a 15% lower death rate, and an 18% lower rate of death from heart disease (Li 2020).

2. Old mice started on glucosamine lived significantly longer. It works like a low-carb diet inside your cells (Weimer 2014).

3. In a 3-year placebo-controlled trial in people with knee arthritis, the crystalline sulfate form all but stopped knee cartilage loss: 0.06 mm of joint space lost, against 0.31 mm on the placebo (Reginster 2001).

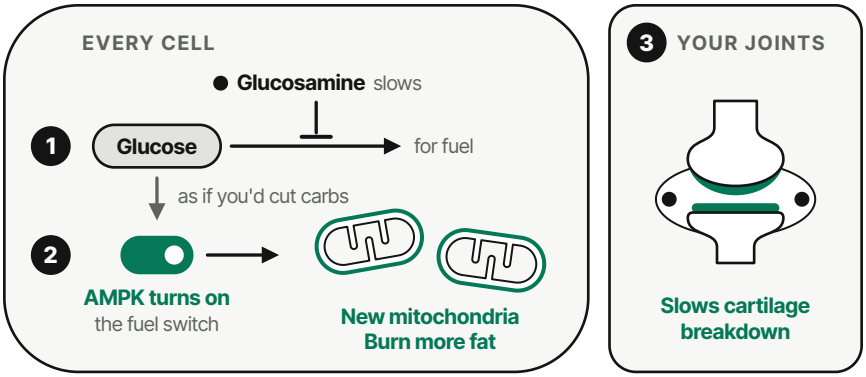
What it does for you

Most people take it for their knees. The bigger story is what turned up when researchers followed hundreds of thousands of users.

Glucosamine slows how your cells burn sugar, which turns on AMPK, the fuel switch inside every cell, and your cells build new mitochondria.

How glucosamine works

It works like a low-carb diet inside your cells.

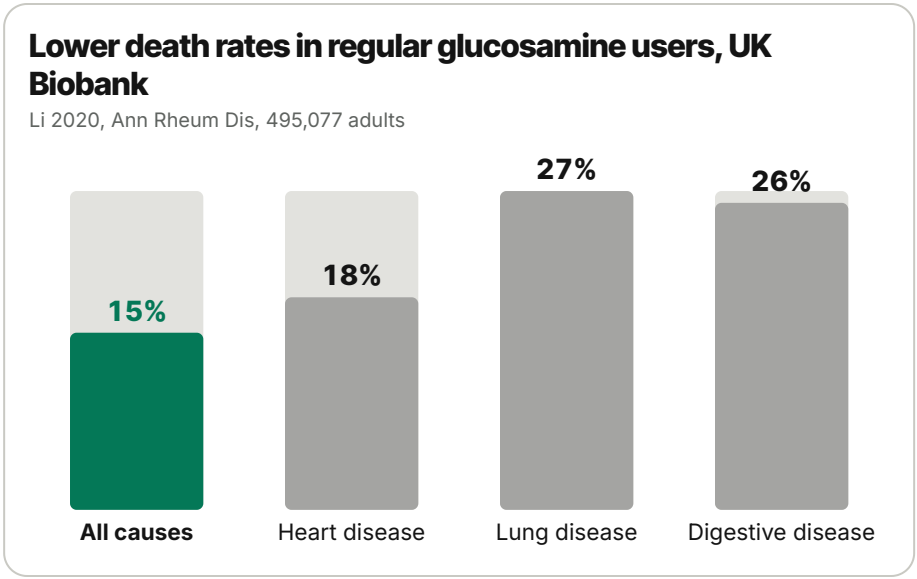


1. Glucosamine slows how your cells burn glucose for fuel.
2. So they act as if you'd cut carbs: AMPK, the fuel switch inside every cell, turns on, and your cells build new mitochondria and burn more fat.
3. Your body uses glucosamine to build cartilage. The crystalline sulfate form reaches the fluid in your joints and slows cartilage breakdown.

Old mice started on glucosamine lived significantly longer.

What the science says

Half a million people. UK users also had 27% fewer deaths from lung disease and 26% fewer from digestive disease, after allowing for lifestyle, diet and medicines (Li 2020). These studies follow people who chose to take it. One US study of 38,021 adults found no link once everything was adjusted for (Bhimani 2023).



UK Biobank followed 495,077 adults for a median of 8.9 years. About 1 in 5 took glucosamine regularly.

Heart, blood sugar and brain. Glucosamine users also had 15% fewer heart events and 22% fewer heart deaths in 466,039 people with no heart disease at the start (Ma 2019). They had a 17% lower risk of type 2 diabetes in 404,508 (Ma 2020) and a 16% lower risk of dementia (Zheng 2023).

Knees. Across 37 trials, glucosamine sulfate beat a placebo on symptoms and joint space, with no more side effects (Veronese 2020).

The form matters. The biggest trial, GAIT, used glucosamine hydrochloride, and it missed its pain goal overall (Clegg 2006).

How to take it

Take 1,500 mg of crystalline glucosamine sulfate once a day, with a meal. That's the dose and the form from the winning trials.

Read the label: glucosamine hydrochloride (HCl) failed in GAIT, and many US "sulfate" products are glucosamine sulfate 2KCl, a different salt.

If you add chondroitin, take 800 to 1,200 mg a day.

Joint symptoms ease in 4 to 12 weeks; cartilage changes take years.

The brands

TOP PICK

Dona Crystalline Glucosamine Sulfate. It's the exact prescription form from the Reginster and Pavelka trials, now sold over the counter in the US: 1,500 mg per daily dose, in 2 caplets, not the HCl form that missed its pain goal in GAIT. It passed ConsumerLab's tests, with 1,887.7 mg found against 1,500 mg on the label. $39.99 (about $1.33 a day) at donausa.com.

Picture: Dona

BRAND	PER DAY	PRICE	FORM
Dona	**1,500 mg glucosamine sulfate**	**$39.99 (about $1.33 a day)**	**Crystalline sulfate, the trial form**
NOW Foods or Jarrow Glucosamine + Chondroitin	1,500 mg glucosamine plus 1,200 mg chondroitin	About $20 to $30	Sulfate 2KCl
Kirkland Signature Glucosamine with Chondroitin	1,500 mg glucosamine HCl	About $30 for 280 tablets	HCl, the form that failed in GAIT

NOW Foods Glucosamine + Chondroitin

1,500 mg glucosamine plus 1,200 mg chondroitin

Jarrow Glucosamine + Chondroitin

1,500 mg glucosamine plus 1,200 mg chondroitin

Kirkland Signature Glucosamine with Chondroitin

See the label

ALSO GOOD

NOW Foods or Jarrow Glucosamine + Chondroitin, glucosamine plus chondroitin for about $20 to $30. Both use glucosamine sulfate 2KCl, not the crystalline form from the trials. nowfoods.com

CONSUMERLAB

ConsumerLab's joint supplement review, updated in 2026, tested one glucosamine-only product, WynnPharm Dona. It passed, with 1,887.7 mg found against 1,500 mg on the label, at $1.33 a day. NOW and Jarrow weren't in its tests. ConsumerLab's top pick for glucosamine with chondroitin was Kirkland Signature Advanced Glucosamine Chondroitin, at 20 cents a day. That one is the HCl form, the one that missed its pain goal in GAIT.

GOOD TO KNOW

In trials, side effects were no different from placebo; some people get a mild upset stomach. If you're allergic to shellfish, choose one made from fermented corn. If you take warfarin, check with your doctor first. Early worries about blood sugar didn't hold up: users had less diabetes, not more.

SOURCES **1** Reginster 2001, PMID 11214126 · **2** Pavelka 2002, PMID 12374520 · **3** Clegg 2006, PMID 16495392 · **4** Weimer 2014, PMID 24714520 · **5** Ma 2019, PMID 31088786 · **6** Li 2020, PMID 32253185 · **7** Ma 2020, PMID 31988063 · **8** Veronese 2020, PMID 33488785 · **9** Bhimani 2023, PMID 36971848 · **10** Zheng 2023, PMID 36978077

21 Akkermansia

WHAT IT IS	a gut bacterium, *Akkermansia muciniphila* ("mucus-loving"), that lives in and renews the protective mucus lining of your gut
BEST FOR	insulin sensitivity, keeping weight off after a diet, a stronger gut lining, GLP-1, healthy aging
TYPICAL DOSE	one capsule a day (10 to 30 billion pasteurized cells in the trials)
TOP PICK	The Akkermansia Company, Akkermansia Essential
COST A DAY	about $2.17 for one capsule ($65 for a box of 30)

Picture: Melissa Di Rocco, Unsplash

Better insulin sensitivity. Less weight back after a diet.

From a gut bacterium the very oldest people carry.

1. In the first human trial, in overweight adults with insulin resistance, pasteurized Akkermansia raised insulin sensitivity 28.6% and cut blood insulin 34% against a placebo in 3 months (Depommier 2019).

2. After an 8-week diet, people on pasteurized Akkermansia regained 1.2 kg over the next 24 weeks, against 3.2 kg on the placebo (Mount 2026).

3. People aged 105 to 109 had more of it than younger adults (Biagi 2016).

What it does for you

Akkermansia eats your gut's mucus. Your gut answers by making more, so the layer stays fresh and thick.

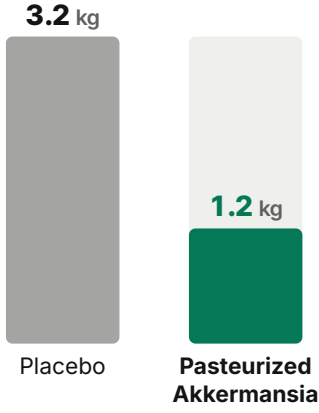
Lean, healthy and very long-lived people tend to have more Akkermansia, and it fades with age.

What the science says

Keeping the weight off. 90 adults lost at least 8% of their weight on an 8-week diet, then took pasteurized Akkermansia or a placebo for 24 weeks (Mount 2026).

Weight regained in the 24 weeks after an 8-week diet

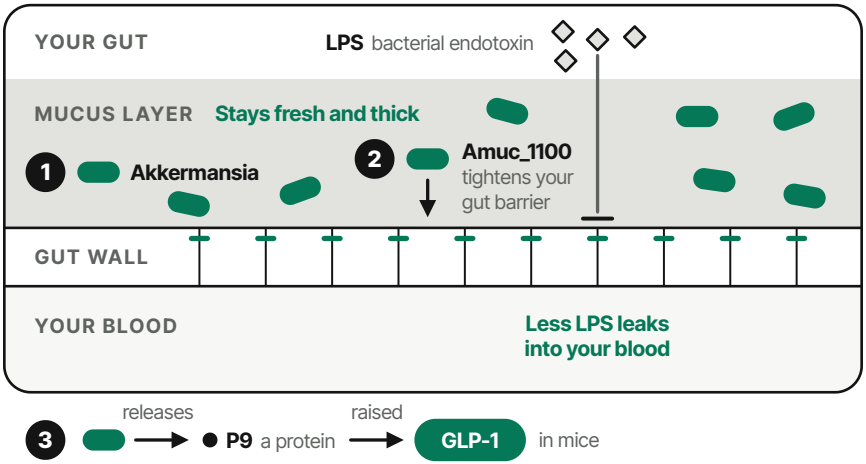
Mount 2026, Nat Med, 90 adults



Less than half the weight regain after a diet.

How Akkermansia works

It eats mucus, and that's a good thing.



1. Akkermansia lives in the mucus layer that coats your gut and feeds on it. That signals your gut to make more, so the layer stays fresh and thick.
2. A protein on its surface, Amuc_1100, tightens your gut barrier, so less bacterial endotoxin (LPS) leaks into your blood.
3. Akkermansia releases a protein called P9 that raised GLP-1 and switched on heat-burning brown fat in mice.

In mice, less bacterial debris leaked into the blood, where it drives inflammation.

The largest trial. In 142 adults with metabolic syndrome, 30 billion pasteurized cells a day for 4 months didn't change whole-body insulin sensitivity, the trial's main goal. But GLP-1, the hormone the new weight-loss drugs are built on, rose more than on the placebo, and people who started with little Akkermansia gained insulin sensitivity and lost trunk fat (Suenaert 2026).

Type 2 diabetes. In 76 people with it, Pendulum's formula brought HbA1c down 0.6 points over 12 weeks against a placebo (Perraudeau 2020).

A stronger gut lining, in mice. A protein on Akkermansia's surface tightened the gut barrier (Plovier 2017). So less bacterial debris leaked into the blood, where it drives inflammation.

Healthy aging, in mice. In mice bred to age too fast, gut bacteria from normal mice extended healthspan and lifespan, and Akkermansia alone was enough to bring benefits (Bárcena 2019).

How to take it

Pasteurized Akkermansia MucT is the form from the Depommier, Mount and Suenaert trials. Pendulum sells live Akkermansia, counted a different way (AFU), so the numbers don't compare.

Take one capsule a day. The trials used 10 and 30 billion pasteurized cells a day, and Europe's food safety authority set 34 billion as safe for adults (EFSA 2021).

You'll get the most from it if your own Akkermansia is low, as three trials found (Zhang 2025; Mount 2026; Suenaert 2026). A stool test such as Viome, Zoe or Ombre shows your level.

Viome

Zoe

Ombre

Give it 3 months for insulin, and 24 weeks to see it hold your weight after a diet.

The brands

TOP PICK

The Akkermansia Company, Akkermansia Essential. It's pasteurized Akkermansia MucT, the strain and form from the Mount and Suenaert trials, at the Suenaert dose of 30 billion per capsule. Take one capsule a day, under the 34 billion Europe's food safety authority set as safe for adults. $65 for a box of 30 (about $2.17 a day), at theakkermansiacompany.com.

Picture: The Akkermansia Company

BRAND	PER CAPSULE	PRICE	FORM
The Akkermansia Company Akkermansia Essential	**30 billion MucT**	**$65 for 30 (about $2.17 a day)**	**Pasteurized, the trial form**
Pendulum Akkermansia	100 million AFU	$54 a month on subscription (about $1.80 a day; $145 for 90 capsules); $75 one-time	Live
Pendulum Glucose Control	Akkermansia, 4 other strains, inulin	$99 a month on subscription; $139 one-time	Live, the formula from its own diabetes trial
The Akkermansia Company Healthy Weight with Glucose Control	MucT plus chromium, green tea EGCG, B2 and D3	$65 a month	Pasteurized

Pendulum Akkermansia

100 million AFU

Pendulum Glucose Control

Akkermansia, 4 other strains, inulin

The Akkermansia Company Healthy Weight with Glucose Control

MucT plus chromium, green tea EGCG, B2 and D3

ALSO GOOD

Pendulum Akkermansia, the best-known Akkermansia brand in the US. pendulumlife.com With type 2 diabetes, Pendulum Glucose Control, the only one with its own placebo-controlled trial in people like you. pendulumlife.com

CONSUMERLAB

ConsumerLab has no Akkermansia review. In its probiotics review (2024 and 2025), it approved Pendulum Akkermansia. A different Pendulum product, Metabolic Daily, fell far short in one of two batches, with 14 million found against 300 million on the label. The Akkermansia Company, the top pick, wasn't in its tests, and it named no top pick for Akkermansia.

GOOD TO KNOW

No safety problems showed up in the trials, at up to 30 billion pasteurized cells a day for 4 months. It hasn't been assessed for pregnancy, breastfeeding or children. With inflammatory bowel disease, ask your doctor first. Some people get mild gas or bloating in the first weeks.

SOURCES **1** Biagi 2016, PMID 27185560 · **2** Plovier 2017, PMID 27892954 · **3** Bárcena 2019, PMID 31332389 · **4** Depommier 2019, PMID 31263284 · **5** Perraudeau 2020, PMID 32675291 · **6** EFSA NDA Panel 2021, PMID 34484452 · **7** Zhang 2025, PMID 39879980 · **8** Mount 2026, PMID 42120725 · **9** Suenaert 2026, PMID 42343233

Also worth a look

Eleven more worth knowing, for memory, sleep, stress, muscle and more, each in brief.

Apigenin

Momentous Apigenin

Picture: Momentous

BEST FOR	keeping more NAD+, your cells' energy molecule, and calming zombie cells
WHAT IT IS	a plant compound found in chamomile and parsley
TYPICAL DOSE	50 mg at bedtime, the common label dose
GOOD BRAND	Momentous Apigenin, $24.99 livemomentous.com

In obese mice, apigenin raised NAD+ by blocking CD38, the main enzyme that breaks it down (Escande 2013). In mice with a premature-aging-like state, it quieted the inflammatory signals of senescent (zombie) cells and improved frailty and memory (Zhang 2025).

Peter Diamandis takes it in Nuchido TIME+, $65 for 30 days (Diamandis, Chapter 5). nuchido.com

Picture: Nuchido

PQQ

Doctor's Best PQQ with BioPQQ

Picture: Doctor's Best

BEST FOR	a better memory, and new mitochondria (your cells' power plants)
WHAT IT IS	pyrroloquinoline quinone, a small vitamin-like molecule found in food
TYPICAL DOSE	20 mg a day
GOOD BRAND	Doctor's Best PQQ with BioPQQ, 20 mg, 30 capsules, $24.99 doctorsbest.com

In mouse liver cells, PQQ switched on PGC-1α, the master switch for new mitochondria (Chowanadisai 2010). In adults aged 20 to 65, 20 mg a day for 12 weeks improved memory against a placebo (Tamakoshi 2023).

Low-dose lithium

BEST FOR	your memory as you age, and a longer life
WHAT IT IS	the trace mineral lithium, at about a hundredth of a psychiatric dose; it's naturally in drinking water and vegetables
TYPICAL DOSE	300 µg to 1 mg of elemental lithium a day (labels list either elemental lithium or the whole salt)
GOOD BRAND	Life Extension Lithium Orotate, 5 mg, 60 capsules, $7.99 lifeextension.com

Among 1.2 million people in Japan, more lithium in tap water went with lower death rates (Zarse 2011). In Alzheimer's, 300 µg a day held memory scores steady for 15 months while the control group's fell (Nunes 2013).

Alpha-lipoic acid

Doctor's Best Alpha-Lipoic Acid 600 mg

Picture: Doctor's Best

BEST FOR	easing nerve pain from diabetes, and cell energy
WHAT IT IS	an antioxidant your mitochondria make
TYPICAL DOSE	300 to 600 mg a day, or 100 to 200 mg of R-lipoic acid, the natural form
GOOD BRAND	Doctor's Best Alpha-Lipoic Acid 600 mg, 60 capsules, $16.99 doctorsbest.com

In 181 people with diabetic nerve damage, 600 mg a day for 5 weeks cut burning, stabbing and tingling by 51%, against 32% on a placebo (Ziegler 2006). With acetyl-L-carnitine, R-lipoic acid gave old rats back part of their lost mitochondrial power (Hagen 2002).

HMB

ProHealth HMB

Picture: ProHealth Longevity

BEST FOR	holding on to muscle, and more muscle and strength
WHAT IT IS	beta-hydroxy beta-methylbutyrate, made when your body breaks down the amino acid leucine
TYPICAL DOSE	3 g a day, split into 2 or 3 doses
GOOD BRAND	ProHealth HMB, 180 capsules, $20.27 prohealth.com

In 10 days of bed rest, healthy adults aged 60 to 76 lost 2.05 kg of lean mass on a placebo, and just 0.17 kg on HMB (Deutz 2013). A review of 11 meta-analyses found it raised muscle mass and strength (Bideshki 2025).

Curcumin

Theracurmin HP

Picture: Integrative Therapeutics

BEST FOR	memory and attention, and knee pain and stiffness
WHAT IT IS	the yellow anti-inflammatory compound in turmeric; buy an enhanced form (Theracurmin, Meriva or Longvida), since plain curcumin is poorly absorbed
TYPICAL DOSE	90 mg twice a day as Theracurmin, or 500 to 1,000 mg a day of Meriva or Longvida
GOOD BRAND	Theracurmin HP (Integrative Therapeutics), 60 capsules, $56.00 integrativepro.com

In 40 adults aged 51 to 84, 18 months of Theracurmin improved memory and attention against a placebo (Small 2018). For knee arthritis, a review of 11 meta-analyses found it cut pain and stiffness (Bideshki 2024).

Green tea extract (EGCG)

Life Extension Lightly Caffeinated Mega Green Tea Extract

Picture: Life Extension

BEST FOR	your heart, and a longer life
WHAT IT IS	EGCG, the main catechin in green tea, as a concentrated extract

TYPICAL DOSE	3 to 5 cups of green tea a day, or about 250 to 500 mg of EGCG with food
GOOD BRAND	Life Extension Lightly Caffeinated Mega Green Tea Extract, 100 capsules, $25.50 lifeextension.com

Among 40,530 Japanese adults, 5 or more cups a day went with a lower death rate than less than 1 cup: 12% lower in men and 23% lower in women, mostly from fewer heart and stroke deaths (Kuriyama 2006).

Very high extract doses have been tied to rare liver injury, so stick to the label dose.

Lion's mane

Real Mushrooms Organic Lion's Mane Extract Capsules

Picture: Real Mushrooms

BEST FOR	sharper thinking and memory
WHAT IT IS	an edible white, shaggy mushroom (*Hericium erinaceus*)
TYPICAL DOSE	about 1 to 3 g a day of the fruiting body, the mushroom itself
GOOD BRAND	Real Mushrooms Organic Lion's Mane Extract Capsules (fruiting body), 120 capsules, $34.95 realmushrooms.com

In 30 Japanese adults aged 50 to 80 with mild cognitive impairment, about 3 g a day for 16 weeks beat a placebo on thinking scores. The gain faded 4 weeks after they stopped (Mori 2009).

Melatonin (low dose)

Life Extension Melatonin 300 mcg

Picture: Life Extension

BEST FOR	falling asleep faster and sleeping better
WHAT IT IS	the sleep hormone your pineal gland makes, which falls with age
TYPICAL DOSE	0.3 mg (300 µg), 30 to 60 minutes before bed
GOOD BRAND	Life Extension Melatonin 300 mcg, 100 capsules, $7.50 lifeextension.com

Across 19 trials in 1,683 people with sleep disorders, melatonin helped people fall asleep 7 minutes faster, sleep 8 minutes longer and rate their sleep better (Ferracioli-Oda 2013).

Go low. 0.3 mg is near what your body makes; many stores sell 3 to 10 mg.

Ashwagandha

Momentous Ashwagandha

Picture: Momentous

BEST FOR	less stress, and lower cortisol, your main stress hormone
WHAT IT IS	an Ayurvedic root (*Withania somnifera*)
TYPICAL DOSE	300 to 600 mg a day of a standardized root extract
GOOD BRAND	Momentous Ashwagandha (NooGandha extract), $24.99 livemomentous.com

Across 9 trials in 558 people, ashwagandha lowered stress, anxiety and cortisol (Arumugam 2024).

Hydrogen water

HRW Rejuvenation Molecular Hydrogen Water Tablets

Picture: HRW

BEST FOR	less damaged LDL cholesterol, and recovery after strength training
WHAT IT IS	water with hydrogen gas dissolved in it, studied as a selective antioxidant
TYPICAL DOSE	0.5 to 1.5 L a day, made fresh (drop a tablet in water and drink it at once)
GOOD BRAND	HRW Rejuvenation Molecular Hydrogen Water Tablets, 30 for $26.99 drinkhrw.com

In a double-blind trial in 36 people with type 2 diabetes or prediabetes, 900 mL a day for 8 weeks cut damaged LDL cholesterol by 15.5% (Kajiyama 2008). In 27 adults averaging 58 who started strength training, it lowered markers of muscle damage more than plain water (Kuzmanovic 2025).

SOURCES **1** Escande 2013, PMID 23172919 · **2** Zhang 2025, PMID 40265973 · **3** Chowanadisai 2010, PMID 19861415 · **4** Tamakoshi 2023, PMID 36807425 · **5** Zarse 2011, PMID 21301855 · **6** Nunes 2013, PMID 22746245 · **7** Hagen 2002, PMID 11854487 · **8** Ziegler 2006, PMID 17065669 · **9** Deutz 2013, PMID 23514626 · **10** Bideshki 2025, PMID 39797501 · **11** Small 2018, PMID 29246725 · **12** Bideshki 2024, PMID 38576215 · **13** Kuriyama 2006, PMID 16968850 · **14** Mori 2009, PMID 18844328 · **15** Ferracioli-Oda 2013, PMID 23691095 · **16** Arumugam 2024, PMID 39348746 · **17** Kajiyama 2008, PMID 19083400 · **18** Kuzmanovic 2025, PMID 40525414 · **19** Diamandis P, Longevity Guidebook (2025 edition), Chapter 5

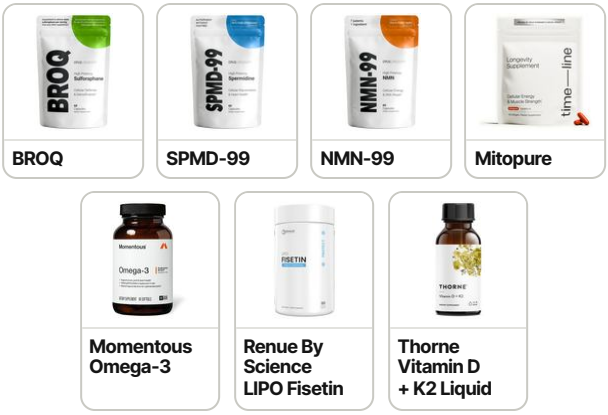
Putting it together

You don't need all 21. Pick a budget or a goal, and start there.

Every price is each chapter's cost a day, on subscription where there is one.

Stacks by budget

BUDGET	THE STACK	COST A DAY
About $2	SPMD-99, Thorne Creatine, Thorne Vitamin D + K2 Liquid	$1.85
About $8	BROQ, SPMD-99, NMN-99, Momentous Omega-3, Thorne Vitamin D + K2 Liquid	$7.95
About $12	The top 7 (chapters 1 to 7): BROQ, SPMD-99, NMN-99, Mitopure, Momentous Omega-3, Renue By Science LIPO Fisetin, Thorne Vitamin D + K2 Liquid	$11.64



BROQ | SPMD-99 | NMN-99 | Mitopure | Momentous Omega-3 | Renue By Science LIPO Fisetin | Thorne Vitamin D + K2 Liquid

Sulforaphane is for inflammation, spermidine for cell renewal, and NMN for DNA repair and energy. Omega-3 adds 50 cents, and the D3 and K2 drops add about 11 cents.

Cheap adds. Thorne Creatine is 49 cents, NOW Foods Taurine under 25 cents and Thorne Magnesium Bisglycinate $1.30 for 300 mg. Add magnesium first, because vitamin D can't do its job without it.

Thorne Creatine

NOW Foods Taurine

Thorne Magnesium Bisglycinate

The top 7 plus creatine and magnesium comes to $13.43 a day.

Stacks by goal

GOAL	THE STACK	COST A DAY
Heart	BROQ, SPMD-99, Momentous Omega-3, Thorne Magnesium Bisglycinate, Pharma Nord Q10	$8.95 to $9.35
Brain	Momentous Omega-3, Thorne Creatine	$0.99
Energy	NMN-99, Mitopure, Pharma Nord Q10	$6.36 to $6.76
Muscle and strength	NMN-99, Mitopure, Thorne Creatine, BioAstin Astaxanthin	$5.81
Skin and hair	SPMD-99, Momentous Collagen Peptides, BioAstin Astaxanthin	$3.64
Blood sugar	BROQ, NMN-99, Thorne Berberine, Thorne Creatine	$9.51
Sleep	Thorne Magnesium Bisglycinate, Life Extension Ergothioneine, glycine powder	$4.30 plus the glycine
More good years	The top 7	$11.64

Heart. Over 70? Pair 200 mg of CoQ10 with 200 mcg of selenium, as a Swedish trial did. For blood pressure, add taurine.

Brain. For memory, add magnesium L-threonate. Life Extension Neuro-Mag is $1.05 a day.

Energy. Mitopure drops to $2.30 a day on the 12-month plan.

Muscle and strength. Pair creatine with strength training.

Skin and hair. Give spermidine about 90 days, and collagen 4 to 12 weeks for skin.

Sleep. Add low-dose melatonin, 0.3 mg, from “Also worth a look”. Life Extension’s is $7.50 for 100 capsules.

Pharma Nord Q10

BioAstin Astaxanthin

Momentous Collagen Peptides

Thorne Berberine

Life Extension Ergothioneine

Life Extension Neuro-Mag

Life Extension Melatonin

When to take each one

WAKING

Morning, on an empty stomach or 30 minutes after food
Sulforaphane, NMN

With breakfast, in a meal with some fat
Vitamin D3 and K2, omega-3, CoQ10, astaxanthin, fisetin, resveratrol, glucosamine, first doses of berberine and quercetin

Any time
Mitopure, creatine, taurine, Ca-AKG, ergothioneine, collagen, Akkermansia

With dinner
Spermidine, second doses of berberine and quercetin

Before bed
Magnesium glycinate or threonate 30 to 60 minutes before; 3 g of glycine about an hour before

BEDTIME

WHEN	WHAT TO TAKE
Morning, on an empty stomach or 30 minutes after food	Sulforaphane, NMN
With breakfast, in a meal with some fat	Vitamin D3 and K2, omega-3, CoQ10, astaxanthin, fisetin, resveratrol, glucosamine, first doses of berberine and quercetin
Any time	Mitopure, creatine, taurine, Ca-AKG, ergothioneine, collagen, Akkermansia
With dinner	Spermidine, second doses of berberine and quercetin
Before bed	Magnesium glycinate or threonate 30 to 60 minutes before; 3 g of glycine about an hour before

NMN	any time, with or without food. Morning is best.
SPERMIDINE	start with 10 mg with food, and move to 20 mg after a few days. Your last meal is best, but any time works.
COQ10	above 100 mg, split it between breakfast and lunch. Some people sleep worse when they take it late.
TAURINE	on workout days, take it before you start.

Take them every day.

What not to combine

Blood thinners. Ask your doctor before omega-3, CoQ10, resveratrol, quercetin, berberine, glucosamine, fisetin, astaxanthin or NAC. Vitamin K2 changes how warfarin works.

Blood pressure medicine. Taurine and CoQ10 add to it. Ask about astaxanthin too.

Diabetes medicine. Berberine adds to it. Ask about astaxanthin too.

Drugs your liver clears. Resveratrol at 1 g a day, berberine and quercetin can change their levels. Ask first if you take cyclosporine, tacrolimus, digoxin or an antidepressant.

Calcium. Each gram of Ca-AKG carries about 200 mg of calcium, and too much vitamin D can raise your blood calcium. Keep D3 at or under 4,000 IU a day from all sources.

Magnesium and some antibiotics. Take magnesium at least 2 hours apart from tetracyclines, quinolones and bisphosphonates (osteoporosis drugs).

And some pairs go together:

- Collagen with vitamin C, an hour before exercise.
- Glucosamine with chondroitin, 800 to 1,200 mg a day.

GOOD TO KNOW

Consult a medical doctor before taking any supplement if you are pregnant, nursing, have a medical condition or are taking any medications.

The blood tests that show it's working

Part 7 covers each test in full. Its scorecard lists a good number for most of them and the chapter that moves it.

IF YOU TAKE	TEST FOR
Sulforaphane	hs-CRP, HbA1c
NMN	An NAD+ finger-prick test, fasting insulin
Vitamin D3 and K2	25-hydroxyvitamin D; below 20 ng/mL is the danger zone
The heart stack	ApoB, Lp(a), hs-CRP
The blood sugar stack	HbA1c, fasting insulin
The muscle stack	Strength, balance and walking tests, a DEXA scan
The top 7	A biological age test

Jinfiniti NAD+ test
$198

OmegaQuant Omega-3 Index
$54.95

Microplastics, and what you can do about them

Make a cup of tea.

If the bag is the plastic mesh kind (some are nylon), you get more than tea. In one study, **a single plastic tea bag released about 11.6 billion pieces of microplastic into one cup** (Hernandez 2019).

Billion, with a b.

About

11.6 billion

pieces of microplastic from a single plastic tea bag, in one cup

Hernandez 2019, one study

It doesn't all pass through

You eat plastic, drink it and breathe it (Cox 2019).

The average person ingests about 20 grams of microplastics every month, the weight of an empty one-liter plastic water bottle.

Some of it stays.

It's been found in the plaque inside people's neck arteries.

People with microplastics in their artery plaque were 4.5 times as likely to have a heart attack, a stroke or die within 3 years (Marfella 2024). That's a link, not proof the plastic caused it.

And one study measured the plastic in human brains. In people who died in 2024, about half a percent of the brain tissue was plastic by weight, 47% more than in 2016 (Nihart 2025).

Cut what goes in

Start here, because cutting it off worked in mice.

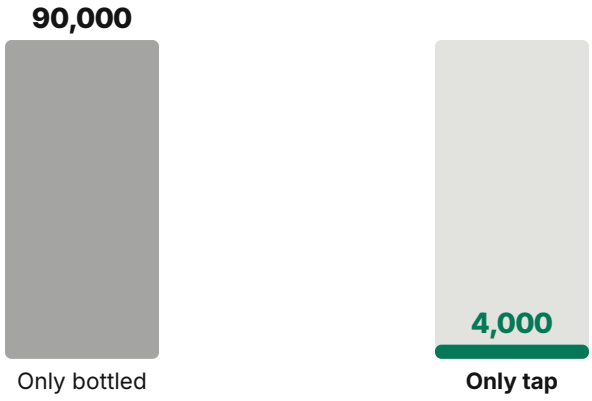
Mice given nanoplastics, the tiniest pieces of plastic, built up fat in their livers. After 50 days with none, their livers recovered (Lu 2024).

Drink tap, not bottled. By one estimate, which its authors call a likely underestimate, drinking only bottled water adds 90,000 plastic particles a year. Drinking only tap adds 4,000 (Cox 2019).

Plastic particles a year added by your drinking water

Drink tap, not bottled.

Cox 2019, Environ Sci Technol, a model estimate for Americans



Filter your tap water. Reverse osmosis takes microplastics out of your water. The top pick is the AquaTru Classic, $475 plus about $130 a year in filters, which sits on your counter and needs no plumbing (Part 3, chapter 10).

AquaTru Classic

$475

Picture: AquaTru

Keep plastic out of the microwave. In 3 minutes of microwaving, one square centimeter of plastic container released as many as 2.11 billion nanoplastic particles (Hussain 2023).

Skip plastic tea bags. You know why.

What doesn't work so well

Not every filter is made for plastic. In ConsumerLab's test, the Brita pitcher with the Elite filter cut microplastics only 14.1%.

It's fine for chlorine and lead. It's just not the tool for plastic.

ConsumerLab didn't approve the ZeroWater 6-cup, because it added particles to the water.

ConsumerLab tested pitchers only, so the AquaTru wasn't in its tests.

Can you get it back out?

One machine has been shown to lower the plastic in human blood.

Plasma exchange swaps out your plasma, the liquid part of your blood. In 114 patients, one exchange lowered the microplastics in their blood (Weinstein 2026).

It costs $4,500 to $15,000 a session in the US (Part 4, chapter 9). And the machine's own plastic tubing leaked particles back into the blood.

What to take: the ideal basic stack

Spermidine and sulforaphane are two of the only supplements shown to help remove microplastics from the body. Take both.

Sulforaphane, for your chemical defenses. It's the most potent trigger for Nrf2, your master switch for antioxidant and detox genes (Dinkova-Kostova 2002). In one study of mouse muscle cells in a dish, nanoplastics switched Nrf2 down, and sulforaphane switched it back on (Jung 2026).

In a 12-week trial of 291 people, it helped the body flush out 61% more benzene, a toxic air pollutant (Egner 2014).

Spermidine, for your cleanup crew. Autophagy is how every cell takes out its trash. In those mice with the fatty livers, the plastic had piled up in the cells' recycling sacs until autophagy stalled (Lu 2024).

Spermidine releases a brake on autophagy (Pietrocola 2015). In a 13-week trial of 40 adults, it switched on autophagy genes in their immune cells (Alsaleh 2026).

The top sulforaphane and spermidine picks, with lab results, are in Part 1, chapters 1 and 2.

Now make that tea. Check the bag first.

SOURCES **1** Hernandez 2019, PMID 31552738 · **2** Cox 2019, PMID 31184127 · **3** Marfella 2024, PMID 38446676 · **4** Nihart 2025, PMID 39901044 · **5** Lu 2024, PMID 38422876 · **6** Hussain 2023, PMID 37343248 · **7** Weinstein 2026, PMID 42169439 · **8** Dinkova-Kostova 2002, PMID 12193649 · **9** Jung 2026, PMID 41697588 · **10** Egner 2014, PMID 24913818 · **11** Pietrocola 2015, PMID 25526088 · **12** Alsaleh 2026, PMID 42169618

2

PART 2

22 Experts to Follow

The scientists, doctors and pioneers who'll teach you the most about living longer, and where to find them.

The science of living longer moves every week. Nobody can read all of it, but these 22 people do, and they explain it for free. Follower counts are from October 2026.

They don't all agree. Where two of them differ, we tell you.

1 Peter Attia, MD

WHO	Stanford-trained physician
KNOWN FOR	*Outlive* (2023), "Medicine 3.0", VO2 max, muscle and ApoB
FOLLOW	YouTube @PeterAttiaMD (about 1.04M); Instagram @peterattiamd (about 2M); podcast *The Peter Attia Drive* (over 125M downloads)

He's the doctor to follow for fitness, muscle and your heart, and he changes his mind in public when the data changes.

Train for the 90-year-old you want to be. His Centenarian Decathlon: pick ten physical things you want to still do at 90, and train for them now.

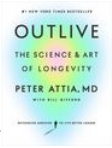
Each week he trains stability, strength and Zone 2 cardio, plus one hard interval session.

Build your VO2 max and your strength. The least fit had about five times the death risk of the fittest (Mandsager 2018; Part 7, chapter 2). Every 5 kg (11 lb) drop in grip strength went with a 16% higher risk of dying from any cause (Leong 2015; Part 7, chapter 6).

Get your ApoB low. It counts the particles that build plaque in your arteries, and he wants it under 30 to 40 mg/dL (see Part 7, chapter 3).

START HERE

Read *Outlive*. Then The Drive #311, "Longevity 101", free at peterattiamd.com.



2 Andrew Huberman, PhD

WHO	Professor of Neurobiology at Stanford School of Medicine
KNOWN FOR	the Huberman Lab podcast, and free protocols for sleep, light, focus, cold and heat
FOLLOW	Instagram @hubermanlab (about 8M); YouTube @hubermanlab (about 7.95M); X @hubermanlab (about 1.8M)

Each free episode of his podcast ends with things you can try that day. His book, *Protocols*, came out in September 2026.

Get outside within an hour of waking, for 5 to 10 minutes on a clear day and longer when it's cloudy. Bright light at the right time resets your body clock (Czeisler 1989).

Breathe out the stress. The "physiological sigh" is two breaths in through the nose, then a long, slow breath out. In a trial he co-led, five minutes a day for a month lifted mood more than mindfulness meditation did (Balban 2023).

Use the cold, about 11 minutes a week over 2 to 4 sessions. See Part 4, Cold.

For sleep he takes magnesium threonate or bisglycinate (about 300 to 400 mg), 50 mg of apigenin and theanine (see Part 1, chapter 9). He's a partner of Momentous, which sells Huberman Lab supplement kits.

START HERE

"Master Your Sleep & Be More Alert When Awake", free at hubermanlab.com.

3 Rhonda Patrick, PhD

WHO	biomedical scientist
KNOWN FOR	FoundMyFitness; sauna, omega-3, sulforaphane, vitamin D and creatine
FOLLOW	X @foundmyfitness (about 1.8M); Instagram @foundmyfitness (about 1M); YouTube @FoundMyFitness (about 733K)

She has no book and no supplement line of her own. She shows her own routine, with doses, and updates it in public.

Sauna, omega-3 and sulforaphane. She's the one to follow on sauna as exercise for your heart and brain, an omega-3 index of 8% or more, and sulforaphane, which switches on your body's own defense genes. See Part 4, Sauna, and Part 1, chapters 1 and 5.

Creatine, for your brain as well as your muscle. She takes two 5 g doses every morning, often in her coffee, and more when she's short on sleep (see Part 1, chapter 8).

Her June 2025 routine adds fish oil, sulforaphane, a multivitamin, vitamin D, K2, magnesium and 3 mg of melatonin at night.

START HERE

her sauna page at foundmyfitness.com. Then her creatine interview with Darren Candow, PhD.

4 David Sinclair, PhD

WHO	Professor of Genetics at Harvard Medical School
KNOWN FOR	*Lifespan* (2019), the information theory of aging, NAD+ and age reversal
FOLLOW	Instagram @davidsinclairphd (about 900K); X @davidasinclair (about 665K); YouTube @LifespanOfficial (about 523K)

His big idea: aging is a disease, and it's treatable. Your cells keep their DNA but lose the instructions for reading it, like scratches on a CD.

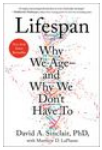
In mice aged early by forced DNA breaks, switching on three "reprogramming" genes reversed the changes (Yang 2023). His lab used the same genes to reverse vision loss in old mice (Lu 2020).

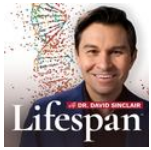
On 8 October 2026, Life Biosciences, which he co-founded, reported the first human results: 2 of 3 people with glaucoma had gains in their field of vision at day 56.

He takes 1 g of NMN every morning and 1 g of resveratrol stirred into yogurt (his own account, 2022; see Part 1, chapter 3). He tracks his biological age with Tally Health, another company he co-founded.

START HERE

Read *Lifespan*. Then "The Biology of Slowing & Reversing Aging" on Huberman Lab, free on YouTube.





5 Bryan Johnson

WHO	tech founder turned full-time longevity experiment; founder of Blueprint and Don't Die
KNOWN FOR	the Blueprint protocol, measuring everything and publishing it all
FOLLOW	Instagram @bryanjohnson_ (about 3M); YouTube @BryanJohnson (about 2.24M); X @bryan_johnson (about 2.1M)

He measures everything, keeps what works and publishes it all, even what failed. He has no medical degree, so he works with a medical team.

Sleep comes first: the same bedtime every night (about 8:30pm), a 30 to 60 minute wind-down and a room at 65 to 68°F.

Olive oil, and lots of it. He has 3 tablespoons of extra virgin olive oil a day. In 92,383 US adults followed for 28 years, more than half a tablespoon a day went with a 19% lower risk of dying from any cause (Guasch-Ferré 2022).

Measure how fast you're aging. On DunedinPACE, 1.0 means one year of aging per calendar year. His best is 0.48, the top score on the Rejuvenation Olympics leaderboard (see Part 7, chapter 1).

He eats vegan, about 2,250 calories a day, finished by late morning, and sells the foods and supplements he uses through Blueprint.

START HERE

his free protocol at blueprint.bryanjohnson.com. Then the Netflix documentary *Don't Die* (2025).

6 Peter Diamandis, MD

WHO	physician and engineer (MD, Harvard); founder of XPRIZE; co-founder of Fountain Life
KNOWN FOR	the $101 million XPRIZE Healthspan and the Moonshots podcast
FOLLOW	YouTube @peterdiamandis (about 539K); X @PeterDiamandis (about 421K); Instagram @peterdiamandis (about 306K)

Nobody gives you a clearer view of what's coming next: where longevity science, AI and money are heading, and when.

Don't die from something stupid. Every year he does an "Upload" at Fountain Life: whole-body and brain MRI, a heart scan read by AI, his full genome, 100+ blood tests and the Galleri blood test (see Part 7, chapter 10).

Muscle is the longevity organ. Heavy weights at least four times a week for 40 to 50 minutes, about 150 g of protein a day and 5 g of creatine.

Eat early and skip the sugar. No added sugar, nothing after about 6 to 7pm, and a few fasting-mimicking cycles a year (see No. 8). In men with prediabetes, eating within an early 6-hour window improved insulin sensitivity and blood pressure, with no weight loss (Sutton 2018).

He takes more than 75 medications and supplements a day, rapamycin among them. He co-founded Fountain Life and Lifeforce, and recommends their services and products.

START HERE

Moonshots EP #249, with David Sinclair, free on YouTube.

7 Mark Hyman, MD

WHO	family physician; built the Cleveland Clinic Center for Functional Medicine; co-founder of Function Health
KNOWN FOR	functional medicine, food as medicine, *Young Forever* (2023)
FOLLOW	Instagram @drmarkhyman (about 4M); Facebook (about 1.6M); YouTube @drmarkhyman (about 1.52M)

His most useful idea: look for the root cause, not just the symptom, and start with food.

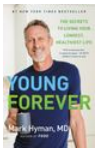
Cut ultra-processed food. His Pegan diet is mostly plants, with enough protein. Across 45 meta-analyses covering 9.9 million people, ultra-processed food went with a 50% higher risk of dying from heart and blood vessel disease (Lane 2024).

Lift, especially after 60. Just 30 to 60 minutes of strength training a week went with about 10% to 20% lower risk of dying from any cause (Momma 2022).

After an hour of resistance-band training, he has a shake of 40 to 50 g of goat whey, 5 g of creatine, urolithin A and probiotics. He tests through Function Health (160+ lab tests for $365 a year, as of November 2025), and sells supplements through his DrHyman Store.

START HERE

Read *Young Forever*. Then "My Personal Longevity Routine" on The Dr. Hyman Show, at drhyman.com.



8 Valter Longo, PhD

WHO	Director of the USC Longevity Institute
KNOWN FOR	the fasting-mimicking diet, and *The Longevity Diet* (2018)
FOLLOW	Instagram @prof_valterlongo (about 154K); Facebook @profvalterlongo (about 152K)

He created the fasting-mimicking diet: five days of low-calorie, plant-based meals that mimic a fast while you still eat. It's sold as ProLon by L-Nutra, which he co-founded, and his site says he gives all his L-Nutra consulting fees and book royalties to charity.

He recommends 2 to 4 cycles a year for most healthy adults. In blood from two trials, three cycles lowered biological age by a median of 2.5 years, apart from any weight loss (Brandhorst 2024).

Picture: L-Nutra

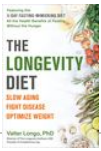
Less protein until 65, more after. Among 6,381 US adults, those aged 50 to 65 who ate the most protein had about 75% higher overall mortality over 18 years. Above 65, they didn't (Levine 2014).

Before 65 he advises about 0.7 to 0.8 g per kg a day, mostly from plants and fish. Gabrielle Lyon (No. 10) sees protein differently, so hear both.

He eats within about 12 hours and walks at least an hour every day.

START HERE

The Longevity Diet (2018). Then his interview with Rhonda Patrick (No. 3), free at foundmyfitness.com.



9 Matt Kaeberlein, PhD

WHO	biologist of aging (PhD, MIT); co-founder and CEO of Optispan, a longevity clinic near Seattle
KNOWN FOR	rapamycin, and co-founding the Dog Aging Project, the largest study of aging in pet dogs
FOLLOW	X @mkaeberlein (about 32K); YouTube @optispan (about 23K); podcast *The Optispan Podcast*

He's the filter you want: one of the most careful voices on what works in people. He ranks hyped supplements and says which ones he skips and why.

Rapamycin turns down mTOR, a master switch for aging. He showed in yeast that dialing it down extends life (Kaeberlein 2005). Three months of rapamycin in middle-aged mice raised their remaining life expectancy by up to 60% (Bitto 2016). See Part 4, Rapamycin.

He takes rapamycin in cycles, reported as 8 mg once a week for 12 weeks, then time off, and eats 60 to 80 g of fiber a day.

Picture: Optispan

START HERE

The Drive #175, his interview with Peter Attia, at peterattiamd.com.

10 Gabrielle Lyon, DO

WHO	board-certified family medicine physician
KNOWN FOR	Muscle-Centric Medicine and *Forever Strong* (2023)
FOLLOW	Instagram @drgabriellelyon (about 1M); YouTube @DrGabrielleLyon (about 290K); TikTok @drgabriellelyon (about 136K)

Her one big idea: muscle is the organ of longevity. Most people aren't overfat, she says. They're undermuscled.

She's also the go-to voice on keeping your muscle while you lose weight on GLP-1 drugs like Ozempic and Wegovy.

Eat about 1 gram of protein per pound of your ideal body weight, over three meals of 30 to 50 g. Across 49 trials, extra protein added to the strength and muscle people gained from training, up to about 1.6 g per kg a day (Morton 2018). Valter Longo (No. 8) advises less protein before 65.

Lift three times a week, and take creatine. Full-body sessions, adding weight over time, and 5 g of creatine a day (see Part 1, chapter 8). She does the same herself, plus explosive work.

START HERE

Forever Strong (2023). Then *The Forever Strong Playbook* (2026), a six-week plan.

11 Mary Claire Haver, MD

WHO	board-certified OB-GYN and Certified Menopause Practitioner
KNOWN FOR	*The New Menopause* (2024)
FOLLOW	Instagram @drmaryclaire (about 4M); TikTok @drmaryclaire (about 2.3M); Facebook (about 1.46M)

She's the doctor to follow for women in midlife. Her message: you don't have to just put up with menopause.

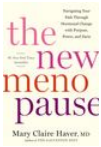
Consider hormone therapy near menopause. In the Women's Health Initiative, 27,347 women were followed for 18 years, and hormone therapy didn't raise death from any cause (Manson 2017). Started within 6 years of menopause, estradiol slowed the thickening of neck arteries; started 10 or more years later, it didn't (Hodis 2016).

Know the signs. Her list runs past 30 symptoms, from brain fog to frozen shoulder, and they often start in your 40s.

Her June 2025 routine: hormone therapy, vitamin D with K2, creatine and collagen. She has her own supplement line.

START HERE

The New Menopause (2024). Then *The New Perimenopause* (2026), if you're in your 40s.



12 Stacy Sims, PhD

WHO	exercise physiologist and nutrition scientist
KNOWN FOR	*ROAR* (2016, revised 2024) and *Next Level* (2022)
FOLLOW	Instagram @drstacysims (about 1.3M); YouTube @DrStacySims (about 374K); Facebook (about 302K)

Her line "Women are not small men" changed how coaches and doctors train women. Most exercise studies were done on young men, and she's spent her career fixing that.

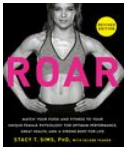
Lift heavy in perimenopause and after. In the LIFTMOR trial, 101 postmenopausal women with low bone mass did supervised deadlifts, squats, presses and jumps twice a week for 8 months. Their spine bone density rose 2.9%, while the light home-exercise group lost 1.2% (Watson 2018).

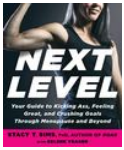
Sprint, short and hard. Do all-out efforts of 20 to 30 seconds with full rest, a few times a week.

Fuel it. Take 3 to 5 g of creatine monohydrate a day (see Part 1, chapter 8). She tells women to get 30 to 40 g of protein soon after a session, and never to train hard on an empty stomach.

START HERE

ROAR, for active women of any age. Then *Next Level* (2022) for perimenopause and after, and her courses at drstacysims.com.





13 Casey Means, MD

WHO	physician (MD, Stanford); co-founder of Levels, a continuous glucose monitor app
KNOWN FOR	*Good Energy* (2024), and metabolic health as the root of chronic disease
FOLLOW	Instagram @drcaseyskitchen (about 834K); X @CaseyMeansMD (about 230K); newsletter *Good Energy* (about 199K in February 2025)

Her big idea: most chronic disease traces back to how well your cells make energy, and everyday habits fix it.

Know your own glucose. The same meal spikes different people very differently, so she suggests wearing a glucose monitor for a while, as an experiment (see Part 3, chapter 3).

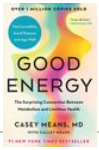
Cut ultra-processed food. Twenty adults lived at the NIH for four weeks: two weeks on ultra-processed food, two on unprocessed, with meals matched for calories, sugar, fat and fiber. Eating as much as they liked, they ate 508 more calories a day on ultra-processed food, and gained weight (Hall 2019).

Walk for 10 minutes after each meal (see Part 3, chapter 3).

She eats about 50 g of fiber a day and no late meals, and walks 7,000 or more steps a day.

START HERE

Read *Good Energy* (2024). Then her May 2024 episode at hubermanlab.com.



14 Eric Topol, MD

WHO	cardiologist; founder and director of the Scripps Research Translational Institute
KNOWN FOR	*Super Agers* (2025), and *Ground Truths*, the best weekly read of new longevity science
FOLLOW	X @EricTopol (about 806K); Substack *Ground Truths* (about 216K); Bluesky @erictopol.bsky.social (about 194K)

He reads the big new papers, explains them in plain English with the charts, and says plainly when something is hype.

Super agers carry fewer risk genes. His Wellderly study enrolled more than 1,400 people aged 80 to 105 with no chronic disease. Sequencing 511 of them found no extra "longevity genes", but lower genetic risk of Alzheimer's and heart disease than 686 controls (Erikson 2016).

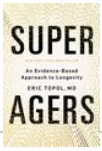
Your organs age at different speeds. Fast organ aging meant a 20 to 50% higher risk of death (Oh 2023; Part 6, chapter 11).

He sees GLP-1 drugs as possible longevity medicines. See Part 4, GLP-1 drugs and metformin.

He works out most days, mixing aerobic exercise, strength and balance. He eats Mediterranean-style and mostly plants, with little red meat and no ultra-processed food.

START HERE

Read *Super Agers* (2025). Then "Medicine is Moving From Calendars to Clocks", free at erictopol.substack.com.



15 Dan Buettner

WHO	journalist and National Geographic Fellow; founder of Blue Zones
KNOWN FOR	the Blue Zones, the places where people live longest
FOLLOW	Instagram @danbuettner (about 878K); Facebook (about 206K); TikTok @danbuettner (about 178K)

His most useful rule: make the healthy choice the easy choice.

Eat a cup of beans a day. In 785 people aged 70 and over, every extra 20 g of beans and other legumes a day meant a 7 to 8% lower death rate (Darmadi-Blackberry 2004).

Have a reason to get up in the morning.

Belong. Across 148 studies of 308,849 people, those with stronger social ties were 50% more likely to be alive at the end (Holt-Lunstad 2010). Put loved ones first, and pick friends whose habits you'd like to share.

He eats about 98% plant-based, with no meat, and moved to walkable South Beach in Miami so he'd move without planning to.

START HERE

Live to 100: Secrets of the Blue Zones, four episodes on Netflix. Then his Power 9 habits at bluezones.com.

16 Andrea Maier, MD PhD

WHO	geriatrician; professor at the National University of Singapore
KNOWN FOR	building longevity medicine as a real clinical specialty; co-founding Chi Longevity in Singapore
FOLLOW	LinkedIn (about 39,700); Instagram @chi_longevity (her clinic, about 3,200)

Her most useful idea: test first, take only what your results show you need, then test again.

Raise your NAD, and measure it. In her trial, 80 healthy adults aged 40 to 65 took placebo or 300, 600 or 900 mg of NMN a day for 60 days. NAD rose with the dose, and the bigger a person's rise, the further they walked in 6 minutes (Kuerec 2024). Responses varied a lot, so she tests NAD before and after (see Part 1, chapter 3).

Build the plan around your results, as in her PROMETHEUS study: urolithin A for low muscle, NMN for low fitness, a multivitamin for weaker thinking (Kuerec 2026).

Her clinic, Chi Longevity, runs this test-first approach as "The Maier Method" (see Part 5, Chi Longevity).

START HERE

"Democratising longevity", her episode of Thriva's The Method, free at thriva.co. Then her TIME Longevity Leaders profile at time.com.

17 Nir Barzilai, MD

WHO	founding director of the Institute for Aging Research at Albert Einstein College of Medicine, New York
KNOWN FOR	the genetics of centenarians, the TAME metformin trial and *Age Later* (2020)
FOLLOW	X @NirBarzilaiMD (about 10.9K)

He's the scientist of 100-year-olds: what they carry in their genes and blood, and how to turn that into medicines for the rest of us.

Centenarians carry protective genes. The 213 Ashkenazi Jewish centenarians he studied were nearly 3 times as likely as other people to carry two copies of one cholesterol gene variant (Barzilai 2003).

Less growth signaling, longer life. Among 184 people in their 90s, women with the growth signal IGF-1 at or below 96 ng/mL lived significantly longer (Milman 2014).

Treat aging itself, starting with metformin. His TAME trial is built to test whether metformin delays the diseases of aging together (Barzilai 2016). Its funding is still being raised. See Part 4, GLP-1 drugs and metformin.

He and his wife take metformin; he said in 2022 that both had been prediabetic. It's prescription only.

START HERE

The Drive #204, "Centenarians, metformin, and longevity", free at peterattiamd.com. Then read *Age Later* (2020).

18 Vonda Wright, MD

WHO	orthopedic sports surgeon in Orlando, Florida
KNOWN FOR	naming the "musculoskeletal syndrome of menopause" (2024), and *Unbreakable: A Woman's Guide to Aging with Power* (2025)
FOLLOW	Instagram @drvondawright (about 1.6M); YouTube @vondawright (about 150K); TikTok @drvondawright (about 79K)

She gives you a surgeon's view of aging: bone, muscle, joints and tendons, and why women's frames change so fast around menopause.

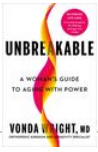
Menopause hits the frame. Joint pain, muscle loss, bone loss, frozen shoulder, tendon trouble and worse arthritis share one driver: falling estrogen. She named it the musculoskeletal syndrome of menopause, and naming it gets women treated (Wright 2024).

Keep training for life. In masters athletes aged 40 to 81 who trained 4 to 5 times a week, thigh muscle didn't shrink with age (Wroblewski 2011).

Load your bones, and train for power. Daily jumps or hops in short bursts, heavy strength training, fast moves and single-leg balance, so a stumble doesn't become a broken hip. She adds protein-forward meals rich in leucine, and creatine (see Part 1, chapter 8).

START HERE

Read *Unbreakable* (2025). Then her talk with Gabby Reece on Apple Podcasts.



19 Lisa Mosconi, PhD

WHO	neuroscientist at Weill Cornell Medicine in New York; director of its Women's Brain Initiative
KNOWN FOR	*The Menopause Brain* (2024)
FOLLOW	Instagram @dr_mosconi (about 371K)

Midlife, she says, is your window to protect your brain.

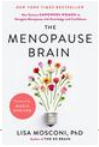
Menopause is a brain transition, and the brain adapts. In 161 women aged 40 to 65, menopause stage, not age alone, went with changes in brain structure, wiring and energy use. After menopause, gray matter recovered in key regions (Mosconi 2021).

Women's Alzheimer's risk starts in midlife. In 42 healthy women aged 40 to 60 and 18 men, women in and after the menopause transition showed an Alzheimer's-like pattern on brain scans that men and still-cycling women didn't (Mosconi 2017).

Eat for your brain. Mediterranean and plant-forward: vegetables, beans, whole grains, extra-virgin olive oil, oily fish and nuts, plus plant-estrogen foods like flaxseed, sesame seeds and dark chocolate. She eats the way she grew up in Florence.

START HERE

Read *The Menopause Brain* (2024). Then her TEDWomen talk, "How menopause affects the brain", free at ted.com.



20 Matthew Walker, PhD

WHO	sleep neuroscientist at the University of Texas at Dallas, formerly UC Berkeley
KNOWN FOR	*Why We Sleep* (2017)
FOLLOW	X @sleepdiplomat (about 452K); Instagram @drmattwalker (about 185K); podcast *The Matt Walker Podcast*

Sleep is the base every other health habit stands on, he says, so fix it first.

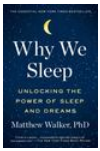
His rules. Get 7 to 9 hours, with the same bedtime and wake time every day. Keep the bedroom dark and cool, about 65°F (18°C). Stop caffeine many hours before bed, and don't use alcohol as a sleep aid. If you've been awake in bed for 20 to 25 minutes, get up.

Why it matters. In 20 healthy adults, one night without sleep raised beta-amyloid, the protein that builds up in Alzheimer's (Shokri-Kojori 2018). Given cold-virus nose drops, people who'd slept under 5 hours a night were 4.5 times as likely to catch the cold as those who'd slept more than 7 (Prather 2015).

"I give myself a non-negotiable eight-hour sleep opportunity every night," he told The Guardian. He's a scientific adviser to Oura (see Part 3, Smart ring).

START HERE

"Sleep is your superpower", his TED talk, free at ted.com. Then his free sleep check at whywesleep.org.



21 Brad Stanfield, MD

WHO	family doctor (GP) in Auckland, New Zealand; founder of Stanfield Health, which sells his supplements
KNOWN FOR	reading the newest human trials on supplements and drugs on camera, and leading the RAPA-EX-01 rapamycin trial
FOLLOW	YouTube @DrBradStanfield (about 363K); X @BradStanfieldMD (about 29.5K)

He's one of our two rising voices. Each week he takes one new study, shows you the numbers and gives you a practical take.

A daily multivitamin for the aging brain. Pooled across the COSMOS studies, it meant about two years less cognitive aging (Vyas 2024).

Test longevity drugs in people. His trial added 6 mg of rapamycin a week, or a placebo, to 13 weeks of home exercise in 40 sedentary adults aged 65 to 85. The drug added nothing, and brought more minor side effects (Stanfield 2026). See Part 4, Rapamycin.

Per his own site, he takes omega-3, his MicroVitamin multivitamin and his Sleep formula, all from Stanfield Health.

MicroVitamin

Sleep

START HERE

"NAC & Glutathione Are Transforming Aging! New Study", on his YouTube channel. Then his research page at drstanfield.com.

22 Nick Norwitz, MD PhD

WHO	physician-scientist (PhD, Oxford; MD, Harvard Medical School)
KNOWN FOR	the “lean mass hyper-responder” and the “lipid energy model”
FOLLOW	YouTube @nicknorwitzMDPhD (about 1.3M); Instagram @nicknorwitz (about 135K); Substack *Stay Curious Metabolism* (about 69K)

Our second rising voice eats keto and runs experiments on his own blood.

Some lean people see LDL soar on low carb, and carbs bring it down fast. Adding 12 Oreos a day to his keto diet for 16 days cut his LDL 71%. After a washout, a high-intensity statin for 6 weeks cut it 32.5% (Norwitz 2024). He’s clear that Oreos aren’t health food.

In his study of 100 lean keto eaters, high ApoB didn’t predict new plaque over a year; existing plaque did (Soto-Mota 2025). But their plaque still grew, and Peter Attia (No. 1) wants ApoB as low as possible.

START HERE

“I Ate 720 Eggs in 1 Month. Here’s What Happened to my Cholesterol”, free on YouTube. Then his newsletter at staycuriousmetabolism.substack.com.

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3

PART 3

12 Products Worth Owning

The devices that measure, protect and improve your health at home, which one to buy, and what each one costs.

The best longevity tools aren't all in a clinic.

Some measure what predicts a long life. Others fix your air, your water, your bed and how much you sit.

We chose 12 on the science, on how many people buy them, and on whether Peter Diamandis uses them himself. Saunas and other treatments are in Part 4; home test kits are in Part 7.

1 Smart Ring

WHAT IT IS	a ring that tracks your sleep, resting heart rate, heart rate variability (HRV) and temperature
BEST FOR	better sleep, spotting illness and overtraining early, tracking recovery
TOP PICK	Oura Ring 5
PRICE	$399 to $499, plus $5.99 a month

The most regular sleepers had up to a 48% lower risk of death.

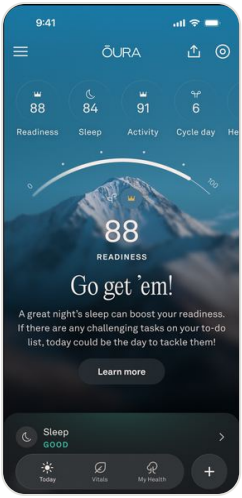
That's 20 to 48% lower than the least regular, in 60,977 UK adults (Windred 2024). A smart ring tells you every morning how regular your own sleep is.

What it does for you

Every morning it shows how well you slept, how recovered you are, and whether you're fighting something off.

Illness. Oura rings caught 82% of COVID-19 cases, on average 2.75 days before people got tested (Mason 2022).

How to use it



Every morning it shows you how well you slept, how recovered you are, and whether your body is fighting something off.
Picture: Oura Health Oy

- Resting heart rate up, HRV down and temperature up together means you're getting sick or overdoing it. Take an easy day.
- Follow the weekly trend, not one night. Peter Diamandis aims for an Oura score of 90 or higher.

The picks

TOP PICK

Oura Ring 5. A ring that tracks your sleep, resting heart rate, HRV and temperature. It's the only ring brand here with peer-reviewed accuracy studies: its nightly heart rate matched an ECG almost perfectly (Kinnunen 2020), and in a 2025 test of 5 devices, an Oura ring came closest to the ECG for HRV (Dial 2025). $399 to $499, plus $5.99 a month, at ouraring.com

Picture: Oura Health

ALSO GOOD

Samsung Galaxy Ring, $399.99, Android phones only. RingConn Gen 3, $349 to $369 (ringconn.com). Ultrahuman Ring PRO, $479 (ultrahuman.com). None needs a subscription.

BUDGET PICK

RingConn Gen 2 Air, $199, no subscription.

Samsung Galaxy Ring

RingConn Gen 3

Ultrahuman Ring PRO

RingConn Gen 2 Air
Budget pick

GOOD TO KNOW

Take it off before an MRI. Rings aren't cleared to diagnose sleep apnea, atrial fibrillation or blood pressure.

2 Smartwatch and Fitness Strap

WHAT IT IS	a watch or strap that counts your steps, estimates your fitness (VO2 max) and checks your heart rhythm
BEST FOR	moving more, building fitness, catching atrial fibrillation early
TOP PICK	Apple Watch Series 12
PRICE	from $399, no subscription

7,000 steps a day went with a 47% lower risk of death than 2,000.

That's across 57 studies (Ding 2025). Wearing a tracker adds about 1,800 steps a day (Ferguson 2022).

Picture: Káplár Bálint Áron, Unsplash

What it does for you

Of everything you control, fitness and steps best predict a long life. A tracker puts both on your wrist.

Heart rhythm. In the Apple Heart Study, 84% of repeat irregular rhythm alerts were confirmed as atrial fibrillation (Perez 2019).

How to use it

- Turn on irregular rhythm alerts, and take any alert to your doctor.
- For a VO2 max reading, take outdoor walks or runs with GPS (Part 7, chapter 2).

The picks

TOP PICK

Apple Watch Series 12. A watch that counts your steps, estimates your VO2 max and checks your heart rhythm, with no subscription. It has the biggest heart rhythm study behind it: in the Apple Heart Study, 84% of repeat irregular rhythm alerts were confirmed as atrial fibrillation (Perez 2019). Apple Watch SE 3 is $249; Ultra 4 is $799. From $399, at apple.com

Picture: Apple

ALSO GOOD

WHOOP, a screenless strap sold as a membership: about $199 a year for One, about $239 for Peak and about $359 for Life (adds an ECG) (whoop.com). Garmin CIRQA Smart Band, $199.99, no subscription (garmin.com). Google Pixel Watch 5, from $399.99 (store.google.com).

BUDGET PICK

Google Pixel Watch 4, from $349.99. For the most accurate workout heart rate, add a Polar H10 chest strap, $104.95 (Gilgen-Ammann 2019). polar.com

Apple Watch SE 3

WHOOP

Apple Watch Ultra 4

Garmin CIRQA Smart Band

Google Pixel Watch 5

Google Pixel Watch 4
Budget pick

Polar H10

GOOD TO KNOW

A watch alert isn't a diagnosis, and VO2 max numbers are estimates.

3 Continuous Glucose Monitor (CGM)

WHAT IT IS	a small sensor on your arm that reads your blood sugar around the clock
BEST FOR	finding which foods spike you, steadier energy, heading off prediabetes
TOP PICK	Dexcom Stelo
PRICE	$99 a month (2 sensors), no prescription

Cornflakes and milk pushed 80% of healthy adults into the prediabetic range.

That's above 140 mg/dL, in Stanford's study (Hall 2018). A CGM shows you which of your foods do that to you.

Picture: Salahuddin Ahmed, Unsplash

What it does for you

A blood test gives you one number. A CGM shows you every spike, after every meal.

It's personal. The same meal spiked different people very differently (Zeevi 2015).

The fixes are simple. In adults with type 2 diabetes, a 10-minute walk after each meal lowered after-meal blood sugar 12% more than one 30-minute walk a day (Reynolds 2016).

How to use it

- Eat vegetables and protein first (Shukla 2019), and walk for 10 minutes after meals.

Peter Diamandis wears a Dexcom G7 with the Levels app.

The picks

TOP PICK

Dexcom Stelo, the first over-the-counter CGM. A small sensor on your arm reads your blood sugar around the clock, with no prescription, and each sensor lasts 15 days. It's from Dexcom, the maker of the G7 that Peter Diamandis wears, and it works with iPhone and Android. $99 for 2 sensors (one month), or $89 a month on a subscription, at stelo.com

Picture: Dexcom

ALSO GOOD

Abbott Lingo, $54 for 2 weeks or $89 for 4 weeks, no prescription (hellolingo.com). With a prescription: Dexcom G7, about $181 for 2 sensors with GoodRx (dexcom.com), or FreeStyle Libre 3 Plus. The Levels app is $15 a month or $80 a year (levels.com).

Dexcom G7

FreeStyle Libre 3 Plus

Abbott Lingo

Levels app

GOOD TO KNOW

Over-the-counter CGMs are for adults not on insulin. They can read higher than a fingerstick, so watch patterns, not single numbers. Take it off before an MRI.

4 Home Blood Pressure Monitor and Home ECG

WHAT IT IS	an upper-arm cuff for your blood pressure, and a pocket ECG for your heart rhythm
BEST FOR	heart and brain health; catching atrial fibrillation early
TOP PICK	Omron Platinum BP5465 cuff; KardiaMobile ECG
PRICE	$90.99 (cuff); $79 (ECG)

High blood pressure killed more people in 2019 than any other risk factor.

That's 10.8 million deaths (GBD 2019). And your home readings predict your future better than the ones at your doctor's office.

What it does for you

Home readings tell the truth. They predicted heart attacks and strokes; office readings didn't, once both were counted (Niiranen 2010).

Hidden rhythm problems. In the REHEARSE-AF trial, in people 65 and over, a KardiaMobile ECG twice a week found atrial fibrillation 3.9 times as often as usual care (Halcox 2017).

How to use it

- Buy a validated upper-arm cuff (check validatebp.org).
- Take 2 readings 1 minute apart, morning and evening, for 7 days, and average them. The goal for most adults is under 130/80.

The picks

TOP PICK

Omron Platinum BP5465, a validated upper-arm cuff for two users, with a free app and no subscription. Home readings from a cuff like this are the ones to trust: they predicted heart attacks and strokes, and office readings didn't, once both were counted (Niiranen 2010). It stores each user's readings separately, so two of you can share it. $90.99, at omronhealthcare.com

Picture: Omron Healthcare

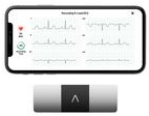
TOP PICK FOR HEART RHYTHM

KardiaMobile, a pocket ECG that checks for atrial fibrillation and slow or fast heart rhythms. It's the device from the REHEARSE-AF trial: used twice a week by people 65 and over, it found atrial fibrillation 3.9 times as often as usual care (Halcox 2017). The 6L is $129, plus a KardiaCare membership at $99 a year after the first. $79, at kardia.com

Picture: AliveCor

ALSO GOOD

Omron Complete BP7900, $163.99, a cuff and ECG in one (omronhealthcare.com). Withings BPM Connect, about $99.95, or BPM Vision, about $129.95 (withings.com).



Kardia-Mobile 6L

Omron Complete BP7900

Withings BPM Connect

Withings BPM Vision

Hilo Core

GOOD TO KNOW

Cuffless wristbands like Hilo Core ($239.98) are best as a trend tracker beside a cuff. A pocket ECG can’t diagnose a heart attack and isn’t tested with pacemakers. Change medicines only with your doctor.

5 Smart Scale

WHAT IT IS	a bathroom scale that measures muscle, fat and water, not just weight
BEST FOR	keeping muscle as you age, losing fat, keeping weight off
TOP PICK	InBody Dial H20N
PRICE	$299

Older adults with the most muscle had a 20% lower risk of death.

That's against those with the least, measured the way these scales measure it (Srikanthan 2014; Part 7, chapter 7). A smart scale tells you every morning whether you're keeping it.

What it does for you

Two people at the same weight can carry very different amounts of muscle and belly fat. A smart scale shows you which.

Weight. People who weighed every day on a smart scale lost 6.55% of their weight in 6 months, against 0.35% for a control group (Steinberg 2013).

How to use it

- Watch the 7 to 30 day trend, not the daily number.
- For exact numbers, get a DEXA scan every year or two (BodySpec, about $40). Peter Diamandis gets one every year, with the InBody H20N as his at-home stand-in between scans.

The picks

TOP PICK

InBody Dial H20N. A bathroom scale that measures muscle, fat and water, with thumb electrodes on a handle as well as foot pads. It's from the maker of the InBody scanners at longevity clinics like Human Longevity and Next Health, and it's Peter Diamandis's at-home stand-in between his yearly DEXA scans. FSA and HSA eligible. $299, at inbodyusa.com

Picture: InBody USA

ALSO GOOD

Withings Body Scan, about $499.95, adds an ECG plus artery and nerve readings. Withings BodyScan 2, about $599.95. Withings Body Comp, about $229.95. Optional Withings+ app, about $9.95 a month. Garmin Index S2, about $149.99.

BUDGET PICK

Renpho Elis 2X, $49.99.

Withings Body Scan

Withings Body Comp

Withings BodyScan 2

Garmin Index S2

Renpho Elis 2X

Budget pick

GOOD TO KNOW

With a pacemaker or implanted defibrillator, or in pregnancy, use the weight-only mode.

6 Vagus Nerve Stimulator

WHAT IT IS	a palm-sized device that sends a gentle electrical pulse through the skin of your neck or ear to the vagus nerve
BEST FOR	stress and calm, sleep, heart rhythm, inflammation, migraine and cluster headache
TOP PICK	Truvaga Plus (neck); Nurosym (ear)
PRICE	$499 (Truvaga Plus), no subscription

One hour a day of a mild current on the ear cut time in atrial fibrillation by 85%.

That was on the little flap in front of the ear canal, against sham, over 6 months in the TREAT-AF trial (Stavrakis 2020). The top pick for heart rhythm, Nurosym, clips onto that same spot.

What it does for you

The pulse travels up the nerve to your brain, which turns up “rest and digest” and turns down “fight or flight”.

Sleep. In adults with chronic insomnia, 8 weeks of ear stimulation improved sleep quality scores by 8.2 points, against 3.9 on sham (Zhang 2024).

Headache. gammaCore, a neck device, made people with migraine pain-free at 30 minutes three times as often as sham (Tassorelli 2018). In episodic cluster headache, 48% of attacks were pain-free within 15 minutes, against 6% on sham (Goadsby 2018).

Inflammation and stress. In healthy people, neck sessions lowered inflammation signals (Lerman 2016) and ear stimulation lowered stress nerve firing (Clancy 2014).

How to use it

NECK DEVICES (TRUVAGA, PULSETTO, GAMMACORE)	put conductive gel on the two electrodes and press them to the side of your neck, over your pulse.
EAR DEVICES (NUROSYM)	clip it onto the little flap in front of your ear canal. The trials used an hour a day for heart rhythm, and 30 minutes twice a day, 5 days a week, for sleep.

Which one to buy

TOP PICK

Truvaga Plus. A stimulator you press to the side of your neck, for unlimited 2-minute sessions, with an app and no subscription. It's the consumer version of gammaCore, from the same company; gammaCore made people with migraine pain-free at 30 minutes three times as often as sham (Tassorelli 2018). Truvaga 350 is $325 for 350 sessions with no app. $499, at truvaga.com

Picture: Truvaga

TOP PICK FOR HEART RHYTHM AND SLEEP

Nurosym, a clip-on ear device from Parasym in London, with no subscription. Parasym says the TREAT-AF trial used its technology: an hour a day on the ear cut time in atrial fibrillation by 85% against sham (Stavrakis 2020). In a separate trial, ear stimulation improved sleep in chronic insomnia (Zhang 2024). EUR 700, at nurosym.com

Picture: Parasym

ALSO GOOD

Pulsetto FIT, $296 (Lite $269, FIT X $350; optional app premium $60 to $119 a year), the one Peter Diamandis uses (pulsetto.tech). gammaCore, prescription only, about $450 to $600 to start (gammacore.com). Xen by Neuvana, $329 (neuvanalife.com).

Pulsetto FIT

gammaCore

Xen by Neuvana

Truvaga 350

Pulsetto Lite

Pulsetto FIT X

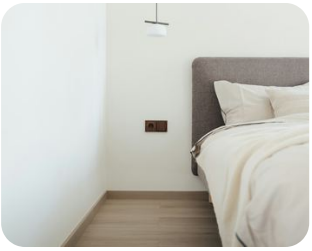
GOOD TO KNOW

Ask your doctor first if you have a pacemaker or other implant, a slow heart rate, carotid artery disease or neck surgery (for neck devices), epilepsy, or you're pregnant. Don't use it on broken skin or while driving.

7 Bed Cooling

WHAT IT IS	a mattress cover or pad that cools or warms your side of the bed all night
BEST FOR	deeper sleep, hot sleepers, couples who like different temperatures
TOP PICK	Eight Sleep Pod 6
PRICE	$2,899 (queen), plus $199 to $399 a year

A bed that draws heat from your body gave 16% more deep sleep.



Picture: Wemel Wood, Unsplash

That was in a study of men (Kräuchi 2018). Cool at the start of the night, warm toward morning, and you sleep deeper from the first night.

What it does for you

To sink into deep sleep, your core body temperature has to drop. A cooling bed helps it drop.

How to use it

- Set it cool at the start of the night, when most deep sleep happens, and warmer toward morning. Peter Diamandis sets his Eight Sleep to minus 5 at bedtime and plus 4 by morning.

The picks

TOP PICK

Eight Sleep Pod 6. A mattress cover that cools or warms each side of the bed on its own, and the one Peter Diamandis uses. A bed that drew heat from the body gave men 16% more deep sleep (Kräuchi 2018). The Autopilot membership is required the first year, $199 to $399 a year. $2,899 for a queen (king $2,999; one-side Solo $1,999), at eightsleep.com

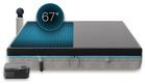
Picture: Eight Sleep

ALSO GOOD

Chilipad 2.0, from $1,599, no subscription (sleep.me); the smaller Chilipad Cube is $719. BedJet 3, $498 (list $699), blows cool or warm air under the covers; dual zone from $969.

BUDGET PICK

Coop Cool+ pillow, $149.



Chilipad 2.0

Chilipad Cube

Eight Sleep Autopilot

BedJet 3

Coop Cool+ pillow

Budget pick

GOOD TO KNOW

If your feet are numb (from diabetes, for example), keep the heat low. Use distilled water in water-based systems.

8 Sleep Kit: Eye Mask and Blue-Blocking Glasses

WHAT IT IS	a blackout eye mask for the night, and amber glasses that block the evening light that keeps you awake
BEST FOR	deeper sleep, falling asleep sooner, travel, bedrooms that never get fully dark
TOP PICK	Manta Sleep Mask; Sleep Swannies glasses
PRICE	$39 (mask); $129.99 (glasses)

A week of sleeping in an eye mask made people better at learning the next day.

That was in young adults, who were also more alert, against a week without one (Greco 2023). The cheapest sleep upgrade there is.

Picture: Skinby DrG, Unsplash

What it does for you

Light is the strongest signal your body clock gets. Even dim room light at night cuts the melatonin that puts you to sleep (Phillips 2019).

The glasses. Amber glasses for 3 hours before bed, for 2 weeks, improved sleep quality and mood (Burkhart 2009).

How to use it

MASK	every night, all night. Peter Diamandis never travels without his Manta.
GLASSES	from 2 to 3 hours before bed until lights out, screens included. Pick amber, orange or red lenses.

The picks

TOP PICK

Manta Sleep Mask. Its eye cups sit around your eyes for full blackout. It's the mask Peter Diamandis never travels without, and it comes with a 60-day money-back guarantee. A week in an eye mask made young adults better at learning the next day (Greco 2023). Manta PRO, with bigger, softer cups for side sleepers, is $85. $39, only at mantasleep.com.

Picture: Manta Sleep

TOP PICK FOR GLASSES

Sleep Swannies, amber lenses that block the evening light that keeps you awake, with prescription and fit-over versions. The maker says third-party lab tests show they block over 99% of blue light. Amber glasses for 3 hours before bed, for 2 weeks, improved sleep quality and mood (Burkhart 2009). $129.99, at swanwicksleep.com

Picture: Swanwick Sleep

ALSO GOOD

Ra Optics Sunset, from $174 (raoptics.com). TrueDark Twilights Classic, $159, red lenses, the brand Peter Diamandis wears (truedark.com). Cheaper masks: Nidra Deep Rest, about $20 to $25, or MZOO 3D Contoured, about $10 to $15.

BUDGET PICK

Uvex Skyper orange safety glasses, about $10 to $20, the kind the Burkhart trial used.

Manta PRO

Ra Optics Sunset

TrueDark Twilights Classic

Nidra Deep Rest

MZOO 3D Contoured

Uvex Skyper Budget pick

GOOD TO KNOW

Don’t drive in amber glasses at night. If you have bipolar disorder, check with your doctor first.

9 Air Purifier and CO2 Monitor

WHAT IT IS	a HEPA air purifier, and a monitor that tells you when your bedroom needs fresh air
BEST FOR	blood pressure, heart, brain and sleep; homes near busy roads or wood smoke
TOP PICK	Coway Airmega Mighty AP-1512HH; Aranet4 HOME for CO2
PRICE	$239.99 (purifier); about $189 (CO2 monitor)

Fine particle pollution is the world's number one risk factor for lost healthy years.

Picture: Darryl Low, Unsplash

That's the 2021 ranking (GBD 2021). Three days of HEPA filtration at home lowered seniors' systolic pressure by 3.2 points (Morishita 2018).

What it does for you

Fine particles don't stop at your lungs. They pass into your blood and inflame blood vessels (Chen 2015).

Brain. Older women who breathed cleaner air over a decade had slower decline in thinking and memory (Younan 2022).

Sleep. Opening a bedroom window took overnight CO2 from 2,585 to 660 ppm and gave better sleep and better logical thinking the next day (Strøm-Tejsen 2016).

How to use it

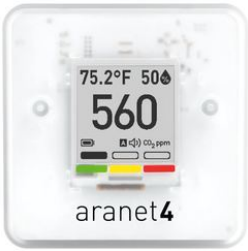
- Put the CO2 monitor by your bed. If it climbs past about 1,000 ppm overnight, crack a window or door.

The picks

TOP PICK

Coway Airmega Mighty AP-1512HH, a true HEPA purifier that covers 361 sq ft. True HEPA traps at least 99.97% of the hardest particles to catch, and three days of HEPA filtration at home lowered seniors' systolic pressure by 3.2 points (Morishita 2018). Switch off its ionizer. Filter sets are about $60 to $65; the Mighty2 is $269.99. $239.99, at cowaymega.com

Picture: Coway



TOP PICK FOR CO2

Aranet4 HOME, the reference home CO2 monitor, with an E-ink screen; the maker says its AA batteries last for years. Put it by your bed and crack a window past about 1,000 ppm. Opening a bedroom window took overnight CO2 from 2,585 to 660 ppm and gave better sleep and sharper thinking the next day (Strøm-Tejsen 2016). About $189, at aranet.com

Picture: Aranet

ALSO GOOD

Blueair Blue Pure 211i Max, $349.99, quiet, for big rooms (blueair.com). IQAir HealthPro Plus XE, about $1,199.99, Swiss-made and medical grade (iqair.com). Airthings View Plus, $329.99, tracks CO2, fine particles and radon (airthings.com); Airthings Wave Plus, $249.99, also tracks radon.

BUDGET PICK

Levoit Core 300-P, $99.99, for a small bedroom (levoit.com). Or build a Corsi-Rosenthal box from four or five MERV-13 furnace filters and a 20-inch box fan, about $58 in parts.

Coway Airmega Mighty2

Blueair Blue Pure 211i Max

IQAir Health-Pro Plus

Airthings View Plus

Airthings Wave Plus

Levoit Core 300-P
Budget pick

GOOD TO KNOW

Skip ozone generators and ozone-making “ionizer” purifiers. Look for the AHAM Verifide label and CARB certification (ozone-safe).

10 Water Filter

WHAT IT IS	a filter that takes PFAS ("forever chemicals"), lead and microplastics out of your drinking water
BEST FOR	heart and arteries, brain, cutting your body's load of plastics and forever chemicals
TOP PICK	AquaTru Classic
PRICE	$475, plus about $130 a year in filters

People with microplastics in their artery plaque were 4.5 times as likely to have a heart attack, a stroke or die within 3 years.

In 257 people having neck artery surgery (Marfella 2024). Reverse osmosis takes microplastics out of your water.

What it does for you

Tap water can carry PFAS, lead and tiny plastic particles (Smalling 2023). A good filter takes most of it out.

Brain. Human brains held about 47% more plastic in 2024 than in 2016, and far more in people who had dementia (Nihart 2025).

Filters work. After two Ohio Valley water districts added carbon filtration, residents' blood PFOA fell 26% a year (Bartell 2010). Under-sink reverse osmosis removed 94% or more of PFAS (Herkert 2020).

How to use it

- If you use a pitcher, choose one certified to NSF/ANSI 53 (lead, PFOA and PFOS).

The picks

TOP PICK

AquaTru Classic, countertop reverse osmosis with no plumbing, so it works for renters. It's certified by IAPMO, an independent certifier, to NSF standards for 84 contaminants, including lead, PFAS and microplastics, and reverse osmosis removed 94% or more of PFAS in tests (Herkert 2020). Filters run about $130 a year. $475, at aquatru.com

Picture: AquaTru

ALSO GOOD

Waterdrop G3P800, $999, under-sink reverse osmosis, filters about $194 a year (waterdropfilter.com). Clearly Filtered pitcher, $110, filters $65 (clearlyfiltered.com).

BUDGET PICK

Brita Elite filters, certified for lead, PFOA and PFOS, about $15 to $20 a filter (brita.com).

Waterdrop G3P800

Clearly Filtered pitcher

Brita Elite
Budget pick

CONSUMERLAB

ConsumerLab tested pitchers only, from 2020 to 2024. AquaTru, Waterdrop and Clearly Filtered's pitcher weren't in its tests. Brita's pitcher with the Elite filter passed and was its pick for chlorine taste, but cut microplastics only 14.1%. The ZeroWater 6-cup wasn't approved, because it added particles to the water. ConsumerLab's top pitcher overall was Aquagear, $69.95, which cut microplastics 59%. ConsumerLab didn't test PFAS, so go by the NSF certifications above.

GOOD TO KNOW

Reverse osmosis also strips minerals and fluoride. AquaTru and Waterdrop sell remineralizing cartridges, and if you count on fluoride for your teeth, ask your dentist.

11 Hearing Aids

WHAT IT IS	hearing aids, now sold over the counter, including earbuds that work as cleared hearing aids
BEST FOR	protecting your brain, staying social, preventing falls
TOP PICK	AirPods Pro 3; Jabra Enhance Select for all-day wear
PRICE	$249 (AirPods Pro 3); $1,195 to $1,995 a pair (Jabra)

Hearing loss is the biggest risk for dementia you can change.

In 437,704 UK adults, hearing loss without hearing aids meant 42% more dementia. With hearing aids, the risk matched normal hearing (Jiang 2023).

Picture: GN Group, Unsplash

What it does for you

When sound arrives blurred, your brain works overtime decoding words, with less left for memory and thinking. Hearing aids take that load off.

Brain. The Lancet Commission ranked midlife hearing loss first among dementia risks, at 8.2% of cases worldwide in 2020, and still first in 2024 (Livingston 2020 and 2024).

Social life and falls. In the ACHIEVE trial, adults aged 70 to 84 given hearing aids kept more of their social circle and felt less lonely over 3 years (Reed

2025). Hearing aid users had 13% fewer injurious falls (Mahmoudi 2019).

How to use it

- Test first: Apple's 5-minute Hearing Test with AirPods Pro and an iPhone, an audiologist (about $50 to $250), or Costco Hearing Aid Centers (free for members).
- See a doctor first if hearing loss is sudden, in one ear only, or comes with ear pain, drainage, dizziness or loud ringing.

The picks

TOP PICK

AirPods Pro 3. With an iPhone, they work as a cleared over-the-counter hearing aid, with Apple's 5-minute hearing test built in, so you can test your hearing and fix it at home. In 437,704 UK adults, people with hearing loss who used hearing aids had the same dementia risk as people with normal hearing (Jiang 2023). $249, at apple.com

Picture: Apple

TOP PICK FOR ALL-DAY WEAR

Jabra Enhance Select, over-the-counter hearing aids with 3 years of video care from hearing specialists and a 100-day trial. In the ACHIEVE trial, adults aged 70 to 84 given hearing aids kept more of their social circle and felt less lonely (Reed 2025). $1,195 (M1), $1,695 (M2) or $1,995 (M3) a pair, or from $39 a month, at jabraenhance.com

Picture: Jabra

ALSO GOOD

Sennheiser All-Day Clear, $699.95 a pair, from the Swiss hearing aid maker Sonova (sennheiser-hearing.com). Prescription hearing aids cost about $4,000 to $6,000 a pair from an audiologist, or about $1,400 to $2,500 at Costco. Samsung's hearing aid feature for Galaxy Buds was cleared for US use in August 2026 and arrives late in 2026.

Picture: Sennheiser Hearing

GOOD TO KNOW

Skip Lexie and Eargo hearing aids, which are shutting down. Sony has stopped selling its over-the-counter hearing aids.

12 Walking Pad and Standing Desk

WHAT IT IS	a slim treadmill that slides under a standing desk, so you walk slowly while you work
BEST FOR	more daily steps, steadier blood sugar, less sitting
TOP PICK	WalkingPad P1 with an UPLIFT V3 desk
PRICE	$349 (pad); from $599 (desk)

About 9,800 steps a day went with half the risk of dementia.

In 78,430 UK adults (del Pozo Cruz 2022). A walking pad gets you there without leaving your desk.

Picture: ergonofis, Unsplash

What it does for you

It turns hours at a desk into easy steps, at 1 to 2 miles an hour, slow enough to type and take calls.

Blood sugar. Two minutes of easy walking every 20 minutes cut the after-meal rise in blood sugar and insulin by about a quarter, against sitting straight through (Dunstan 2012).

Less sitting. Office workers given a sit-stand desk sat 83 fewer minutes a workday a year later (Edwardson 2018).

How to use it

- Break up sitting at least every 30 minutes, especially after meals. Peter Diamandis calls long sitting “the new smoking.”

The picks

TOP PICK

WalkingPad P1, a slim treadmill that slides under a standing desk, for walking at 1 to 2 miles an hour while you work. It folds in half to store under a desk or bed, with no subscription. Two minutes of easy walking every 20 minutes cut the after-meal rise in blood sugar by about a quarter (Dunstan 2012). $349 (list $399), at walkingpad.com

Picture: WalkingPad

TOP PICK FOR THE DESK

UPLIFT V3 Standing Desk, a sit-stand desk to go over your walking pad, with a 15-year warranty. UPLIFT says Wirecutter rated it number one. Office workers given a sit-stand desk sat 83 fewer minutes a workday a year later (Edwardson 2018). Switch between sitting, standing and walking at least every 30 minutes. From $599, at upliftdesk.com

Picture: UPLIFT Desk

ALSO GOOD

LifeSpan TR1200 Pro GlowUp, $1,299, the premium under-desk treadmill from the brand Peter Diamandis uses (lifespanfitness.com). Fully Jarvis desk, now sold by Herman Miller, $1,195 and up. FlexiSpot E7 Pro, about $370 to $400 on sale. Rather pedal? The LifeSpan Ampera under-desk bike is $1,099 (lifespanfitness.com).

BUDGET PICK

Urevo SpaceWalk E1L, $169.99. urevo.com

LifeSpan TR1200 Pro GlowUp

Fully Jarvis

FlexiSpot E7 Pro

LifeSpan Ampera

Urevo Space-Walk E1L

Budget pick

GOOD TO KNOW

Most walking pads have no handrail. Start at 1 mph, wear shoes, keep the safety key or remote handy, and keep cords, pets and children clear. Don't trade sitting for hours of standing still.

Also worth a look

GRIP STRENGTH GAUGE

A weaker grip meant a higher risk of death (Leong 2015; Part 7, chapter 6). A Camry EH101 hand dynamometer costs about $20 to $40; the clinic standard, Jamar Plus+, is about $350 to $500.

Camry EH101

Jamar Plus+

VIBRATION PLATE

A platform you stand or exercise on while it vibrates, with trials for bone and balance in older women behind it. Power Plate and LifePro are the best-known brands.

Power Plate

LifePro Waver

SOURCES **1** Windred 2024, PMID 37738616 · **2** Kinnunen 2020, PMID 32217820 · **3** Dial 2025, PMID 40834291 · **4** Mason 2022, PMID 35236896 · **5** Ding 2025, PMID 40713949 · **6** Perez 2019, PMID 31722151 · **7** Ferguson 2022, PMID 35868813 · **8** Gilgen-Ammann 2019, PMID 31004219 · **9** Hall 2018, PMID 30040822 · **10** Zeevi 2015, PMID 26590418 · **11** Reynolds 2016, PMID 27747394 · **12** Shukla 2019, PMID 30101510 · **13** GBD 2019, PMID 33069327 · **14** Niiranen 2010, PMID 20385970 · **15** Halcox 2017, PMID 28851729 · **16** Srikanthan 2014, PMID 24561114 · **17** Steinberg 2013, PMID 23512320 · **18** Stavrakis 2020, PMID 32192678 · **19** Zhang 2024, PMID 39680406 · **20** Tassorelli 2018, PMID 29907608 · **21** Goadsby 2018, PMID 29231763 · **22** Lerman 2016, PMID 26990318 · **23** Clancy 2014, PMID 25164906 · **24** Kräuchi 2018, PMID 29247670 · **25** Greco 2023, PMID 36521010 · **26** Phillips 2019, PMID 31138694 · **27** Burkhart 2009, PMID 20030543 · **28** GBD 2021, PMID 38762324 · **29** Morishita 2018, PMID 30208394 · **30** Chen 2015, PMID 26022815 · **31** Younan 2022, PMID 35113870 · **32** Strøm-Tejsen 2016, PMID 26452168 · **33** Marfella 2024, PMID 38446676 · **34** Nihart 2025, PMID 39901044 · **35** Smalling 2023, PMID 37356308 · **36** Bartell 2010, PMID 20123620 · **37** Herkert 2020, DOI 10.1021/acs.estlett.0c00004 · **38** Livingston 2020, PMID 32738937 · **39** Livingston 2024, PMID 39096926 · **40** Jiang 2023, PMID 37062296 · **41** Reed 2025, PMID 40354063 · **42** Mahmoudi 2019, PMID 31486068 · **43** del Pozo Cruz 2022, PMID 36066874 · **44** Dunstan 2012, PMID 22374636 · **45** Edwardson 2018, PMID 30305278 · **46** Leong 2015, PMID 25982160

4

PART 4

Treatments and Protocols

The heat, cold, light and medicines with the most science behind them, and exactly how to use each one.

Ending your shower with 30 to 90 seconds of cold costs nothing, and it cut sick days off work by 29%. Chapter 7 weighs the $1,000 NAD+ drip against cheaper ways to raise NAD+.

Here's which treatments are worth your time and money: 11 chapters, ranked by the strength of the evidence, then by how many people will want them.

1 Sauna

WHAT IT IS	dry heat: 80 to 100°C (176 to 212°F) in a traditional Finnish sauna, or 45 to 65°C (113 to 149°F) in an infrared one
BEST FOR	a longer life, heart, blood pressure, brain, mood, endurance
HOW OFTEN	4 to 7 times a week, 20 minutes or more each time
COST	included at many gyms; studios about $30 to $60 a session; at home from $699 (a blanket) to about $14,000
WHERE	home, gym, sauna studio

40% lower risk of dying from any cause.

In Finnish men who took a sauna 4 to 7 times a week, against once a week (Laukkanen 2015).

Picture: Almost Heaven Saunas

1 The same men had a 63% lower risk of sudden cardiac death (Laukkanen 2015) and a 66% lower risk of dementia (Laukkanen 2017).

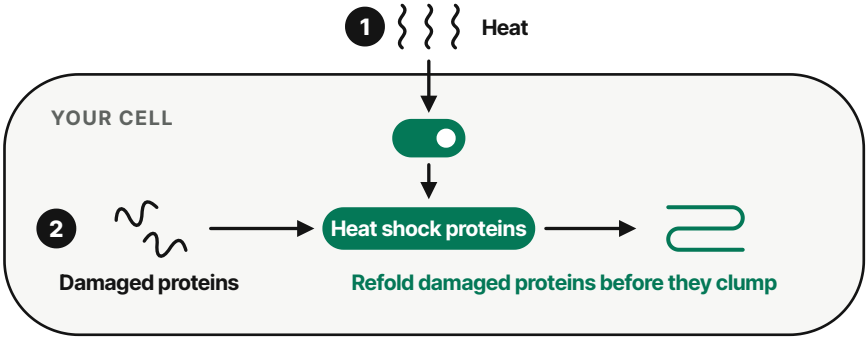
2 One 30-minute session dropped blood pressure from 137/82 to 130/75 and made arteries measurably less stiff (Lee 2018).

What it does for you

A hot sauna works your heart like a moderate workout while you sit still. Heat also switches on heat shock proteins, which refold damaged proteins before they clump.

How sauna works

One 30-minute session raised heat shock proteins by 48.7%.

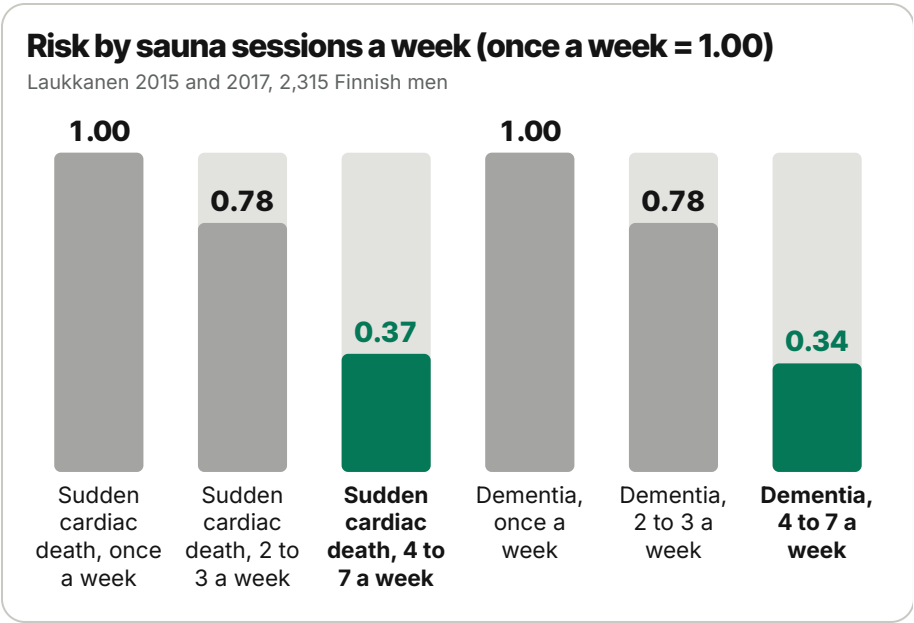


1. Heat switches on heat shock proteins.
2. Heat shock proteins refold damaged proteins before they clump.

What the science says

The Finnish study followed 2,315 men for about 20 years. The more often they went, the lower their risk, and sessions longer than 19 minutes beat sessions shorter than 11 (Laukkanen 2015). At 2 to 3 sessions a week, sudden cardiac death and dementia were each 22% less likely, but that could have been chance (Laukkanen 2015; Laukkanen 2017).

In inactive adults, 15 minutes of sauna after each workout for 8 weeks raised aerobic fitness 2.7 mL/kg/min more than exercise alone (Lee 2022). Runners who used one after training for 3 weeks lasted 32% longer (Scoon 2007).



The more often the men used a sauna, the lower their risk.

In major depression, one session of whole-body heat beat a sham, and the gap held at six weeks (Janssen 2016).

The protocol

HOT ENOUGH	80 to 100°C (176 to 212°F) at head height. The Finnish men averaged about 79°C (174°F). Infrared runs cooler, so stay 30 to 45 minutes.
LONG ENOUGH	5 to 20 minutes a round, 1 to 3 rounds, with a cool-off in between (a shower, fresh air or a cold dip).
AFTER A WORKOUT	15 minutes, 3 times a week.
FOR SLEEP	go an hour or two before bed, so your body can cool down.

Drink water before and after, and sit for a minute before you stand up.

At home or at a studio

At home. A 240-volt circuit for the heater costs about $500 to $2,500. A $6,000 sauna used 4 times a week for 5 years comes to about $5.77 a session.

TOP PICK

Almost Heaven barrel saunas, traditional saunas with Harvia heaters. They're the closest match to the traditional Finnish saunas in the studies, where 4 to 7 sessions a week went with a 40% lower risk of death than once a week (Laukkanen 2015), at the lowest price we found for a traditional sauna. From $4,485 (Salem 2 Person) or $6,060 (Pinnacle 4 Person), at almostheaven.com

Picture: Almost Heaven Saunas

ALSO GOOD

Sunlighten, the infrared brand many clinics use. The Solo System, a lie-down unit for one, is about $2,099, and cabins start at about $4,999. sunlighten.com On a budget, the HigherDOSE Infrared Sauna Blanket is $699; it runs cooler than a Finnish sauna. higherdose.com

Almost Heaven Pinnacle 4 Person Barrel Sauna

Harvia heater

Sunlighten Solo System

HigherDOSE Infrared Sauna Blanket

GOOD TO KNOW

No alcohol before or during. Ask your doctor first if you have unstable heart disease, a recent heart attack, severe aortic stenosis, uncontrolled blood pressure or a fever. Pregnant women should avoid overheating. Men trying to conceive can pause: two sessions a week for 3 months cut sperm count, which recovered 6 months after stopping (Garolla 2013).

2 GLP-1 drugs and metformin

WHAT IT IS	two kinds of prescription drug. GLP-1 drugs (semaglutide, sold as Wegovy and Ozempic; tirzepatide, sold as Zepbound and Mounjaro) copy a gut hormone that tells your brain you're full. Metformin is a cheap diabetes pill that longevity doctors prescribe off label.
BEST FOR	heart, a longer life, weight, blood sugar, kidneys, liver
HOW OFTEN	GLP-1 drugs, a weekly shot or a daily pill; metformin, once or twice a day with food
COST	metformin about $9 for 60 tablets; GLP-1 drugs $149 to $449 a month at self-pay prices
WHERE	prescription, from your doctor, a longevity clinic or a telehealth service

20% fewer heart attacks, strokes and heart deaths.

From one weekly shot, in people without diabetes.

Picture: Diana Polekhina, Unsplash

1 In the SELECT trial, 17,604 adults with heart disease and extra weight took semaglutide or a placebo for 39.8 months on average. Heart attacks, strokes and heart deaths hit 6.5% vs 8.0%, and deaths from any cause fell 19% (Lincoff 2023; Scirica 2024).

2 People with diabetes who took metformin outlived matched people without diabetes (Bannister 2014).

What it does for you

GLP-1 drugs turn down hunger, so you eat less without a fight.

Semaglutide, sold as Wegovy and Ozempic.
Picture: Hims & Hers

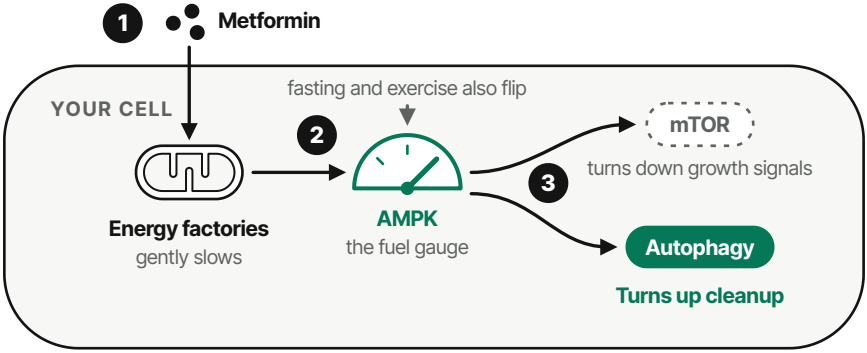
Metformin works like a mild version of fasting. It flips the same fuel gauge (AMPK) that fasting and exercise flip, turning down growth and turning up cleanup.

What the science says

In adults with diabetes and kidney disease, semaglutide cut major kidney events by 24% (Perkovic 2024). It cleared fatty liver inflammation in 62.9% of people, vs 34.3% on placebo (Sanyal 2025).

How metformin works

Metformin works like a mild version of fasting.



1. Metformin gently slows the energy factories in your cells.
2. That flips on AMPK, the fuel gauge that fasting and exercise also flip.
3. That turns down growth signals (mTOR) and turns up cleanup (autophagy).

Over 72 weeks, tirzepatide took off 20.2% of body weight and semaglutide 13.7% (Aronne 2025). The next drug in line, retatrutide, took off 25.0% in 80 weeks (Jastreboff 2026).

In 14 adults aged about 70, 6 weeks of metformin lowered blood sugar and insulin, compared with placebo (Kulkarni 2018). Semaglutide improved blood sugar too, a gain that drifted back in the year after people stopped (Wilding 2022).

The metformin catch: in healthy older adults, it blunted the gains from cardio and from weight training (Konopka 2019; Walton 2019). It fits best if you have prediabetes or insulin resistance.

How to take them

METFORMIN	500 mg once a day with food, building over a few weeks to 1,000 to 1,500 mg. Extended release is easier on your stomach. Check your kidney function (eGFR) first and your B12 once a year.
GLP-1 DOSES	start low and step up every 4 weeks to keep nausea down. Wegovy goes from 0.25 mg to 2.4 mg (there's also a 7.2 mg Wegovy HD pen); Zepbound from 2.5 mg to 15 mg. The Wegovy pill goes down on an empty stomach. Foundayo, a daily pill, has no food rules.
KEEP YOUR MUSCLE	lift weights 2 to 3 times a week and eat 1.2 to 1.6 g of protein per kg of body weight a day.
PLAN TO STAY ON IT	a year after people stopped semaglutide, about two-thirds of the lost weight came back (Wilding 2022).

Where to get them, and what they cost

DRUG	FORM	SELF-PAY PRICE
Metformin (generic)	Pill, daily	About $9 for 60 tablets with GoodRx
Wegovy pill	Pill, daily	$149 to $299 a month
Wegovy	Shot, weekly	$199 a month for 2 months, then $349 ($399 for Wegovy HD)
Zepbound	Shot, weekly	About $299 to $449 a month
Foundayo	Pill, daily	About $149 to $399 a month

Ro and Hims & Hers add a membership: $39 the first month, then $149 a month. On Medicare Part D, the GLP-1 Bridge caps Wegovy, the Zepbound KwikPen and Foundayo for weight at $50 a month from 1 July 2026.

Wegovy pill

Wegovy

Zepbound

Foundayo

Ro

Picture: Ro

TOP PICK

AgelessRx, the best-known longevity telehealth service, for metformin or a GLP-1 drug, prescribed online with clinician-guided dosing and filled by US-licensed pharmacies. It's the company that ran PEARL, the longest placebo-controlled rapamycin trial in healthy aging (chapter 3). Metformin starts at $25 a month, prescriber included, and GLP-1 plans at $139 a month, at agelessrx.com

Picture: AgelessRx

ALSO GOOD

Hims & Hers for GLP-1 drugs, with the Wegovy pill and Foundayo from $149 a month plus membership. hims.com Or Wegovy direct from the maker at wegovy.com.

GOOD TO KNOW

Nausea, diarrhea and constipation are common while doses climb, and gallbladder problems and pancreatitis are uncommon but real. Skip GLP-1 drugs in pregnancy, after pancreatitis, or with a personal or family history of a rare thyroid tumor (MTC) or MEN2. No trial has tested the "microdoses" some clinics sell to lean people. Metformin can upset your stomach at first; skip it before scans with iodine contrast and if you drink heavily.

3 Rapamycin

WHAT IT IS	a prescription drug (generic name sirolimus) that turns down mTOR, your cells' main growth switch
BEST FOR	a longer life, immune aging, muscle in women, skin
HOW OFTEN	once a week, often 3 months on and 1 month off
COST	generic about $22 to $25 a month; telehealth programs $64 to $152 a month, labs included
WHERE	prescription, from your doctor or a longevity telehealth service

The only drug that has extended life in every major lab animal tested.

Even in mice that started it at the human equal of 60.

A soil bacterium from Easter Island makes it.

Picture: Thomas Griggs, Unsplash

1 Mice started on rapamycin at 600 days old, about 60 in human years, lived longer at three separate labs. It was the first drug shown to extend life in both sexes of a mammal (Harrison 2009).

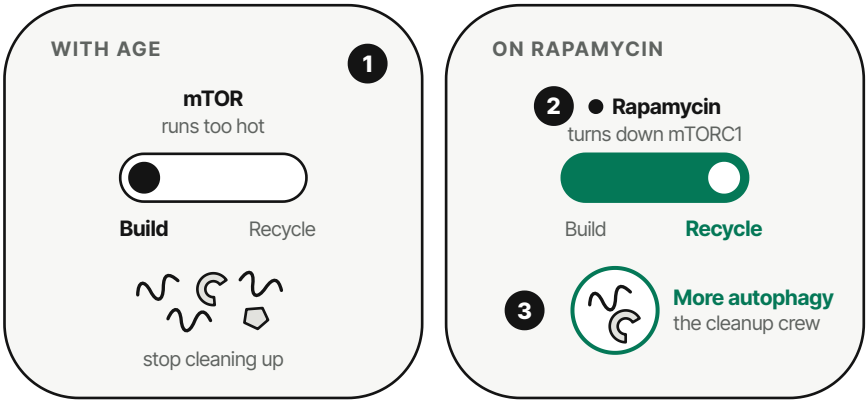
2 Across 167 studies in 8 species, rapamycin extended life about as much as eating less. Metformin didn't (Ivimey-Cook 2025).

What it does for you

With age, mTOR runs too hot. Rapamycin turns down one part of it, and your cells shift from building to maintaining and recycling.

How rapamycin works

Every cell has a growth switch called mTOR.



1. With age, it runs too hot: cells keep building and stop cleaning up.
2. Rapamycin turns down one part of that switch (mTORC1).
3. Your cells shift from building to maintaining and recycling, with more autophagy, the cleanup crew that breaks down worn-out parts.

What the science says

In PEARL, the longest placebo-controlled trial of rapamycin in healthy aging, women on 10 mg a week gained lean muscle and had less pain over 48 weeks, with side effects no worse than placebo. Belly fat, the main goal, didn't change, and the trial used compounded rapamycin (Moel 2025).

A short course of everolimus, a close cousin of rapamycin, raised older adults' flu vaccine response by about 20% (Mannick 2014). A rapamycin cream raised collagen VII in sun-aged skin (Chung 2019).

How to take it

DOSE	longevity doctors most often prescribe 3 to 10 mg once a week. Some start at 1 to 3 mg and step up.
DIAMANDIS'S ROUTINE	6 mg every Sunday night, 3 months on and 1 month off.
GENERIC OR COMPOUNDED	ask which you're getting. Compounded gives about 31% of the blood level of the same milligrams of generic (Harinath 2025).
TIMING	the same day each week. Blood levels peak about 2 days after a dose. Many doctors pause it around surgery, dental work and infections.

Skip grapefruit. Get blood work before you start and along the way: a blood count, lipids, fasting glucose and HbA1c, your average blood sugar over 2 to 3 months.

Where to get it

With a GoodRx coupon, generic sirolimus is about $22 to $25 a month at 6 mg a week.

Generic sirolimus

Picture: Glenmark Pharmaceuticals

TOP PICK

AgelessRx, the biggest rapamycin telehealth service, with generic or compounded rapamycin from US-licensed pharmacies. It's the company that ran PEARL, where women on 10 mg a week gained lean muscle (Moel 2025), and its staff co-wrote the study of generic against compounded blood levels (Harinath 2025). Pause or cancel anytime. From $65 a month, blood work included, at agelessrx.com

Picture: AgelessRx

ALSO GOOD

Healthspan, from $64 a month with labs, and the only service we found with a rapamycin skin cream ($115 a month). gethealthspan.com HealthRx is $152 a month, or $122 a month on a 12-month plan. healthrx.com

Healthspan

HealthRx

GOOD TO KNOW

Mouth sores are the most common side effect. Some people see higher glucose or cholesterol, which is why the blood work matters. Bryan Johnson stopped in 2024 after almost 5 years, citing skin infections, higher lipids and

glucose, and a faster resting heart rate. Skip it if you're pregnant or trying to conceive, get frequent infections, or take other drugs that suppress the immune system.

4 Cold: plunge and cryotherapy

WHAT IT IS	a cold plunge is sitting neck deep in water at 10 to 15°C (50 to 59°F) for 1 to 5 minutes. Cryotherapy is standing for 2 to 3 minutes in dry air at -110 to -140°C (-166 to -220°F).
BEST FOR	mood, focus, stress, sleep, blood sugar, pain, recovery, fewer sick days
HOW OFTEN	plunge 2 to 4 times a week, about 11 minutes a week in all (Søberg 2021); cryotherapy 2 to 3 times a week
COST	a cold shower is free; home plunges $1,150 to about $14,600; cryotherapy about $40 to $60 a session
WHERE	home, gym, wellness studio, longevity clinic

29% fewer sick days, from 30 to 90 seconds of cold at the end of your shower.

That's days off work, in a trial of 3,018 Dutch adults (Buijze 2016). It costs nothing.

Picture: Renu Therapy

1 An hour in 14°C (57°F) water raised noradrenaline by 530% and dopamine by 250% (Šrámek 2000).

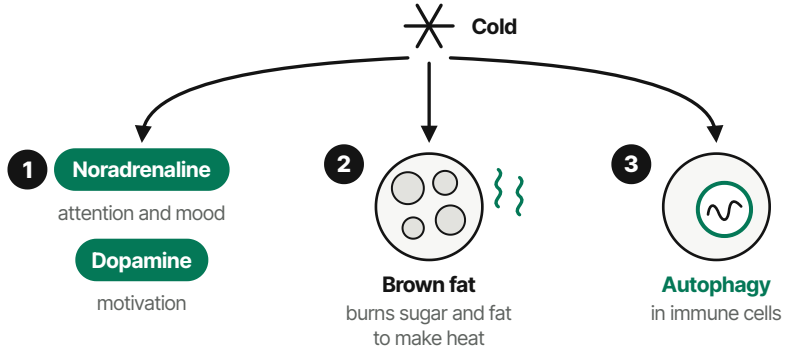
2 Ten days in a cool 14 to 15°C (57 to 59°F) room, about 6 hours a day, raised insulin sensitivity by about 43% in people with type 2 diabetes (Hanssen 2015).

What it does for you

Cold skin fires up your nervous system. Noradrenaline sharpens your attention and lifts your mood; dopamine drives motivation. Cold also wakes up brown fat, which burns sugar and fat to make heat.

How cold works

Cold skin fires up your nervous system.



1. Noradrenaline sharpens your attention and lifts your mood; dopamine drives motivation.
2. Cold also wakes up brown fat, which burns sugar and fat to make heat.
3. It switches on repair: after 7 days of cold water, autophagy rose in young men's immune cells.

What the science says

Across 11 randomized studies of 3,177 adults, cold water lowered stress 12 hours later and improved sleep (Cain 2025). Just 5 minutes at 20°C (68°F) made adults more alert, attentive and inspired (Yankouskaya 2023).

Six sessions of cryotherapy eased rheumatoid arthritis pain, and 58% of patients cut back or stopped painkillers (Klemm 2022). Ten sessions eased depression on top of medication (Rymaszewska 2020) and improved memory in mild memory loss (Rymaszewska 2018).

Cryotherapy is standing for 2 to 3 minutes in dry air at -110 to -140°C.

Picture: CryoBuilt

The protocol

PLUNGE, HOW COLD	10 to 15°C (50 to 59°F). Start at the warm end; 20°C (68°F) still lifted mood.
PLUNGE, HOW LONG	1 to 5 minutes. For recovery after hard training, 11 to 15 minutes at 11 to 15°C worked best (Machado 2016).

PLUNGE, WHEN	morning is best. It wakes you up, so a late plunge can push back sleep. If you want muscle, wait 4 hours or more after lifting. After cardio, it made no difference (Malta 2021).
CRYOTHERAPY	2 to 3 minutes at -110 to -140°C, never more than 4. A course is 10 to 20 sessions over 2 to 4 weeks, then 2 to 3 times a week.

At home or at a studio

Cheapest: a cold shower, or an inflatable tub (about $50 to $250) or stock tank (about $100 to $400) filled with ice.

Chilled at home: a chilled tub costs about $10 to $30 a month to run. Plug it into a GFCI-protected outlet.

TOP PICK

Ice Barrel 300, the best-value rigid tub: a 77-gallon barrel you sit in upright, neck deep, for the 1 to 5 minutes at 10 to 15°C that the protocol calls for. Start with ice and add the $4,000 chiller later; a chilled tub costs about $10 to $30 a month to run. $1,150, or $5,150 with the chiller, at icebarrel.com

Ice Barrel 300, the best-value rigid tub.
Picture: Ice Barrel

ALSO GOOD

Plunge All-In, the best-known all-in-one, with nothing to plumb. plunge.com

The Plunge All-In is $9,990 to $10,490.

Plunge studios charge about $39 to $65 a visit.

Cryotherapy studios. iCRYO is $49 a session, or passes from $149 a month for 6.

Ice Barrel 300

Sun Home Vertical

Plunge Air

Plunge All-In

BlueCube DROP

TOP PICK FOR CRYOTHERAPY

iCRYO, a chain of cryotherapy studios, for the 2 to 3 minutes at -110 to -140°C in the protocol above. It has the lowest price per session we found, and it also offers localized cryotherapy for one sore spot. Passes start at $149 a month for 6 sessions, about $25 each. $49 a session, at icryo.com

Artica Element

iCRYO

Next Health

Restore

GOOD TO KNOW

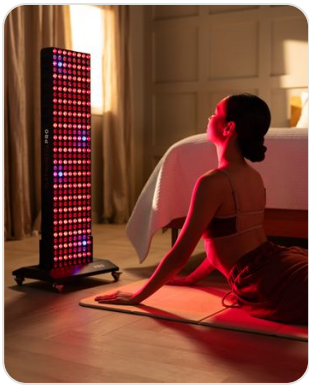
Never hold your breath or hyperventilate in cold water; it can trigger heart rhythm problems or a blackout (Shattock 2012). Never plunge alone in open water, and keep moving after: your core keeps cooling for a few minutes. Check with your doctor first if you have heart disease, an irregular heartbeat, Raynaud's or a cold allergy, or you're pregnant. With cryotherapy, keep your skin dry to avoid frostbite, and never use a nitrogen cabin alone: a 24-year-old died alone in one in 2015.

5 Red light

WHAT IT IS	red (630 to 670 nm) and near-infrared (810 to 850 nm) light from LED panels, masks and caps, which your cells use to make more energy
BEST FOR	skin, hair, eyes, muscle, joint pain, blood sugar
HOW OFTEN	10 to 15 minutes a side, 3 to 5 times a week
COST	masks from $99, panels $199 to $1,699; studios about $25 to $60 a session
WHERE	home, gym, studio, eye clinic

Up to 36% fewer wrinkles, from light alone.

In 8 sessions of red and near-infrared light over 4 weeks, in a double-blind trial (Lee 2007).



Picture: PlatinumLED Therapy Lights

1. Skin biopsies in that trial showed more collagen.
2. Three minutes of deep red light, once, in the morning, improved color vision for a week in people aged 37 to 70 (Shinhmar 2021).

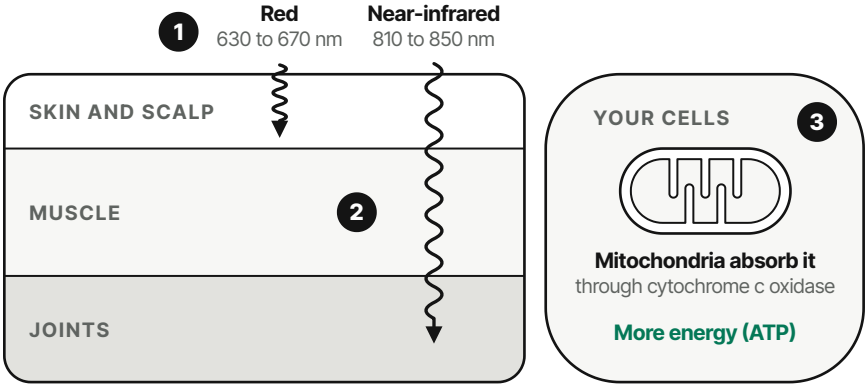
3 Fifteen minutes of 670 nm light cut the blood sugar rise after a glucose drink by 27.7% (Powner 2024).

What it does for you

Your mitochondria absorb the light and make more energy, and your cells switch on repair (Hamblin 2017). Red light reaches your skin, scalp and eyes; near-infrared goes deeper, into muscle and joints.

How red light works

Red and near-infrared light, which your cells use to make more energy.



1. Red and near-infrared light pass into your skin and tissue.
2. Red light reaches your skin, scalp and eyes. Near-infrared goes deeper, into muscle and joints.
3. Your mitochondria absorb it through an enzyme called cytochrome c oxidase. They use oxygen faster and make more energy (ATP).

What the science says

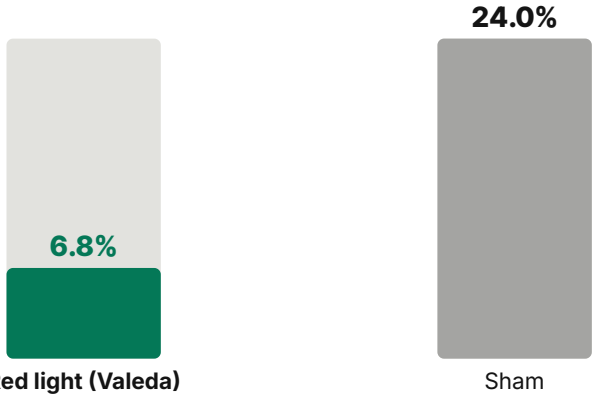
In 100 people with dry macular degeneration, eyes treated with the Valeda red light device gained 6.2 letters on the eye chart. Far fewer progressed to advanced damage at 21 to 24 months: 6.8%, vs 24.0% on sham (Jaffe 2026).

Valeda

Picture: LumiThera

Eyes with dry macular degeneration that progressed to advanced damage (geographic atrophy)

Jaffe 2026, Retina, LIGHTSITE III, 100 people



Women using a red laser comb 3 times a week grew about 20 extra hairs per square centimeter in 26 weeks, vs about 3 on a sham (Jimenez 2014).

Across 13 trials, light before exercise added 5.47 reps (Leal-Junior 2015). Across 22 trials, knee arthritis pain fell 14.2 points on a 100-point scale vs

placebo (Stausholm 2019).

Laser hair caps work on a schedule, for example 30 minutes every other day.
Picture: iRestore

The protocol

PANEL	keep it 15 to 30 cm (6 to 12 inches) away. If you don't know the panel's output, start with 5 to 10 minutes.
MUSCLE	right before you train.
BLOOD SUGAR	15 minutes before a meal.
EYES	the studies used gentle 670 nm light for about 3 minutes in the morning. Morning matters.

Expect smoother skin in 4 to 6 weeks, fewer wrinkles in 8 to 12, and more hair in 16 to 26.

Face masks: 10 minutes, 3 to 5 times a week.
Picture: CurrentBody

At home or at a studio

At an eye clinic. Valeda for dry macular degeneration, about $2,500 to $4,000 a course through retina practices.

At home. A good half-body panel costs $450 to $1,300, about $0.60 to $1.80 a day over 2 years.

TOP PICK

PlatinumLED BioMax 900, a panel with five red and near-infrared wavelengths (630 to 850 nm), with a 3-year warranty. It has the best documented output for the money, about 90 mW/cm² at 6 inches in independent tests. It's the panel Peter Diamandis uses every morning, 20 minutes at a time. $1,299 (about $1.80 a day over 2 years), at platinumtherapylights.com

ALSO GOOD

Hooga HG300, $199, on a budget. hoogahealth.com For your face, the Omnilux Contour Face mask (about $395), with the same wavelengths as the wrinkle trial. omnilux.com For hair, the HairMax LaserComb ($299 to $399 for the Ultima 12), the device in the hair trials. hairmax.com

PlatinumLED BioMax 900

Mito Red Light MitoPRO X

Hooga HG300

Joovv Solo 3.0

Omnilux Contour Face

CurrentBody Series 3

Kiierr 148 Pro

HairMax LaserComb

HairMax LaserBand 82

GOOD TO KNOW

Don’t stare into a panel. Near-infrared is invisible and doesn’t make you blink, so wear the goggles that come with high-output panels, and use LEDs near your eyes, not lasers. Check first if you have retinal disease or take drugs that make you sensitive to light, like doxycycline, isotretinoin, St John’s wort or amiodarone. Don’t shine it over suspicious moles or skin spots.

6 Hyperbaric oxygen

WHAT IT IS	breathing 100% oxygen in a pressurized chamber, at twice sea-level pressure (2.0 ATA) in the aging trials
BEST FOR	brain, fitness, immune aging, recovery from brain injury
HOW OFTEN	the aging protocol is 60 sessions of 90 minutes, 5 a week for 12 weeks
COST	about $200 to $500 a session at a clinic; home chambers from $4,095
WHERE	clinic; mild versions at wellness studios and at home

Over 20% longer telomeres in immune cells.

In healthy adults over 64, after 60 sessions.

Picture: Aviv Clinics

1. Sixty sessions cut senescent T helper cells, a kind of worn-out immune cell, by 37.30% (Hachmo 2020).

2. In a randomized trial of 63 healthy adults over 64, it improved overall thinking, with the biggest gains in attention and processing speed (Hadanny 2020).

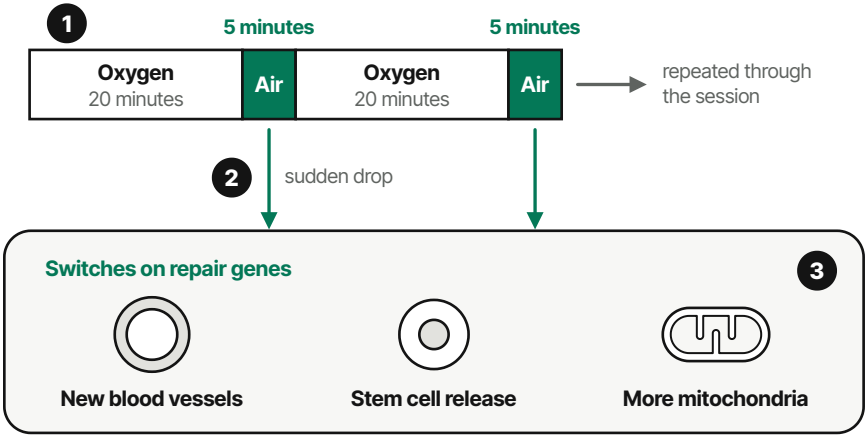
What it does for you

At twice sea-level pressure, your blood plasma carries many times more oxygen than normal. Every 20 minutes you breathe normal air for 5, and your body reads that drop as low oxygen.

That switches on repair: new blood vessels, stem cell release and more mitochondria (Hadanny 2020).

One hyperbaric oxygen session

90 minutes in the trials, with a 5-minute air break every 20 minutes.



1. After every 20 minutes of oxygen, you take off the mask and breathe normal air for 5 minutes.
2. Your body reads that sudden drop as low oxygen.
3. It switches on the same repair genes real low oxygen does: new blood vessels, stem cell release and more mitochondria.

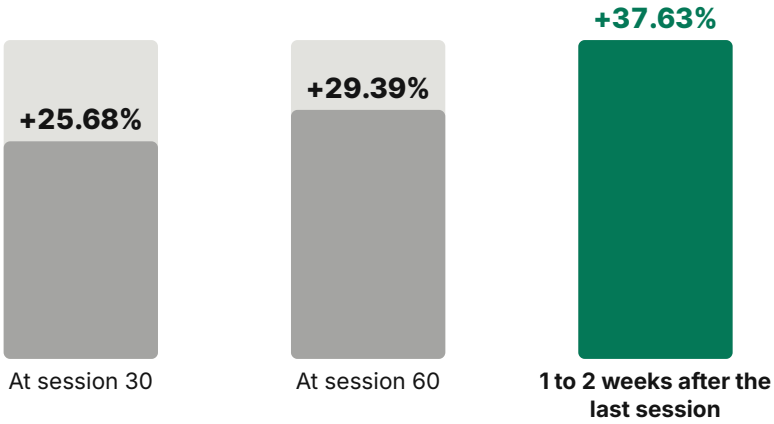
What the science says

In the adults who finished all 60 sessions, telomeres in four kinds of immune cells grew by more than 20%, and by 37.63% in B cells 1 to 2 weeks after (Hachmo 2020).

Change in B cell telomere length with hyperbaric oxygen

In healthy adults aged 64 and up, 60 sessions over 3 months.

Hachmo 2020, Aging



In 63 inactive adults over 64, VO2max rose 1.91 mL/kg/min more than in controls (Hadanny 2024). In people treated 6 to 36 months after a stroke, neurological function and quality of life improved (Efrati 2013).

The protocol

SESSION	90 minutes in the trials; the clinic programs built on them run about 2 hours.
FOR BRAIN INJURY	trials used 40 sessions over 8 weeks.

Bring nothing flammable: no lotions, hair products, phones or synthetic clothing. If you have diabetes, check your blood sugar before and after.

Where to get it

The trial protocol. Two places run it.

In Dubai, The Brain & Performance Centre, A DP World Company, runs the same 12-week, 60-session program. It publishes no prices. braindubai.com

In Israel, the Sagol Center for Hyperbaric Medicine and Research, the team behind the aging trials, takes private patients at Shamir Medical Center near Rishon LeZion. It publishes no prices either. shamir.org

In the US, hard-chamber clinics charge about $200 to $500 a session (about $250 typical), so about $12,000 to $30,000 for 60.

At home, soft chambers start at $4,095 (Newtowne A4-27), or $900 to $1,395 a month to rent; Summit to Sea from $7,995, and the Dive, its most popular model, $9,995. Hard home chambers cost about $18,000 to $80,000, and most use concentrator oxygen, not the 100% oxygen in the trials.

The Sagol Center at Shamir Medical Center, the team behind the aging trials.

Picture: Aviv Clinics

Hard home chambers run about $18,000 to $80,000.

Picture: Macy-Pan

TOP PICK

a hard chamber running the trial protocol: 2.0 ATA, 100% oxygen, 90 minutes with air breaks, 60 sessions. It's the only version with the aging results behind it, including over 20% longer telomeres in immune cells (Hachmo 2020). At a US clinic, 60 sessions cost about $12,000 to $30,000. For the full program with testing, The Brain & Performance Centre in Dubai, at braindubai.com.

Picture: The Brain & Performance Centre

ALSO GOOD

at home, Newtowne Hyperbarics is the pick on price newtownehyperbarics.com, and Summit to Sea for roomier, quieter units summit-to-sea.com. Both run at about 1.3 ATA, a far lower dose than the trials.

Newtowne Hyperbarics

Summit to Sea

GOOD TO KNOW

Ear squeeze is the most common side effect (Hadanny 2016), and long courses often cause near-sightedness that fades within months. Oxygen seizures are rare. Pure oxygen under pressure burns violently: a chamber fire in Troy, Michigan killed a 5-year-old boy in January 2025. A collapsed lung is the one absolute no. Ask a doctor first if you have lung disease, uncontrolled asthma, a blocked sinus, recent ear surgery or seizures, or you're pregnant.

SOURCES **1** Laukkanen 2015, PMID 25705824 · **2** Laukkanen 2017, PMID 27932366 · **3** Lee 2018, PMID 29048215 · **4** Lee 2022, PMID 35785965 · **5** Scoon 2007, PMID 16877041 · **6** Janssen 2016, PMID 27172277 · **7** Garolla 2013, PMID 23411620 · **8** Lincoff 2023, PMID 37952131 · **9** Scirica 2024, PMID 39217559 · **10** Bannister 2014, PMID 25041462 · **11** Perkovic 2024, PMID 38785209 · **12** Sanyal 2025, PMID 40305708 · **13** Aronne 2025, PMID 40353578 · **14** Jastreboff 2026, PMID 42814954 · **15** Kulkarni 2018, PMID 29383869 · **16** Konopka 2019, PMID 30548390 · **17** Walton 2019, PMID 31557380 · **18** Wilding 2022, PMID 35441470 · **19** Harrison 2009, PMID 19587680 · **20** Ivimey-Cook

2025, PMID 40532901 · **21** Moel 2025, PMID 40188830 · **22** Harinath 2025, PMID 39873920 · **23** Mannick 2014, PMID 25540326 · **24** Chung 2019, PMID 31761958 · **25** Bryan Johnson, Blueprint blog, 2025: blueprint.bryanjohnson.com · **26** Šrámek 2000, PMID 10751106 · **27** Buijze 2016, PMID 27631616 · **28** Hanssen 2015, PMID 26147760 · **29** Cain 2025, PMID 39879231 · **30** Yankouskaya 2023, PMID 36829490 · **31** Klemm 2022, PMID 35238767 · **32** Rymaszewska 2020, PMID 32581890 · **33** Rymaszewska 2018, PMID 30059565 · **34** Machado 2016, PMID 26581833 · **35** Søberg 2021, PMID 34755128 · **36** Malta 2021, PMID 33146851 · **37** Shattock 2012, PMID 22547634 · **38** Shinhmar 2021, PMID 34819619 · **39** Powner 2024, PMID 38378043 · **40** Jaffe 2026, PMID 41791029 · **41** Hamblin 2017, PMID 28748217 · **42** Lee 2007, PMID 17566756 · **43** Jimenez 2014, PMID 24474647 · **44** Leal-Junior 2015, PMID 24249354 · **45** Stausholm 2019, PMID 31662383 · **46** Hachmo 2020, PMID 33206062 · **47** Hadanny 2020, PMID 32589613 · **48** Hadanny 2020, PMID 32630465 · **49** Hadanny 2024, PMID 38961397 · **50** Efrati 2013, PMID 23335971 · **51** Hadanny 2016, PMID 27265988

7 IV drips: NAD+ vs NMN, and the other drips

WHAT IT IS	nutrients dripped into a vein: NAD+, NR, vitamin C, glutathione (your cells' main antioxidant), the Myers' cocktail (magnesium, calcium, B vitamins and vitamin C in one drip) and more; NAD+ also comes as a shot you give yourself at home
BEST FOR	raising NAD+, energy, fatigue, vitamin C levels no pill can reach
HOW OFTEN	clinics start with a series (often 4 days in a row for NAD+), then one drip every 2 to 8 weeks
COST	vitamin drips about $99 to $375; NAD+ drips $199 (125 mg) to about $1,400 (1,000 mg); NMN capsules about $60 a month for 1,000 mg a day
WHERE	drip bars, longevity clinics, Restore studios; NAD+ shots at home on a prescription

One NAD+ drip costs about as much as a year or more of NMN capsules at 1,000 mg a day.

At Next Health, 750 mg of NAD+ by drip is $1,000.
A month of NMN at 1,000 mg a day is about $60.

NAD+ by drip, by shot or by capsule

NAD+ is the molecule your cells use to turn food into energy, and the fuel for the enzymes that repair your DNA.

Is a $1,000 drip better than a capsule? Here's how they compare.

WAY TO RAISE NAD+	WHAT YOU GET	COST	WHAT STUDIES SHOW
NMN capsules (NMN by mouth)	1,000 mg of NMN a day (seconds a day)	about $60 a month for 1,000 mg a day	Whole-blood NAD+ about double the placebo group in 14 days (Christen 2026); randomized trials for blood sugar control in muscle, walking speed and sleep (Yoshino 2021; Morifuji 2024)
Tru Niagen (NR by mouth)	300 mg of NR a day (seconds a day)	$49 a month	NAD+ in white blood cells up about 60% at 1,000 mg a day (Martens 2018)
NAD+ drip	125 to 1,000 mg of NAD+ by vein, over 1 to 6 hours	$199 to about $1,400 a drip; $1,000 for 750 mg at Next Health	Plasma NAD+ flat for 2 hours, then up 398% by the end of one 6-hour drip (Grant 2019)
NR drip (Niagen IV)	500 to 1,000 mg of NR by vein, over 30 to 45 minutes	$860 to $2,000 a drip	Clinic records: milder side effects than a NAD+ drip, and done in 37 minutes instead of 97 (Reyna 2026)
NAD+ shots	20 to 80 mg, 1 to 3 times a week, at home, in seconds	From $79 a month	No published human data yet

NAD+ drip

NR drip (Niagen IV)

NAD+ shots

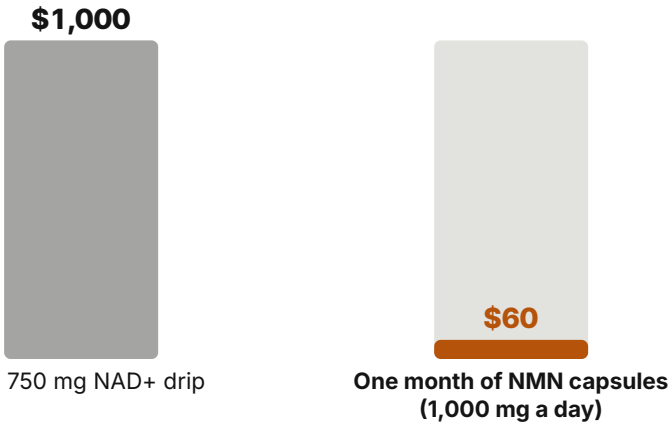
The 398% is in plasma, right after one drip. The doubling is in whole blood, after 2 weeks of capsules.

A 2026 review of 33 human studies found no outcome trial yet of a drip or a shot (Gallagher 2026).

What NAD+ costs

One NAD+ drip costs about as much as a year or more of NMN capsules at 1,000 mg a day.

Next Health NAD+ menu, read 13 Oct 2026; NMN capsules at about $60 a month



What it does for you

Inside your tissues, NAD+ falls with age.

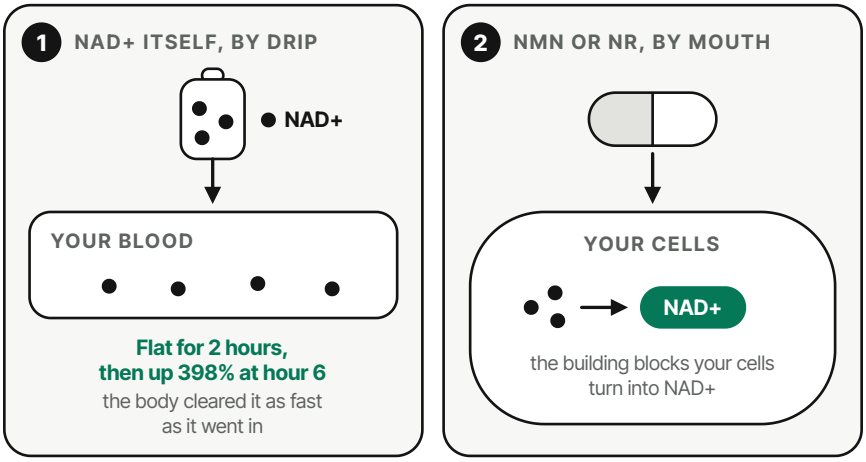
In trials, raising NAD+ with NMN capsules meant muscles more sensitive to insulin in women with prediabetes, faster walking and better sleep (Part 1, chapter 3).

What the science says

The other drips. In modeling, a 50 g vitamin C drip reached blood levels about 60 times higher than the most you can get by mouth (Padayatty 2004). In office workers, a 10 g drip cut fatigue within 2 hours, and it stayed lower the next day (Suh 2012).

NAD+ by drip or by capsule

Inside your tissues, NAD+ falls with age.



1. For 2 hours, blood NAD+ didn't rise at all, because the body cleared it as fast as it went in. By hour 6, it was up 398%.
2. Or you can take NMN or NR, the building blocks your cells turn into NAD+.

The protocol

NMN	1,000 mg a day. Blood NAD+ rises within 2 weeks.
VITAMIN DRIPS	30 to 45 minutes. Before high-dose vitamin C, clinics test you for G6PD deficiency and check your kidneys.

At a clinic or at home

Drip clinics. Next Health has the widest menu (Part 5, chapter 4). next-health.com

The DRIPBaR NAD+ drip

IV Nutrition

Shots at home. AgelessRx prescribes NAD+ shots online, from $79 a month on 3-month plans. agelessrx.com

TOP PICK

NMN by mouth, not the drip. In 14 days, capsules at 1,000 mg a day raised whole-blood NAD+ to about double the placebo group's (Christen 2026), in seconds a day. Randomized trials also back NMN for blood sugar control in muscle, walking speed and sleep (Yoshino 2021; Morifuji 2024). No drip has an outcome trial yet (Gallagher 2026). About $60 a month.

To check your NAD+ before and after, there's an at-home finger-prick test (Part 7, chapter 11).

ALSO GOOD

Tru Niagen, the clear winner if you'd rather take NR. $49.00 for 30 capsules of 300 mg, or $39.20 on subscription, at truniagen.com.

Picture: Niagen Bioscience

GOOD TO KNOW

A fast NAD+ drip brings chest pressure, nausea, cramping and a racing heart; a slow one is easier. Talk to your doctor first if you have heart disease or are pregnant or breastfeeding, and skip drips with kidney or heart failure. Some drip menus add methylene blue. Never take it with SSRIs or other serotonin drugs. In Texas, since September 2025, an elective drip must be ordered by a physician, PA or nurse practitioner.

8 Stem cells and exosomes

WHAT IT IS	a drip or injection of donor stem cells (most often from umbilical cord or bone marrow), or of exosomes, the tiny message packets stem cells release
BEST FOR	walking and strength in frail older adults, inflammation, knees, skin and hair
HOW OFTEN	one or two infusions, 1 to 3 months apart, in the trials; for skin and hair, 3 or 4 sessions a few weeks apart
COST	abroad about $1,400 to $27,000 a course; US exosome drips about $1,500 to $5,000; exosome facials about $500 to $1,500
WHERE	clinics in Panama, Mexico, Costa Rica, Colombia, the Bahamas and Japan; in the US, clinical trials and clinics in Florida and Utah under new state laws; dermatologists for skin and hair

63.4 meters farther in a 6-minute walk.

Frail older adults, 9 months after one IV infusion of donor stem cells, compared with placebo (Ruiz 2026).

Picture: Girl with red hat, Unsplash

1 In mild Alzheimer's, the same cells slowed whole-brain shrinkage by 48.4% over 39 weeks (Rash 2025).

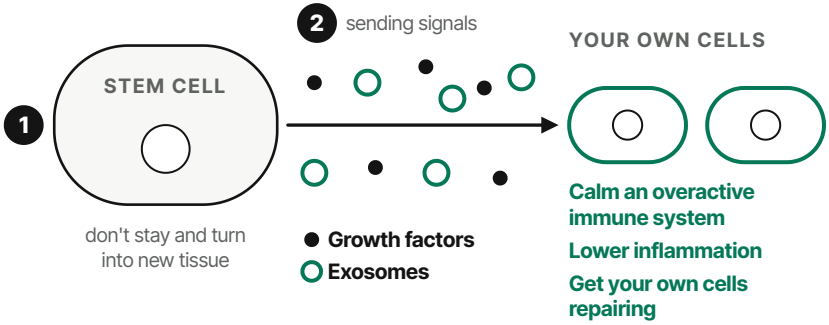
2 Old mice given exosomes from young mouse blood lived 12.42% longer (Chen 2024).

What it does for you

Most stem cells given by IV don't stay and turn into new tissue. They send signals, growth factors and exosomes, that calm an overactive immune system, lower inflammation and get your own cells repairing.

How stem cells and exosomes work

Stem cells are your body's repair crew.



3 **Exosomes** those signals without the cells

1. Most stem cells given by IV don't stay and turn into new tissue.
2. They work by sending signals: growth factors and exosomes that calm an overactive immune system, lower inflammation and get your cells repairing.
3. Exosomes are those signals without the cells.

What the science says

In frail adults in their mid-70s, one infusion improved walking and lowered the inflammation marker TNF-alpha (Tompkins 2017). Umbilical cord cells improved grip strength in a double-blind trial (Zhu 2024).

In 30 people with knee arthritis, one injection of their own bone marrow stem cells took pain from 7 to 2 out of 10 in the low-dose group, and it held

at 4 years (Lamo-Espinosa 2018). In the biggest head-to-head, 480 patients, no stem cell shot beat a steroid shot at 1 year (Mautner 2023).

Picture: Next Health

Exosomes after microneedling beat saline on wrinkles, elasticity and hydration (Park 2023). After four scalp sessions, doctors rated hair growth better in 83% of people (Ablon 2025).

Across 55 randomized trials, IV stem cells brought more fevers, but no rise in infections, clots or deaths (Thompson 2020).

The protocol

IV FOR AGING	the trials used one infusion of 100 million cells, or two infusions of 1 to 1.5 million cells per kilo (about 70 to 105 million for a 70 kg adult), 1 to 3 months apart. Clinics abroad often sell 100 to 300 million cells a visit.
WHEN YOU'LL NOTICE	walking gains at 3 to 9 months, skin at 12 weeks, hair at 4 to 6 months.

SKIN AND HAIR	exosomes go on right after microneedling or laser.
ASK ANY CLINIC	where the cells come from, how many live cells you'll get, how they're tested for sterility, whether the lab is GMP-certified, what license the country gives, and who handles complications.

Where to go

In the US. Donor cells for aging are legal only in clinical trials, which are free: search clinicaltrials.gov.

TOP PICK

Stem Cell Institute in Panama City, Panama. Founded in 2004 by Neil Riordan, with its own GMP-certified lab and more than 55,000 stem cell procedures. Umbilical cord stem cells by IV, with protocols for the frailty of aging, and the clearest published prices: from $26,900 for adults, as a 5-day package with a hotel room and breakfast. cellmedicine.com

Picture: Stem Cell Institute

ALSO GOOD

The Regenerative Medicine Institute in San José, Costa Rica, Peter Diamandis's pick after vetting many clinics. It doesn't post prices. rmihealth.com R3 Stem Cell in Mexico runs from $3,999 (25 million cells) to $12,499 (150 million). r3stemcell.com

Picture: RMI, The Regenerative Medicine Institute

Skin and hair. BENEV's Exosome Regenerative Complex+ is the one from the hair trial. benevbeauty.com

BENEV Exosome Regenerative Complex+

Picture: BENEV

GOOD TO KNOW

Clinics vary a lot. Three women went blind or nearly blind after a Florida clinic injected fat “stem cells” into their eyes (Kuriyan 2017), and in 2018 the CDC reported 12 infections from contaminated cord blood products (Perkins 2018). Diamandis gets a full health screening first, because these growth signals can feed a tumor that’s already there. Skip them if you have one.

9 Plasma exchange

WHAT IT IS	a machine swaps out your plasma, the liquid part of your blood, for saline and albumin, and gives you back your own blood cells; the grown-up version of the “young blood” idea
BEST FOR	biological age, the immune system, the brain, clearing microplastics from the blood
HOW OFTEN	a course of six sessions, about a month apart; some clinics add one every few months after that
COST	$4,500 to $15,000 a session in the US; a six-session course $40,000 to $45,000; Mexico about $1,100 to $1,900 a session
WHERE	a clinic with an apheresis machine, ordered and supervised by a doctor

2.61 years off your biological age.

After three sessions of plasma exchange plus IVIG, compared with a sham.

Picture: R. Henrik Nilsson, CC BY 4.0, via Wikimedia Commons

1 In 347 people with Alzheimer’s, 14 months of plasma exchange meant 52% less decline in daily living skills than a sham; nothing changed in mild Alzheimer’s (Boada 2020).

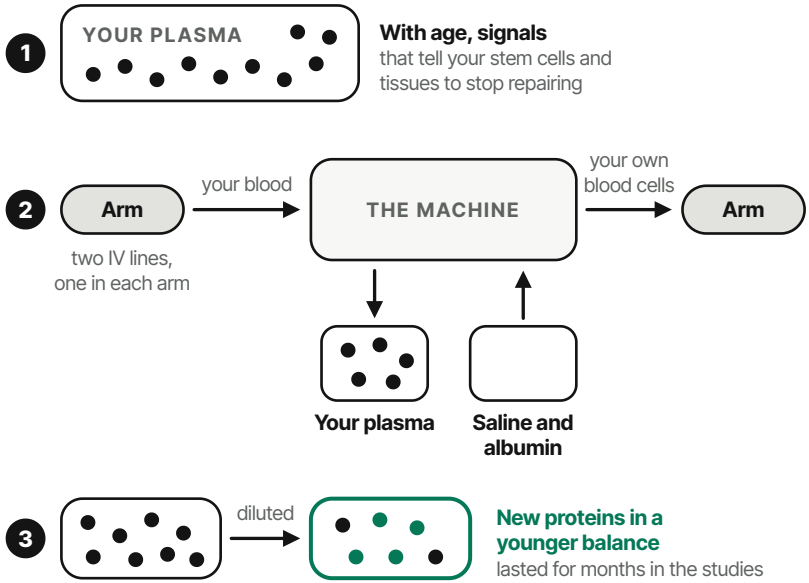
2 Old mice joined to young mice for three months lived 6 to 9% longer (Zhang 2023).

What it does for you

With age, your plasma fills up with signals that tell your stem cells and tissues to stop repairing, like inflammatory proteins. Plasma exchange dilutes them.

How plasma exchange works

Your blood is about 55% plasma.



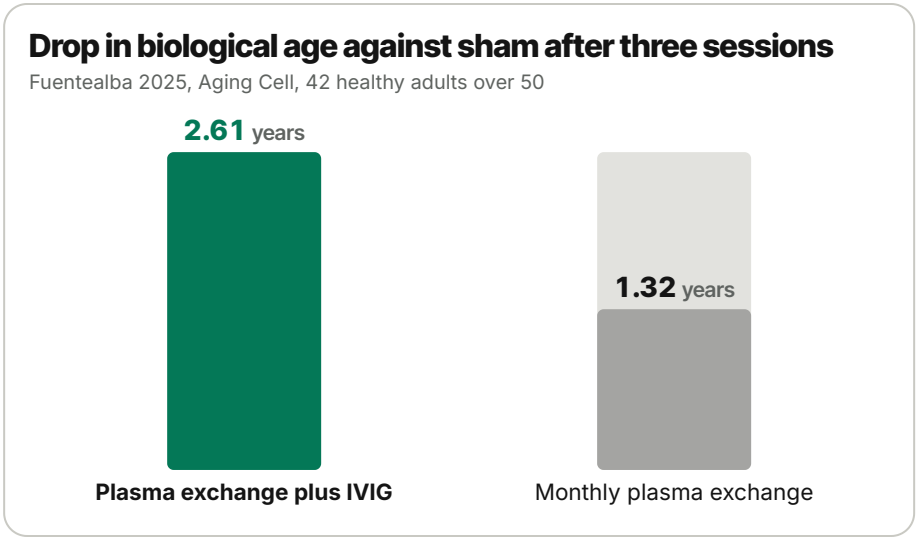
1. With age, your plasma fills up with signals that tell your stem cells and tissues to stop repairing.
2. Two IV lines, one in each arm. The machine swaps out your plasma for saline and albumin, and gives you back your own blood cells.
3. Once the old signals are diluted, your body makes new proteins in a younger balance, and the change lasted for months in the studies.

What the science says

At the Buck Institute, 42 healthy adults over 50 had plasma exchange every two weeks with or without IVIG (pooled antibodies), plasma exchange monthly, or a sham. After three sessions, plasma exchange plus

IVIG lowered biological age by an average of 2.61 years across epigenetic clocks.

The gap faded by the last draw. Across 240 procedures, there was one mild allergic reaction (Fuentealba 2025).



In an earlier pilot, 8 people, most aged 60 to 77, had rounds of plasma exchange, each followed by IVIG. DNA damage and a marker of aging cells fell, and their immune systems shifted toward a younger profile (Kim 2022). In 114 patients, one exchange lowered the microplastics in their blood (Weinstein 2026).

The protocol

- **A session:** two IV lines, one in each arm. The machine removes about 2.5 to 3 liters of plasma, one full plasma volume. It takes 2 to 3 hours. Most people work on a laptop, and most drive themselves home.
- **How many:** in the trial, monthly beat every two weeks, and most of the effect showed after three sessions.
- **Add IVIG** for the bigger effect (2.61 years against 1.32). It's a prescription blood product, priced separately.
- **Before you start:** a doctor's visit and blood tests. Many people test their biological age before and after (see Part 7).

The machine removes about one plasma volume (2.5 to 3 liters) and returns your cells with 5% albumin in saline.

Picture: Terumo BCT

Take your medicines after a session, not before. ACE inhibitor blood pressure pills are usually stopped 24 to 48 hours before.

Picture: Next Health

Where to go

TOP PICK

Global Apheresis in Mill Valley, California, Dr. Dobri Kiprov's clinic, which ran both human aging studies and has done the most plasma exchange for longevity. Each session takes 2 to 3 hours, and it also offers IVIG and biological age tests. 2 sessions for $15,000, 4 for $28,000, 6 for $40,000 (about $6,700 a session on the 6-session plan), with the doctor's consultation included. globalapheresis.com

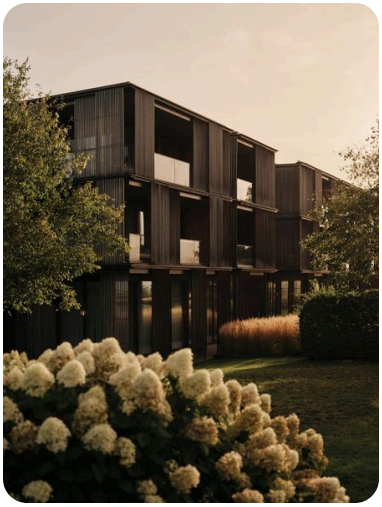
Picture: Global Apheresis

ALSO GOOD

Circulate, which Kiprov co-founded, runs the trial's protocol at about 35 partner clinics around the US, for about $5,000 to $8,000 a session. circulate.health Avinity Health in Scottsdale, Arizona has the clearest price list and the cheapest start: a half-volume session is $5,995, or from $4,500 in a package; a full volume is $10,500, or from $8,000. avinityhealth.com

Picture: Avinity Health

Diamandis had his six sessions at Fountain Life in Orlando, at $8,000 to $12,000 each, and calls it his "longevity oil change."



Lanserhof Tegernsee in Germany offers a version that filters your own plasma.

Picture: Lanserhof

Circulate runs the trial's protocol at about 35 partner clinics around the US.

Picture: Circulate Health

GOOD TO KNOW

In a registry of 50,846 procedures, problems were mild in 2.4%, moderate in 3% and severe in 0.4% (Mörtzell Henriksson 2016). Tingling around the mouth, lightheadedness and tiredness the afternoon after are common, and your antibodies and clotting factors stay low for a few days. Skip it with unstable heart disease, an active infection, blood thinners or an albumin allergy. Insurance doesn't pay when it's for longevity.

10 Peptides

WHAT IT IS	short chains of amino acids that act as signals in your body, mostly copies of signals you make less of with age; most are small shots under the skin
BEST FOR	muscle and fat loss (the growth hormone peptides), injury repair, energy, skin
HOW OFTEN	most are daily or nightly shots for 4 to 8 weeks or longer; epitalon for 10 to 20 days, once or twice a year
COST	about $119 to $259 a month by telehealth; copper peptide serums $32 to $62
WHERE	prescription only, from a doctor, a longevity clinic or telehealth; skin serums over the counter

Sharper thinking in 20 weeks.

In adults aged 55 to 87 on the growth hormone peptide tesamorelin.

Picture: Markus Spiske, Unsplash

1. In 152 adults aged 55 to 87, a nightly shot of tesamorelin for 20 weeks improved executive function, raised IGF-1 117% and cut body fat 7.4%. Half got a placebo (Baker 2012).
2. One shot of CJC-1295 raised growth hormone 2 to 10 fold for 6 days or more (Teichman 2006).
3. Your blood's copper peptide, GHK, falls by more than half with age (Pickart 2012).

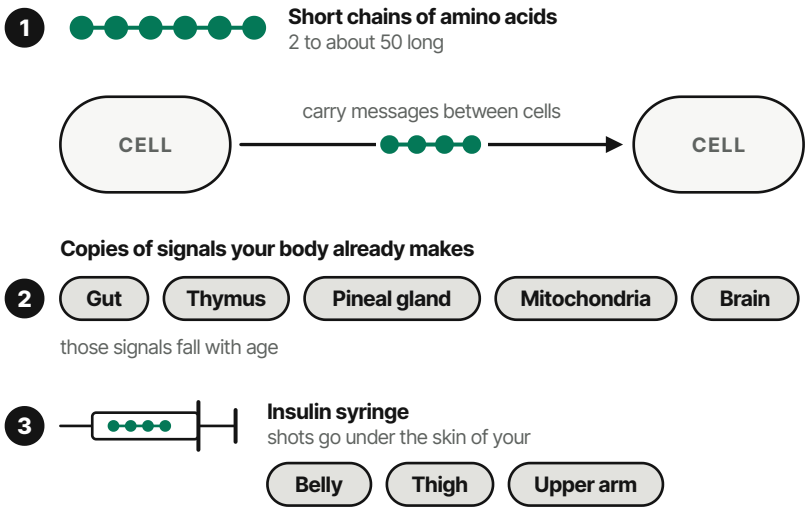
What it does for you

Each one has its own job:

- **Growth hormone releasers** (CJC-1295 with ipamorelin, sermorelin, tesamorelin) get your pituitary to release more of your own growth hormone, in its natural pulses.
- **Repair peptides** (BPC-157, TB-500) for tendons, joints and the gut.
- **Mitochondrial peptides** (MOTS-c, SS-31) for energy and endurance.
- **GHK-Cu** for skin and collagen.
- **Epitalon** for telomeres and sleep.

How peptides work

Short chains of amino acids that act as signals in your body.



1. Peptides are short chains of amino acids, 2 to about 50 long, that carry messages between cells.
2. The longevity peptides are mostly copies of signals your body already makes. Those signals fall with age.
3. Shots go under the skin of your belly, thigh or upper arm, with an insulin syringe.

What the science says

Men aged 64 to 76 who injected sermorelin every night for 6 weeks had more nighttime growth hormone and more endurance in the gym (Vittone 1997). Started in very old mice, MOTS-c raised physical capacity (Reynolds 2021).

In a review of 36 studies, 35 in animals, BPC-157 sped the healing of muscle, tendon, ligament and bone (Vasireddi 2025).

Epitalon lengthened telomeres in human cells (Al-Dulaimi 2025). In cosmetic trials gathered in one review, GHK-Cu tightened loose skin, improved firmness and reduced fine lines and wrinkles (Pickart 2015).

The protocol

These are typical clinic doses.

GROWTH HORMONE RELEASERS	CJC-1295 (no DAC) with ipamorelin, 100 micrograms of each at bedtime, often 5 nights a week; Diamandis takes 200 to 600 micrograms a day. Sermorelin, 200 to 300 micrograms every night. Tesamorelin, 1 to 2 mg a day, the trial doses (Baker 2012; Falutz 2007).
BPC-157	250 to 500 micrograms a day, for 4 to 8 weeks.
EPITALON	5 to 10 mg a day for 10 to 20 days, once or twice a year.
GHK-CU	a 1% serum on your skin every day. Judge it at 8 to 12 weeks.

Get IGF-1 tested before and during any growth hormone peptide. Clinics usually ask for blood work first.

How to get them

US regulators took 12 peptides, including BPC-157, TB-500, MOTS-c, GHK-Cu and epitalon, off their restricted list on 15 April 2026. Many websites sell “research use only” peptide powders with no prescription, and regulators have sent those sellers warning letters.

TOP PICK

Pepti, a telehealth service with a doctor's prescription and flat prices for a 4-week supply, covering the doctor's review, supplies and refrigerated shipping, with no membership: BPC-157 $209, CJC-1295 with ipamorelin $239, sermorelin $229, tesamorelin $249, epitalon $249 and MOTS-c $259. It has the widest longevity menu of the services we checked. The growth hormone peptides need recent blood work. hellopepti.com

Pepti BPC-157

Pepti CJC-1295 with ipamorelin

Pepti sermorelin

Pepti tesa-morelin

Pepti epitalon

Pepti MOTS-c

ALSO GOOD

RxPepsDirect, the lowest prescription price we found: a $39 visit, then BPC-157 at $80 for 15 mg, about $119 a month. rxpepsdirect.com AgelessRx has sermorelin from $99 a month. agelessrx.com Ways2Well starts with a $99 consult. ways2well.com

RxPepsDirect BPC-157

AgelessRx sermorelin

Ways2Well

No prescription needed. Copper peptide serums for your skin: The Ordinary Multi-Peptide + Copper Peptides 1% Serum, $32 theordinary.com, and NIOD Copper Amino Isolate Serum 3 (CAIS3), $62 niod.com.

The Ordinary Multi-Peptide + Copper Peptides 1% Serum

NIOD Copper Amino Isolate Serum 3

GOOD TO KNOW

Expect some redness where you inject, and some water retention with the growth hormone peptides. Those raise IGF-1, so clinics skip them for anyone with a history of tumors, and they skip BPC-157 with an active tumor, since it grows new blood vessels. Skip all of them if you're pregnant or breastfeeding. If you compete, BPC-157, TB-500 and the growth hormone releasers are banned in sport.

11 PEMF

WHAT IT IS	pulsed electromagnetic field therapy: a coil in a mat, pad or headband sends a magnetic field that rises and falls many times a second through your body
BEST FOR	bones, joint and back pain, pain after surgery, muscle, sleep, mood
HOW OFTEN	for muscle, 10 minutes once a week; for knee strength in knee arthritis, 30 minutes 3 times a week for 8 weeks (Lau 2026)
COST	home devices from $359 (a headband) to about $5,700 (full-body systems); clinic sessions about $25 to $100
WHERE	home, clinic, chiropractor, Restore studios; bone stimulators by prescription

Approved in the US to heal broken bones since 1979.

It worked in 76% to 81% of 1,078 fractures and fusions that wouldn't heal (Bassett 1982). That's a prescription stimulator, not a home mat.

Picture: HigherDOSE

1 Spinal fusions succeeded in 92% of people with PEMF, against 65% with a dummy device, in a double-blind trial of 195 people (Mooney 1990).

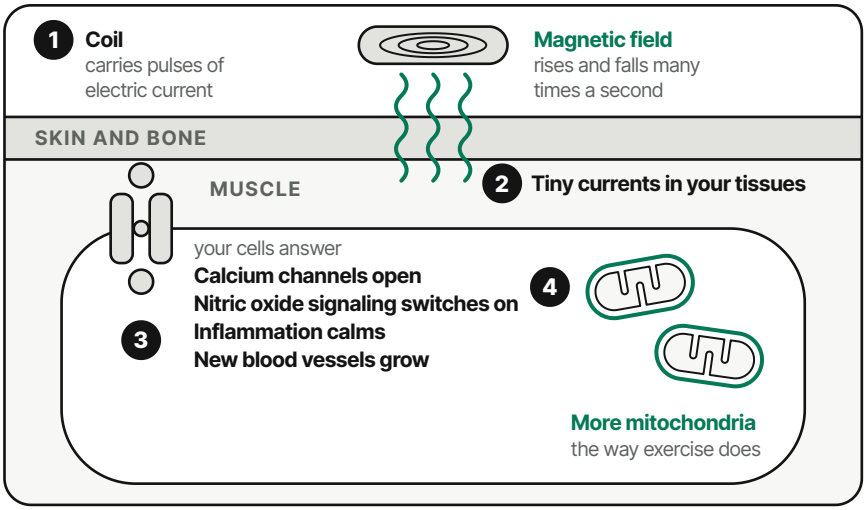
2 Ten minutes a week of a weak field for 12 weeks improved walking, chair-stand times and muscle mass in 101 adults aged 38 to 91 (Venugobal 2023).

What it does for you

The field sets off tiny currents in your tissues. Calcium channels open, inflammation calms and new blood vessels grow (Pilla 2013; Tepper 2004).

How PEMF works

Researchers call it "magnetic mitohormesis."



1. A coil carries pulses of electric current, which make a magnetic field that rises and falls many times a second.
2. The field passes through skin and bone and sets off tiny currents in your tissues.
3. Your cells answer. Calcium channels open, nitric oxide signaling switches on, inflammation calms and new blood vessels grow.
4. In muscle, that brief, mild stress tells cells to build more mitochondria, the way exercise does.

What the science says

Across 15 placebo-controlled trials in arthritis, PEMF had a large effect on pain (Yang 2020), and across 14 trials it cut low back pain more than placebo (Sun 2022). After breast surgery, pain was 57% lower at 1 hour than with a sham device (Rohde 2010).

In 101 people with insomnia, 70% on PEMF had substantial or complete relief in 4 weeks, against 2% on placebo (Pelka 2001).

For sleep and calm, the NeoRhythm headband is $359.
Picture: OmniPEMF

In hard-to-treat depression, PEMF added to medication beat a sham (Martiny 2010). In MS, 8 minutes on a BEMER mat twice a day for 12 weeks cut fatigue scores to 26.8, against 36.7 on placebo (Piatkowski 2009).

The protocol

MUSCLE AND MITOCHONDRIA	1 to 1.5 mT, 10 minutes, once a week, over your thighs. In the lab, more often wasn't better.
AFTER SURGERY	20 minutes every 4 hours, or 15 minutes every 2 hours, for the first days. Five minutes every 20 minutes didn't work (Taylor 2015).

SLEEP	a 4-week course.
FRACTURES AND FUSIONS	a prescription stimulator, worn daily for months.

At home or at a clinic

For bones. Stimulators like the Orthofix Physio-Stim and Cervical-Stim are prescription only, about $3,000 to $5,000, and usually billed to insurance.

Orthofix Physio-Stim

Orthofix Cervical-Stim

TOP PICK

BEMER Evo, the most studied home brand, with trials in MS fatigue and blood flow, and cleared in the US as a muscle stimulator. A full-body mat plus a local pad, for about $5,490. bemergroup.com It's the pick for what its trials tested. For the muscle protocol, FlexPulse reaches the 1 to 1.5 mT (10 to 15 gauss) studied.

Picture: BEMER Group

ALSO GOOD

The HigherDOSE Infrared PEMF Mat adds warm far-infrared heat: $1,295 for the Pro, or $699 for the Go Mat. higherdose.com For sleep and calm, the NeoRhythm headband is $359. omnipemf.com For joints and injuries, FlexPulse is a stronger portable pad at $1,290. flexpulse.com On a budget, the Healthy Line SOFT Mat bundle is $814. healthyline.com

HigherDOSE Infrared PEMF Mat Pro

HigherDOSE Go Mat

NeoRhythm

FlexPulse

Healthy Line SOFT Mat

GOOD TO KNOW

Don't use PEMF with a pacemaker, defibrillator, cochlear implant, nerve stimulator or insulin pump unless the device maker and your doctor say it's fine. Skip it in pregnancy, and with epilepsy, avoid devices for the head. Keep it off a known tumor, active bleeding or an infection. In cells, aminoglycoside antibiotics like gentamicin blocked the muscle effect (Yap 2019). Side effects in trials were mild: warmth, tingling, headache.

SOURCES **1** Grant 2019, PMID 31572171 · **2** Christen 2026, PMID 41540253 · **3** Martens 2018, PMID 29599478 · **4** Reyna 2026, PMID 41704678 · **5** Yoshino 2021, PMID 33888596 · **6** Morifuji 2024, PMID 38789831 · **7** Gallagher 2026, PMID 41655607 · **8** Padayatty 2004, PMID 15068981 · **9** Suh 2012, PMID 22264303 · **10** Ruiz 2026, PMID 41747733 · **11** Rash 2025, PMID 40065171 · **12** Chen 2024, PMID 38627524 · **13** Tompkins 2017, PMID 28977399 · **14** Zhu 2024, PMID 38679727 · **15** Lamo-Espinosa 2018, PMID 30064455 · **16** Mautner 2023, PMID 37919438 · **17** Park 2023, PMID 37377400 · **18** Ablon 2025, PMID 41037530 · **19** Thompson 2020, PMID 31989101 · **20** Kuriyan 2017, PMID 28296617 · **21** Perkins 2018, PMID 30571672 · **22** Fuentealba 2025, PMID 40424097 · **23** Boada 2020, PMID 32715623 · **24** Zhang 2023, PMID 37500973; Harvard Gazette, 8 Aug 2023 · **25** Kim 2022, PMID 35999337 · **26** Weinstein 2026, PMID 42169439 · **27** Mörtzell Henriksson 2016, PMID 26776481 · **28** Baker 2012, PMID 22869065 · **29** Teichman 2006, PMID 16352683 · **30** Pickart 2012, PMID 22666519 · **31** Falutz 2007, PMID 18057338 · **32** Vittone 1997, PMID 9005976 · **33** Reynolds 2021, PMID 33473109 · **34** Vasireddi 2025, PMID 40756949 · **35** Al-Dulaimi 2025, PMID 40908429 · **36** Pickart 2015, PMID 26236730 · **37** Rules and votes: Mintz, 29 Jul 2026; McDermott Will & Schulte, 27 Jul 2026 · **38** Bassett 1982, PMID 7054564 · **39** Mooney 1990, PMID 2218718 · **40** Venugobal 2023, PMID 36934330 · **41** Pilla 2013, PMID 23675615 · **42** Tepper 2004, PMID 15208265 · **43** Yap 2019, PMID 31518158 · **44** Yang 2020, PMID 32251502 · **45** Lau 2026, PMID 41588476 · **46** Sun 2022, PMID 35077249 · **47** Rohde 2010, PMID 20527063 · **48** Pelka 2001, PMID 11697020 · **49** Martiny 2010, PMID 20385376 · **50** Piatkowski 2009, PMID 19422286 · **51** Taylor 2015, PMID 25199571

5

PART 5

11 Longevity Clinics, in the US and Abroad

Where to go to get everything measured, what a visit is like, and what it costs, from $365 a year to a week by Lake Geneva.

A longevity clinic does one thing your regular checkup doesn't. It measures everything, then tells you what to fix first.

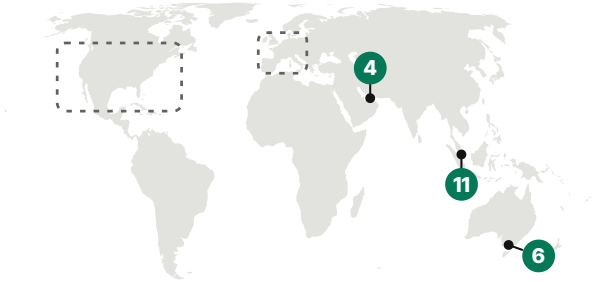
We looked at more than 30 clinics and kept the 11 you can actually book in 2026.

Prices are the clinics' own, read in October 2026, unless we say otherwise. US dollars are at the rate of 12 October 2026.

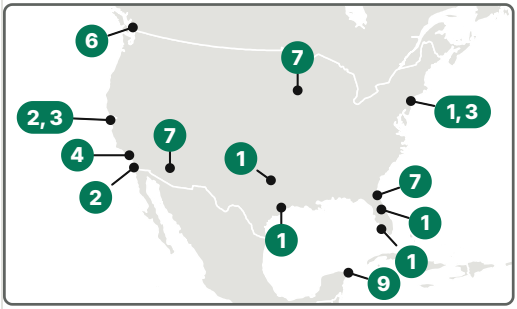
If you want one place to start, Function Health is $365 a year.

11 longevity clinics, in the US and abroad

Each pin is numbered to match the chapters.



US, CANADA AND MEXICO



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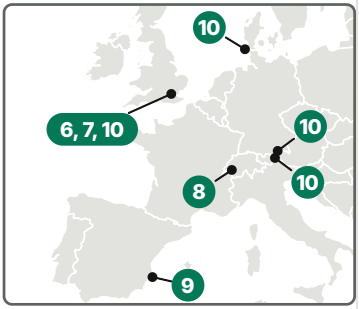


1. **Fountain Life** Dallas, Houston, Orlando, Naples, New York
2. **Human Longevity Inc.** San Diego, South San Francisco
3. **Biograph** San Mateo, New York
4. **Next Health** 18 US clinics and Dubai
5. **Function Health** US-wide, 2,000+ Quest sites or at home
6. **Prenuvo** 28 clinics in the US, Canada, London, Melbourne
7. **Mayo Clinic Executive Health** Rochester, Scottsdale, Jacksonville, London
8. **Clinique La Prairie** Montreux, Switzerland, and more
9. **SHA Wellness Clinic** L'Alfàs del Pi, Spain and Costa Mujeres, Mexico
10. **Lanserhof** Lans, Austria; Tegernsee and Sylt, Germany; London
11. **Chi Longevity** Singapore

11 LONGEVITY CLINICS, IN THE US AND ABROAD

CLINIC	WHERE	STARTS AT	BEST FOR
1. Fountain Life	Dallas, Houston, Orlando, Naples, New York	About $21,500 a year (2025 figure); CORE through employers	Everything measured, plus a care team all year
2. Human Longevity Inc.	San Diego, South San Francisco	$599 (genome); $8,000 a year (Executive Health)	A genome-first checkup in one day
3. Biograph	San Mateo, New York	$7,500 first year	Fitness, heart and brain, Outlive style
4. Next Health	18 US clinics and Dubai	$50 (cryotherapy); $99 a month	Walk-in treatments close to home
5. Function Health	US-wide, 2,000+ Quest sites or at home	$365 a year	The cheapest serious start
6. Prenuvo	28 clinics in the US, Canada, London, Melbourne	$1,199 (30-minute scan); whole body $2,499	A whole-body MRI in about an hour
7. Mayo Clinic Executive Health	Rochester, Scottsdale, Jacksonville, London	US: on inquiry, mostly covered by insurance; London: from about £5,400 (about US$7,100)	A top hospital's full exam
8. Clinique La Prairie	Montreux, Switzerland, and more	CHF 14,900 (about US$17,900) for 7 days	The luxury classic

CLINIC	WHERE	STARTS AT	BEST FOR
9. SHA Wellness Clinic	Spain, Mexico	€1,200 (about US$1,340) or $1,400 a night, room extra	A plant-based longevity stay
10. Lanserhof	Austria, Germany, London	€2,940 (about US$3,280) for 7 nights, room extra	A fasting cure with full medicine
11. Chi Longevity	Singapore	SGD 4,250 (about US$3,320) before tax	Biological age, measured and treated

1 Fountain Life

WHERE	Dallas (The Colony), Houston, Orlando, Naples and New York (White Plains)
WHAT YOU GET	a yearly four-hour “Upload” of scans (whole-body MRI included), genome and blood tests, then a care team and treatments
PRICE	Fountain posts no prices; these are Diamandis’s 2025 figures. APEX about $21,500 a year; CORE, the employer option, $6,500 per employee for companies with 10 or more members; plasma exchange about $8,000 to $12,000 a session
BEST FOR	everything measured, and someone acting on it all year
WEBSITE	fountainlife.com

About 200 GB of data on your body in about four hours.

Picture: Fountain Life

What a visit looks like

It starts with a private call. APEX members get a doctor, a nurse practitioner, a health coach and a dietitian all year.

What makes it special

It finds things. Of Fountain’s first 100 members who seemed healthy, 14.4% had a serious finding that needed action now (company figures, Diamandis 2025).

GOOD TO KNOW

Peter Diamandis (Part 2, expert 6) co-founded Fountain Life with Tony Robbins and others, chairs it and holds shares in it.

2 Human Longevity Inc.

WHERE	San Diego and South San Francisco, California
WHAT YOU GET	your whole genome, whole-body MRI, brain MRI, heart tests and 120+ blood markers in one private day
PRICE	Genomics $599 once; Executive Health $8,000 a year; higher tiers up to $19,000 a year
BEST FOR	a science-first checkup anchored in your genes
WEBSITE	humanlongevity.com

Founded by J. Craig Venter, who led one of the two teams that first sequenced the human genome.

Human Longevity Inc. in San Diego.
Picture: Human Longevity Inc.

What a visit looks like

Start with a free consultation, online or at (844) 838-3322. The higher tiers add a glucose monitor, a heart MRI and quarterly check-ins.

What makes it special

HLI publishes what it finds. In 1,190 adults who had the full workup, 17.3% carried a gene variant that causes or likely causes disease (Hou 2020). Most of the authors worked at HLI.

GOOD TO KNOW

Peter Diamandis co-founded HLI and holds shares in it (Part 2, expert 6).

3 Biograph

WHERE	San Mateo, California, and New York (Financial District)
WHAT YOU GET	one day of 20+ to 30+ tests, then a personal plan and a year of follow-ups
PRICE	Core $7,500 for the first year; Black $15,000 to $17,500 for the first year
BEST FOR	fitness, heart and brain, measured the Outlive way; Biograph doesn't prescribe, so keep your own doctor
WEBSITE	biograph.com

Over 1,000 data points on you, in one day.

Biograph in New York's Financial District.

Picture: Biograph

What a visit looks like

Core runs 20+ tests, from whole-body MRI to VO2 max and grip strength. Black runs 30+, adding a heart artery CT and quarterly reviews with doctors.

What makes it special

It reads the inflammation around your heart arteries with AI, which few clinics offer.

Most heart events happen in people whose arteries don't look blocked. In 40,091 patients, the 81.1% with no blocked arteries still had 66.3% of all heart events (Chan 2024).

GOOD TO KNOW

Peter Attia (Part 2, expert 1) co-founded Biograph. His name is no longer on its site.

4 Next Health

WHERE	18 US clinics in 10 states plus Dubai
WHAT YOU GET	walk-in IVs, cryotherapy, infrared sauna, LED bed, hyperbaric oxygen, hormones, peptides and blood tests under one roof
PRICE	cryotherapy $50 a session; 750 mg NAD+ drip $1,000; memberships $99 to $399 a month
BEST FOR	longevity treatments in person, near home, on a monthly budget
WEBSITE	next-health.com

A $50 cryotherapy session, a hyperbaric chamber and an NAD+ drip, all under one roof.

Picture: Next Health

What a visit looks like

Walk in, book online, or call or text (310) 295-2075. Premier ($299 a month) gives you 2 IVs, 2 vitamin shots and 10 tech credits: cryotherapy costs 1 credit, infrared sauna 2, the LED bed 3 and hyperbaric oxygen 7.

What makes it special

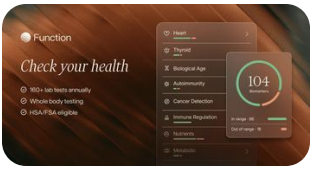
Almost every popular longevity treatment is on one menu, with studies behind it (Part 4, chapters 5, 6 and 7). You'll find it in malls and inside the Four Seasons Resort Maui.

5 Function Health

WHERE	US-wide: 2,000+ Quest Diagnostics sites, or a blood draw at home or work; scans at Ezra imaging centers
WHAT YOU GET	160+ lab tests a year, tested twice a year, with clinicians' notes and a plan in an app
PRICE	$365 a year; full-body MRI $899 for members ($999 without); HSA and FSA eligible
BEST FOR	the cheapest serious start; Function doesn't prescribe, so you need a doctor to act on it
WEBSITE	functionhealth.com

160+ lab tests a year, for $1 a day.

Their own headline: "What could cost you $15,000 is $365."



A sample Function Health report, in the app.
Picture: Function Health

What a visit looks like

It's a test service, not a clinic. Book a 15-minute blood draw at Quest or at home, and results land in the app in 3 to 5 days.

What makes it special

The markers it picks. Most checkups never test Lp(a), an inherited heart risk (Part 7, chapter 3).

GOOD TO KNOW

Mark Hyman, MD (Part 2, expert 7), co-founded Function. In New York and New Jersey, the $365 terms differ.

6 Prenuvo

WHERE	28 clinics: 24 across the US, plus Vancouver, North Vancouver, London and Melbourne
WHAT YOU GET	a whole-body MRI, plus brain, heart and body-composition add-ons; blood panels at US clinics
PRICE	memberships Core $1,199, Comprehensive $2,499, Executive $3,999; Whole Body Scan alone $2,499
BEST FOR	one clear look inside your whole body, at a set price
WEBSITE	prenuvo.com

One scan, about an hour, no radiation and no dye.

Prenuvo says it checks for 500+ conditions.

One scan, about an hour, no radiation and no dye.

Picture: Prenuvo

What a visit looks like

The Focused Scan takes 30 minutes and covers head to mid-thigh. Core ($1,199) is that scan, a blood panel and a review.

What makes it special

Kim Kardashian helped make it famous. In people without symptoms, whole-body MRI found something critical in 13.4% (Kwee 2019; Part 7, chapter 9).

7 Mayo Clinic Executive Health

WHERE	Rochester, Minnesota; Scottsdale, Arizona; Jacksonville, Florida; London (15 Portland Place)
WHAT YOU GET	a head-to-toe exam by your own Mayo internist over 1 to 3 days (typically two), then an action plan
PRICE	US: no public price, an estimate on inquiry; London: from about £5,400 (about US$7,100) at 40 or under to about £12,000 over 45
BEST FOR	busy people 40 and up who trust a top hospital over a boutique clinic
WEBSITE	mayoclinic.org/executive-health

In the US, "the majority of a visit is typically covered by insurance."

Mayo's own words, at the hospital Newsweek has ranked the world's best eight years running.

Mayo Clinic in Rochester, Minnesota.
Picture: Mayo Clinic

What a visit looks like

A typical visit covers heart screening, body composition, full blood work, a mammogram for women and a review of your medications and vaccines.

In the US, you apply online and Mayo invites you. Calendars open three months ahead, so book early.

What makes it special

A 46-year-old executive, George Roberts, nearly skipped his Mayo exam. It found a main heart artery 90% blocked, the “widow maker,” and he had an emergency angioplasty.

8 Clinique La Prairie

WHERE	Montreux, Switzerland, on Lake Geneva (the flagship); Anji, China; Phuket, Thailand (from November 2026); city Longevity Hubs in Beijing, Doha, Dubai and Madrid
WHAT YOU GET	a week’s stay with a doctor all week, a full checkup and the clinic’s own longevity programs, room and meals included
PRICE	Life Reset CHF 14,900 (about US$17,900) for 7 days; Revitalisation CHF 31,800
BEST FOR	Swiss medical luxury from the most storied name in longevity
WEBSITE	cliniquelaprairie.com

Churchill, Pope Pius XII and Marlene Dietrich all came here.

It’s been the world’s most famous longevity clinic since 1931.

Clinique La Prairie in Montreux, on Lake Geneva.
Picture: Clinique La Prairie

What a visit looks like

Life Reset is the entry week. Revitalisation, the flagship, adds advanced lab tests, the clinic's own gene-aging DNA test, and glycan and ceramide screening.

What makes it special

The tests are serious. In 5,117 people, three of the sugar patterns GlycanAge reads on your antibodies tracked closely with age (Krištić 2014).

Revitalisation centers on the clinic's own "CLP Extract." Its contents aren't published, and there's no published trial of it.

GlycanAge reads aging from the sugars on your antibodies.

Picture: GlycanAge

GOOD TO KNOW

Anji is priced in yuan (Life Reset CNY 105,000) and Phuket in baht (Life Reset THB 600,000).

9 SHA Wellness Clinic

WHERE	L'Alfàs del Pi, near Alicante, Spain (since 2008) and Costa Mujeres, north of Cancún, Mexico (since 2024)
WHAT YOU GET	a medically run longevity stay with plant-based meals, diagnostics and treatments like hyperbaric oxygen, NAD+, hypoxia and cryotherapy
PRICE	Advanced Longevity from €1,200 (about US$1,340; Spain) or $1,400 (Mexico) per guest per night, minimum 4 nights, room extra; Rebalance and Energize from €625 or $720 a night
BEST FOR	a longevity week built around food and habits, at about half La Prairie's price
WEBSITE	shawellness.com

Named the World's Best Wellness Clinic at the World Spa Awards 2025.

Formula 1 champion Fernando Alonso is its global ambassador.

SHA in Costa Mujeres, north of Cancún, Mexico.
Picture: SHA Wellness Clinic

What a visit looks like

A 7-night longevity program starts at about €8,400 before the room, with meals, 10+ activities a day and a private transfer. The stem cell program is in Mexico only, price on request.

SHA in L'Alfàs del Pi, near Alicante, Spain, since 2008.
Picture: SHA Wellness Clinic

What makes it special

The food. The SHA Method is plant-based and teaches you to keep eating that way at home.

10 Lanserhof

WHERE	Lans, near Innsbruck, Austria; Tegernsee and Sylt, Germany; a members' medical gym at The Arts Club in London
WHAT YOU GET	a supervised F.X. Mayr gut-rest cure with full diagnostics, plus longevity packages with spermidine infusions, altitude training and cryotherapy
PRICE	for 7 to 8 nights, room extra: Lanserhof Classic €2,940 (about US$3,280); Package Longevity €6,618 (Lans) to €9,189 (Sylt)
BEST FOR	a fasting-style reset for weight, blood pressure, fatty liver, stress or sleep, with longevity testing on top
WEBSITE	lanserhof.com

Two spermidine infusions, four altitude sessions and five cryotherapy sessions in one week.

That's the longevity package at Lans.

What a visit looks like

The minimum is 7 nights, and Lanserhof recommends 14. You eat small, light meals and chew every bite slowly, a real rest for your gut.

What makes it special

Its cure is a close cousin of the Buchinger fast. In 1,422 people on that fast for 4 to 21 days, weight, waist and blood pressure fell (Wilhelmi de Toledo 2019).

Lanserhof Lans, near Innsbruck, Austria.
Picture: Lanserhof (Patrick Graf)

Fasting also raises spermidine, which is why the infusions are there.

11 Chi Longevity

WHERE	Singapore, at Camden Medical Centre and the Four Seasons Hotel; virtual programmes worldwide
WHAT YOU GET	"The Maier Method": map your biology, find what drives your biological age, translate it into a plan, then re-test
PRICE	before 9% GST: Vital Start SGD 4,250 (about US$3,320); Momentum SGD 9,550 (about US$7,460)
BEST FOR	biological age, measured and treated under one of the world's top aging scientists
WEBSITE	chilongevity.com

Your NMN is prescribed only after your NAD is tested.

Then they test again to see if it worked.

Chi Longevity at the Four Seasons Hotel, Singapore.
Picture: Four Seasons Hotels

What a visit looks like

Vital Start covers blood tests, biological age clocks, an NAD+ test, VO2 max and more. A doctor, a dietitian and a health coach turn it into your plan.

What makes it special

It's run under Prof. Andrea Maier (Part 2, expert 16), whose NMN trial found NAD rose by very different amounts from person to person (Kuerec 2024). So Chi tests your NAD first.

Also worth knowing

Aviv Clinics, which ran the hyperbaric oxygen program from the aging trials, closed its only US clinic in April 2026. Two places still run the program, in Israel and Dubai (Part 4, chapter 6).

Cleveland Clinic Executive Health is the hospital alternative to Mayo, in Cleveland, Florida or Toronto. **Buchinger Wilhelmi**, in Germany and Spain, is the fasting classic.

Cleveland Clinic Executive Health

Buchinger Wilhelmi

SOURCES **1** Fountain Life, membership and locations pages · **2** Diamandis P, 2025, Longevity Guidebook, chapters 4 and 5 · **3** Diamandis P, 2025, MetaTrend Longevity report, pp.27 to 33 · **4** Human Longevity Inc., programs and locations pages · **5** Hou 2020, PMID 31980526 · **6** Diamandis P, 2025, MetaTrend Longevity report, pp.29, 34 to 36 · **7** Biograph, memberships, locations and newsroom pages · **8** Chan 2024, PMID 38823406 · **9** Diamandis P, 2025, MetaTrend Longevity report, pp.40 to 42 · **10** Next Health, locations and membership pages · **11** Function Health, home and pricing pages · **12** Prenuvo, pricing, locations and about pages · **13** Kwee 2019, PMID 30932247 · **14** Diamandis P, 2025, MetaTrend Longevity report, pp.43 to 44 · **15** Mayo Clinic Executive Health, program pages and FAQ · **16** Mayo Clinic Healthcare London, Executive Health Assessment brochure and price explainer · **17** Mayo Clinic News Network · **18** Clinique La Prairie, history, programs and destinations pages · **19** Krištić 2014, PMID 24325898 · **20** Diamandis P, 2025, MetaTrend Longevity report, p.53 · **21** SHA Wellness Clinic, program, location and recognition pages · **22** Diamandis P, 2025, MetaTrend Longevity report, p.58 · **23** Lanserhof, resort and program pages · **24** Wilhelmi de Toledo 2019, PMID 30601864 · **25** Chi Longevity, services and programme pages · **26** Kuerec 2024, PMID 38430946 · **27** Aviv Villages LLC closure notice, 3 Apr 2026 · **28** The Brain & Performance Centre · **29** Sagol Center for Hyperbaric Medicine and Research, Shamir Medical Center · **30** Cleveland Clinic Executive Health, employer page · **31** Buchinger Wilhelmi

6

PART 6

The 12 Most Exciting Innovations Coming Soon

What's working in labs and early trials right now, who's behind it, and when you might get it.

Some of what's coming is closer than you'd think.

A pig kidney has kept a man off dialysis for about nine months.

And a pill for senior dogs is one step away from becoming the first drug ever approved for a longer life.

We started with more than 30 candidates and kept the 12 with the biggest results so far and the most realistic path to you.

1 Epigenetic reprogramming: making old cells young again

WHAT IT IS	a short burst of the genes that reset a cell's age, so old cells work like young ones
WHO'S LEADING IT	Life Biosciences, Altos Labs, Retro Biosciences, NewLimit
WHEN YOU MIGHT GET IT	an eye treatment around 2030; whole-body versions in the 2030s

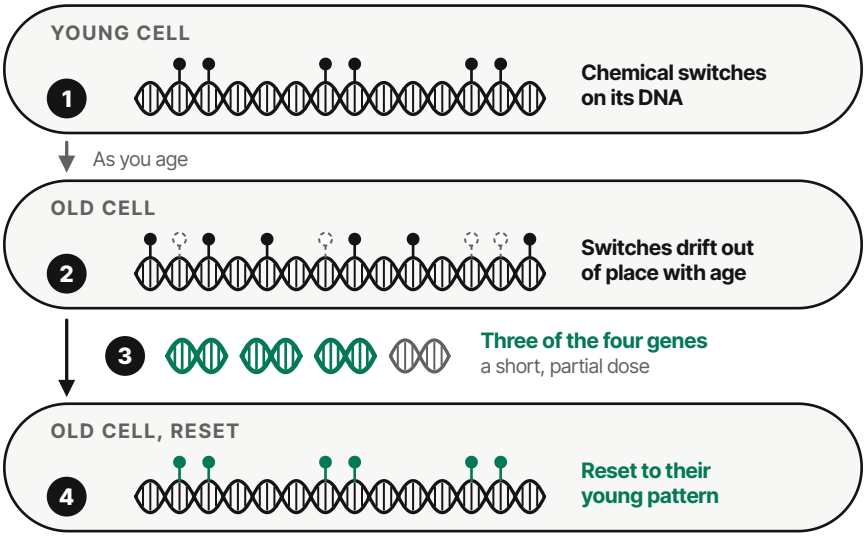
Very old mice more than doubled the rest of their lives.

And in the first human trial, 2 of 3 patients could see more within 8 weeks.

Chemical switches on your DNA make a cell act young or old, and they drift as you age. Shinya Yamanaka won the Nobel Prize for finding four genes that wipe them clean.

How epigenetic reprogramming works

A short burst of the genes that reset a cell's age.



4 That's enough to roll back a cell's age, but not enough to erase what kind of cell it is.

WHAT'S BEEN SHOWN SO FAR.

- Mice aged 124 weeks got three of the four genes. Their median remaining life rose 109% (Macip 2024).
- Life Biosciences' ER-100 is one injection into the eye. In its first human trial (NCT07290244), all 3 glaucoma patients in the first group handled it well, and 2 of the 3 improved on visual field tests by day 56 (Life Biosciences, 8 Oct 2026). It's an open trial with no placebo.

No clinic legally sells reprogramming today, and the "Yamanaka factor" shots offered abroad are unproven.

2 Senolytics: clearing out zombie cells

WHAT IT IS	drugs that clear out “zombie” cells, old cells that stop dividing, refuse to die and leak inflammation
WHO’S LEADING IT	Rubedo Life Sciences, Mayo Clinic, Memorial Sloan Kettering
WHEN YOU MIGHT GET IT	plant senolytics, fisetin and quercetin, now (Part 1, chapters 6 and 15); the first purpose-built senolytic drugs around 2029 to 2030

Clearing zombie cells made mice live up to 27% longer.

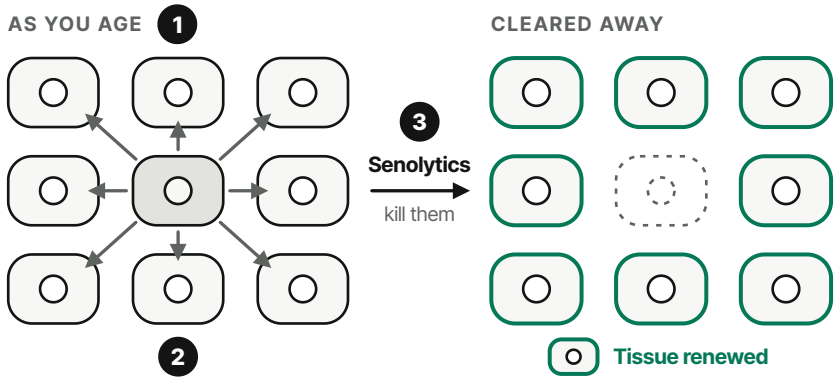
In people, liver scarring improved in 47% vs 7% on placebo.

Dasatinib is a prescription drug (Sprycel).

Picture: Bristol Myers Squibb

How senolytics work

Drugs that clear out "zombie" cells.



1. As you age, damaged cells stop dividing but don't die.
2. These zombie cells pile up in your joints, fat, eyes, liver and blood vessels, and the inflammation they leak spreads the damage.
3. Senolytics kill them.

   Zombie cells take weeks to build back up, so a few days of treatment can be followed by weeks off.

WHAT'S BEEN SHOWN SO FAR.

- In normal mice, clearing zombie cells from middle age raised median lifespan by 24% to 27% (Baker 2016).
- In 31 people with liver scarring from fatty liver disease, scarring improved in 47% on dasatinib plus quercetin (D+Q), vs 7% on placebo (Koning 2026).
- A senolytic skin cream is in its first trial.

How to get in early. Some longevity doctors prescribe D+Q for a few days a month, with blood tests.

3 Gene therapies: one shot for muscle and memory

WHAT IT IS	one shot that gives your own cells the recipe for a helpful protein: follistatin for muscle, klotho for the brain
WHO'S LEADING IT	Minicircle, BioViva, Rejuvenate Bio, Klotho Neurosciences
WHEN YOU MIGHT GET IT	follistatin now, abroad; approved versions for named diseases in the 2030s

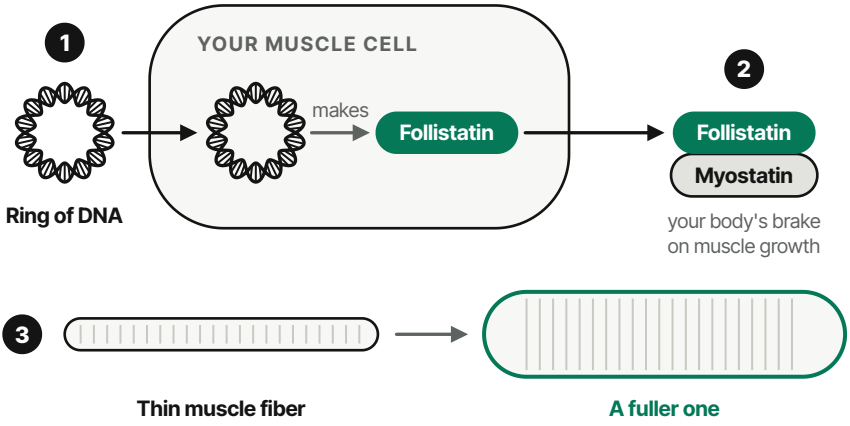
Mice that made extra klotho lived about 19% to 31% longer (Kurosu 2005).

One shot of it sharpened memory in old monkeys (Castner 2023).

Follistatin blocks myostatin, your body's brake on muscle. Klotho is a hormone that falls with age.

How follistatin gene therapy works

One treatment that gives your own cells the recipe for a helpful protein.



1. Gene therapy gives your cells the recipe to make a protein themselves, carried in by a ring of DNA injected into muscle.
2. Follistatin blocks myostatin, your body's brake on muscle growth.
3. Losing muscle is one of the strongest predictors of frailty after 50.

WHAT'S BEEN SHOWN SO FAR.

- Minicircle reports that 43 healthy adults gained about 0.9 kg of lean mass 3 months after one follistatin dose, in its own study with no placebo group.

How to get in early. Minicircle's follistatin is about $25,000 a dose, plus travel, at partner clinics in Roatán, Honduras, and Dubai. It isn't legal to sell in the US.

4 The first drugs aimed at aging itself

WHAT IT IS	drugs tested for a longer, healthier life rather than one disease, in dogs first
WHO'S LEADING IT	Loyal, the Dog Aging Project
WHEN YOU MIGHT GET IT	LOY-002 for your dog as soon as 2026 to 2027; rapamycin by prescription now (Part 4, chapter 3)

The first drug ever approved for a longer life could be for your dog.

US regulators have already agreed it can reasonably be expected to work.

A first approval would open the door for human drugs that target aging itself.

The first drug ever approved for a longer life could be for your dog.

Picture: Loyal

One section away from conditional approval

No regulator has ever approved a drug to extend life.

THE THREE SECTIONS LOY-002 NEEDS

✓	**Effectiveness** can reasonably be expected to extend a dog's healthy life	**Accepted** February 2025
✓	**Safety**	**Accepted** 13 January 2026
○	**Manufacturing**	**Under review**

↓

Conditional approval
LOY-002 for your dog as soon as 2026 to 2027

Source: Loyal, loyal.com, and Business Wire, 13 January 2026.

WHAT'S BEEN SHOWN SO FAR.

- LOY-002 is a daily beef-flavored pill for senior dogs that mimics eating less. US regulators agreed in February 2025 that it can reasonably be expected to work, and accepted its safety section on 13 January 2026. Its manufacturing section, the last one it needs for conditional approval, is under review.
- The Dog Aging Project's TRIAD trial is testing rapamycin in 580 older dogs. Rapamycin's placebo-controlled trial in people is in Part 4, chapter 3.

How to get in early. Sign up for updates at loyal.com. Dog owners can join the Dog Aging Project.

5 GLP-1 drugs: the next wave goes far beyond weight loss

WHAT IT IS	drugs that copy GLP-1, a hormone your gut releases after you eat; made for diabetes and weight, they now protect the heart, kidneys and liver
WHO'S LEADING IT	Novo Nordisk, Eli Lilly, Amgen
WHEN YOU MIGHT GET IT	today by prescription (Part 4, chapter 2); retatrutide around 2026 to 2027

The next drug in line, retatrutide, took off 25.0% of body weight in 80 weeks.

Against 3.9% on placebo, in a trial of 2,339 adults published in September 2026 (Jastreboff 2026).

WHAT'S BEEN SHOWN SO FAR.

- These drugs already do more than take off weight. Weekly semaglutide cut heart attacks, strokes and heart deaths by 20% in people with heart disease and overweight but no diabetes (6.5% vs 8.0%; Lincoff 2023; Part 4, chapter 2).
- Today's drugs, semaglutide and tirzepatide, are weekly shots, and daily pills are here too (Part 4, chapter 2).

Wegovy (semaglutide)

Zepbound (tirzepatide)

Heart attacks, strokes or heart deaths over about 40 months

In 17,604 people with heart disease and overweight but no diabetes.

Lincoff 2023, N Engl J Med (SELECT)

6 One shot to lower cholesterol for life

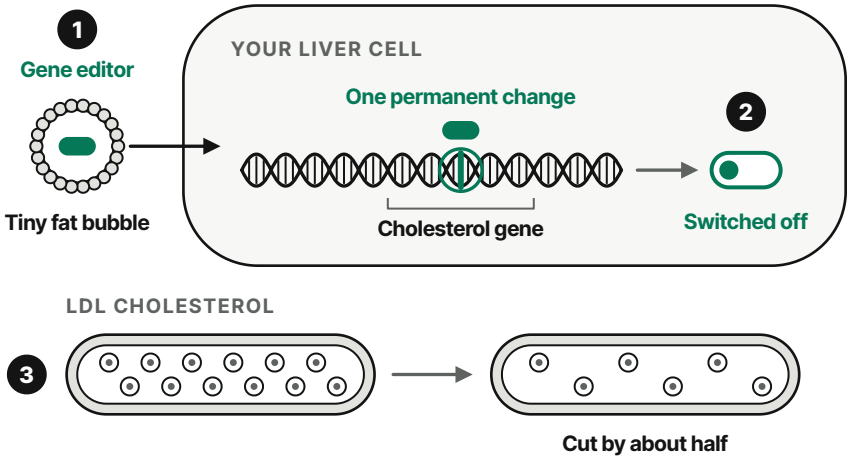
WHAT IT IS	one infusion that switches off a cholesterol gene for good, plus the first drugs for Lp(a), an inherited heart risk
WHO'S LEADING IT	CRISPR Therapeutics, Verve (now part of Eli Lilly), Amgen, Silence Therapeutics
WHEN YOU MIGHT GET IT	Lp(a) drugs in the late 2020s; gene editing about 2029 to 2031, first for families with inherited high cholesterol

One infusion cut LDL cholesterol by about half.

In the first people treated.

How one-shot gene editing works

LDL cholesterol is the biggest lever against heart disease, the top killer.



1. A tiny fat bubble (a lipid nanoparticle) carries a gene editor into a liver cell.
2. One infusion permanently switches off a cholesterol gene.
3. One infusion cut LDL cholesterol by about half in the first people treated.

WHAT'S BEEN SHOWN SO FAR.

- In a 15-person trial, one infusion of CTX310 cut LDL by about half at the highest dose (Laffin 2025; Cleveland Clinic, 8 November 2025). One person died suddenly 179 days after the lowest dose.
- Olpasiran, a shot given twice a year, lowered Lp(a) by more than 95% at the higher doses in 281 people with heart disease (O'Donoghue 2022). Lp(a) drugs are now in large heart-attack trials.

How to get in early. About 1 in 5 people carry high Lp(a), so get yours measured once in your life. It's a simple blood test, often under $50 cash.

7 AI-designed drugs: years of work in months

WHAT IT IS	AI that picks the target and designs the molecule, so new drugs for the diseases of aging arrive years sooner
WHO'S LEADING IT	Insilico Medicine, Isomorphic Labs, Recursion, BioAge Labs
WHEN YOU MIGHT GET IT	rentosertib around 2029 to 2030 if larger trials succeed

The first drug found and designed by AI improved lung function in a placebo-controlled trial.

And the patients' aging clocks read younger (Zhavoronkov 2026).

AI picks the target and invents molecules that fit it.

Picture: National Institute of Allergy and Infectious Diseases, Unsplash

WHAT'S BEEN SHOWN SO FAR.

- Insilico's AI found a new target for lung scarring, a disease of aging, and designed rentosertib to hit it. The company says that took about 18 months, vs 4 to 6 years usually.
- In 71 patients over 12 weeks, lung capacity rose 98.4 mL on 60 mg a day, vs a 20.3 mL drop on placebo (Xu 2025).

Change in lung capacity (FVC) after 12 weeks

Xu 2025, Nat Med, 71 patients with lung scarring

Placebo	Rentosertib, 60 mg a day
-20.3 mL	+98.4 mL

8 New organs on demand

WHAT IT IS	gene-edited pig organs the human body accepts, and human organs frozen like glass to transplant later
WHO'S LEADING IT	eGenesis, United Therapeutics, the University of Minnesota, Until Labs
WHEN YOU MIGHT GET IT	pig kidneys around 2029 to 2032; banked human organs in the 2030s

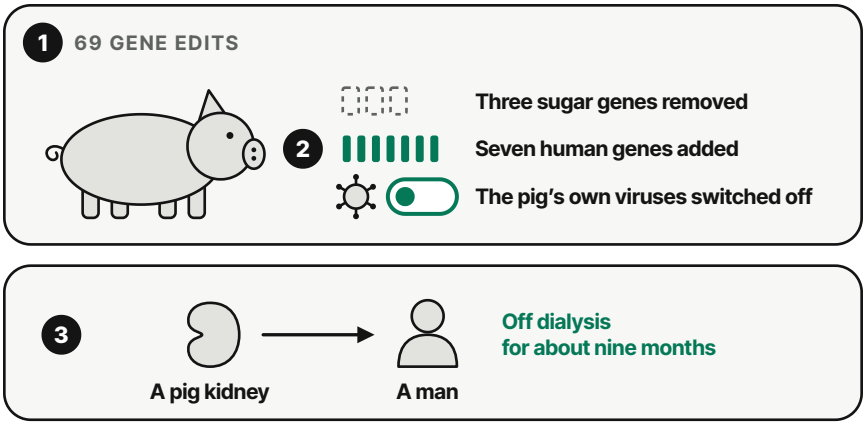
A pig kidney kept a man off dialysis for about nine months.

Now the formal trials have started.

More than 100,000 Americans are waiting for a transplant, and about 17 die each day waiting.

New organs on demand

Gene-edited pig organs the human body accepts.



1. eGenesis's donor pigs carry 69 gene edits.
2. Three sugar genes removed so the immune system doesn't see "pig", seven human genes added, and the pig's own viruses switched off.
3. A pig kidney kept a man off dialysis for about nine months.

WHAT'S BEEN SHOWN SO FAR.

- eGenesis's donor pigs carry 69 gene edits: three sugar genes removed so the immune system doesn't see "pig", seven human genes added, and the pig's own viruses switched off (Anand 2023).
- The man is Tim Andrews, who got one of its kidneys at Massachusetts General Hospital in January 2025. Trials are now enrolling dialysis patients in the US.
- Frozen-and-rewarmed kidneys work in rats (Han 2023).

9 Plasma exchange and young blood factors

WHAT IT IS	swapping out old plasma, and turning the “youth factors” in young blood into drugs
WHO’S LEADING IT	the Buck Institute, Circulate Health, the Conboy lab at UC Berkeley, Grifols and Alkahest
WHEN YOU MIGHT GET IT	plasma exchange today (Part 4, chapter 9); youth-factor drugs around 2030

One swap of old plasma rejuvenated old mice as well as young blood did.

In people, 15 aging clocks read younger.

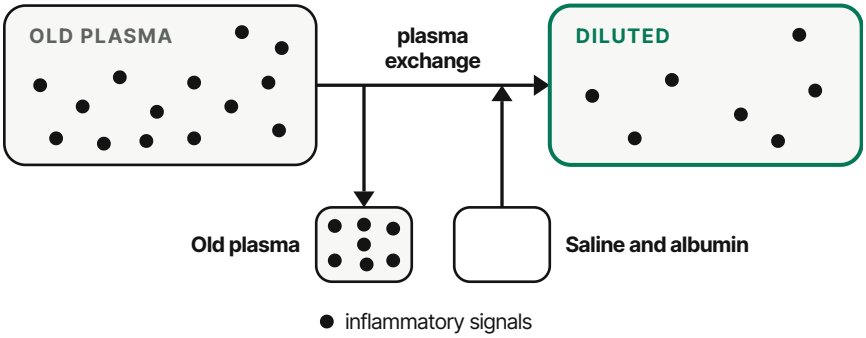
The Buck Institute. Its CEO, Eric Verdin, co-founded Circulate Health.

Picture: Buck Institute for Research on Aging

With age, your plasma fills up with inflammatory signals that tell your stem cells to stop repairing.

Plasma exchange

Plasma, the liquid part of your blood, carries thousands of proteins.



1. Today you can dilute them with plasma exchange, a 2 to 3 hour session at a clinic.
2. In 42 adults over 50, plasma exchange made **15 aging clocks read younger** than a sham, though the gap had faded by the last blood draw.

WHAT'S BEEN SHOWN SO FAR.

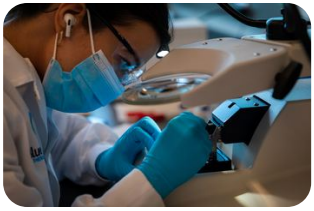
- You don't need young blood. Replacing half the plasma of old mice with saline and albumin, once, worked as well on muscle, liver and brain (Mehdipour 2020).
- In people, the younger clock readings faded by the last blood draw (Fuentealba 2025; Part 4, chapter 9).
- PF4, released by young platelets, restored memory in old mice (Schroer 2023). Youth-factor drugs like it are in early studies.
- Infusing young plasma hasn't shown a benefit in people, and US regulators warned against paying for it in 2019.

10 Stem cells that replace what age wears out

WHAT IT IS	replacement cells grown from stem cells, and donor stem cells that calm inflammation
WHO'S LEADING IT	Sumitomo Pharma, Vertex, BlueRock (Bayer), Cuorips, Longeveron
WHEN YOU MIGHT GET IT	donor stem cells at clinics now (Part 4, chapter 8); diabetes cells possibly 2027 to 2028; Parkinson's cells in the US around 2029 to 2031

10 of 12 people with type 1 diabetes stopped their insulin shots.

One year after one infusion of Vertex's lab-grown insulin cells (Reichman 2025).

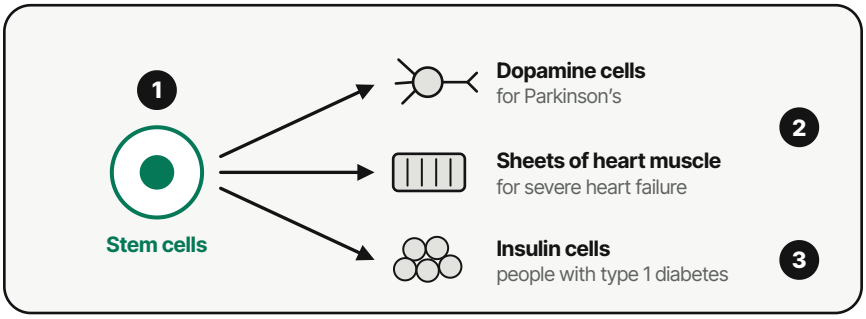


A BlueRock lab. Its cells have been in a phase 3 trial since 2025.
Picture: BlueRock Therapeutics

Yamanaka's discovery (Part 6, chapter 1) lets labs turn a skin or blood cell into an "iPS" stem cell that can become almost any cell.

Stem cells that replace what age wears out

Replacement cells grown from stem cells.



1. Japan approved the first medicines made from reprogrammed (iPS) stem cells in March 2026.
2. Amchepry, dopamine cells for Parkinson's, and ReHeart, sheets of lab-grown heart muscle for severe heart failure.
3. Vertex's lab-grown islet cells freed 10 of 12 people with type 1 diabetes from insulin at one year.

WHAT'S BEEN SHOWN SO FAR.

- The people who stopped insulin do take anti-rejection drugs.
- On 6 March 2026, Japan approved the first medicines made from reprogrammed (iPS) stem cells: dopamine cells for Parkinson's (Sumitomo Pharma's Amchepry) and sheets of heart muscle for severe heart failure (Cuorips' ReHeart). Both approvals are conditional.
- BlueRock's Parkinson's cells are in a phase 3 trial (NCT06944522).

11 Aging clocks that show how old each organ is

WHAT IT IS	blood tests that read how fast each organ is aging
WHO'S LEADING IT	Stanford (Tony Wyss-Coray), TruDiagnostic, GRAIL
WHEN YOU MIGHT GET IT	epigenetic age tests today, about $249 to $499 (Part 7, chapter 1); organ-age reports around 2026 to 2028

Nearly 1 in 5 adults has one organ aging much faster than the rest.

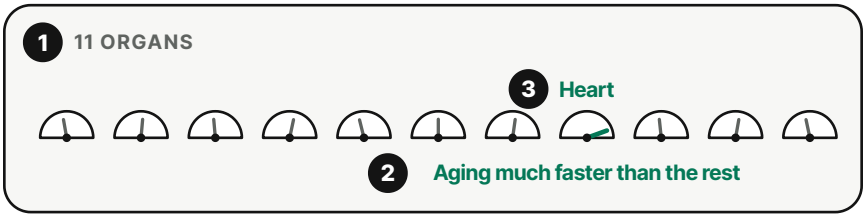
In a Stanford study, a blood test spotted which one.

GRAIL's Galleri blood test kit.
Picture: GRAIL

If you know your heart or kidneys are running old, you can act years before routine labs show a problem.

Aging clocks that show how old each organ is

Blood tests that read how fast you're aging, organ by organ.



1. Stanford researchers sorted thousands of blood proteins by the organ that made them, giving ages for 11 organs in 5,676 adults.
2. Nearly 20% had one organ aging much faster than the rest.
3. A fast-aging heart meant a 250% higher risk of heart failure.

WHAT'S BEEN SHOWN SO FAR.

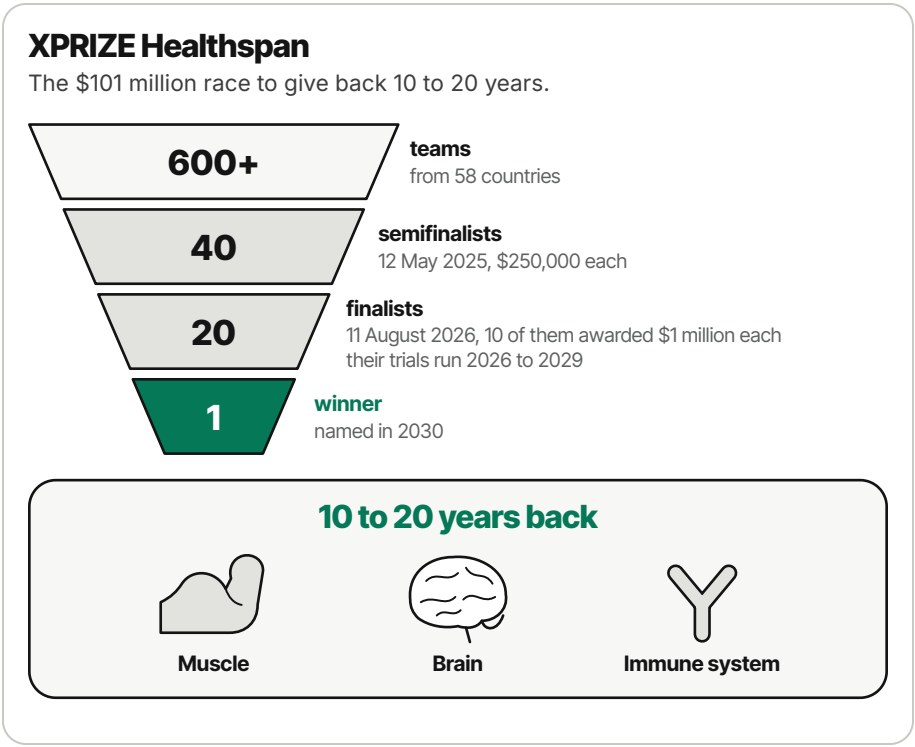
- Stanford researchers read the ages of 11 organs from blood proteins in 5,676 adults. A fast-aging heart meant a 250% higher risk of heart failure (Oh 2023).
- In 44,498 people followed for 17 years, a youthful brain plus a youthful immune system went with 56% lower risk of death (Oh 2025).

12 XPRIZE Healthspan: the $101 million race to give back 10 to 20 years

WHAT IT IS	a prize for the first team to prove that a treatment restores muscle, brain and immune function in older adults by at least 10 years
WHO'S LEADING IT	the XPRIZE Foundation, founded by Peter Diamandis; co-sponsored by the Hevolution Foundation and Lululemon founder Chip Wilson
WHEN YOU MIGHT GET IT	the winner is named in 2030

About $61 million for the first team to give people 10 years back.

More than 600 teams from 58 countries are trying.



WHAT'S BEEN SHOWN SO FAR.

- The grand prize grows with the result: $71 million for 15 years back, and up to $81 million for 20.
- The top 40 teams won $250,000 each in May 2025. On 11 August 2026, 20 finalists were named, and ten of them won $1 million each, including Longeveron, Minicircle, AgelessRx, Mount Sinai and Johns Hopkins.

How to get in early. Finalists will recruit adults aged 50 to 90 through 2029 (xprize.org).

SOURCES **1** Macip 2024, PMID 38381405 · **2** ClinicalTrials.gov NCT07290244 · **3** Life Biosciences, first-in-human ER-100 data, 8 October 2026 · **4** Baker 2016, PMID 26840489 · **5** Koning 2026, PMID 42823536 · **6** Castner 2023, PMID 37400721 · **7** Kurosu 2005, PMID 16123266 · **8** Minicircle · **9** Loyal, Business Wire, 13 January 2026 · **10** Lincoff 2023, PMID 37952131 · **11** Jastreboff 2026, PMID 42814954 · **12** Laffin 2025, PMID 41211945; Cleveland Clinic newsroom, 8 November 2025 · **13** O'Donoghue 2022, PMID 36342163 · **14** Eli Lilly, 17 June 2025 · **15** Xu 2025, PMID 40461817 · **16** Zhavoronkov 2026, PMID 42706338 · **17** Anand 2023, PMID 37821590 · **18** Han 2023, PMID 37296144 · **19** United Therapeutics, release of 3 November 2025 · **20** Mehdipour 2020, PMID 32474458 · **21** Fuentealba 2025, PMID 40424097 · **22** Schroer 2023, PMID 37587343 · **23** Sumitomo Pharma, release of 6 March 2026 · **24** Reichman 2025, PMID 40544428 · **25** ClinicalTrials.gov NCT06944522 · **26** Oh 2023, PMID 38057571 · **27** Oh 2025, PMID 40634782 · **28** XPRIZE, 11 August 2026 · **29** Longevity.Technology, August 2026 · **30** Diamandis, MetaTrend report (v1.5), p. 88

7

PART 7

Tests That Show How Fast You're Aging

The 11 tests that tell you how fast you're really aging, what a good number looks like, and what moves it.

Everything else in this book is something you do. This part shows you whether it's working.

Most tests are cheap. Some are free and take five minutes on your living room floor.

Test once to get your baseline. Pick one or two things from this book that move your weakest number. Then test again in 3 to 4 months, at the same lab, with the same test.

Your scorecard

Here's all of Part 7 on one page.

TEST	GOOD NUMBER	CHAPTER THAT MOVES IT	YOUR NUMBER NOW	AT 4 MONTHS
Biological age (DunedinPACE)	under 1.0 (retest at 6 to 12 months)	Part 1, chapter 5 (Omega-3)		
VO2 max	top quarter for your age (retest at 6 to 12 months)	Part 7, chapter 2; Part 4, chapter 1 (Sauna)		
ApoB	under 90 mg/dL	Part 1, chapter 17 (Berberine)		
Lp(a)	under 30 mg/dL (75 nmol/L). Once is enough.	set by your genes		
HbA1c	about 5.0 to 5.4%	Part 1, chapter 17 (Berberine)		
Fasting insulin	about 2 to 6 µU/mL	Part 4, chapter 2 (GLP-1 drugs and metformin)		
hs-CRP	under 1.0 mg/L	Part 1, chapter 10 (Taurine)		
One-leg stand	10 seconds	Part 7, chapter 6		

TEST	GOOD NUMBER	CHAPTER THAT MOVES IT	YOUR NUMBER NOW	AT 4 MONTHS
Floor test	8 or more out of 10	Part 1, chapter 8 (Creatine)		
Walking speed	1.0 meter a second or faster	Part 1, chapter 12 (GlyNAC)		
Muscle (DEXA)	ALMI above about 7.0 kg/m² (men), 5.5 (women). Retest at 6 to 12 months.	Part 1, chapter 8 (Creatine)		
Visceral fat (DEXA)	under about 100 cm² (retest at 6 to 12 months)	Part 4, chapter 2 (GLP-1 drugs)		
Bone (DEXA)	T-score -1.0 or higher (retest in 2 years)	Part 1, chapter 7 (Vitamin D3 and K2)		
Coronary calcium	0 (if 0, retest in about 5 years)	Part 7, chapters 3 and 5		
Omega-3 Index	8% or higher	Part 1, chapter 5 (Omega-3)		
NAD+	40 to 100 µM	Part 1, chapter 3 (NMN)		

Whole-body MRI (from $999) and Galleri ($699) give you a finding, not a number to move: Part 7, chapters 9 and 10.

Starting a supplement? Fill in your numbers before you start and again at 4 months.

1 Biological age test (epigenetic clock)

WHAT IT MEASURES	how fast your body is aging, read from chemical tags on your DNA
GOOD NUMBER	a DunedinPACE under 1.0, and a biological age below your real age
COST	$249 to $499 for a home kit
WHERE TO GET IT	TruDiagnostic TruAge ($499), the kit that reports DunedinPACE; Tally Health ($249) and Elysium Health ($299) use their own clocks, not DunedinPACE
HOW OFTEN	once to start, then every 6 to 12 months while you're changing something

DunedinPACE tells you how many years you age in one year.

1.0 is average. 0.8 means you're aging 20% slower. Bryan Johnson reports a best of 0.48 (Part 2, chapter 5).

A sample TruDiagnostic report.

Picture: TruDiagnostic

1 In 2,264 Framingham adults, a faster DunedinPACE meant a higher risk of dementia: 27% higher for each step up in pace (Sugden 2022).

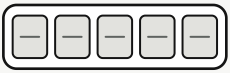
Why it matters

Older clocks, like GrimAge, give you an age. DunedinPACE gives you a speed.

Biological age test

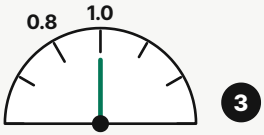
These tests tell you how fast your body is aging.

1 OLDER CLOCKS



An age
like GrimAge

2 DUNEDINPACE



A speed
1.0 is average

1. Older clocks, like GrimAge, give you an age.
2. DunedinPACE gives you a speed.
3. DunedinPACE tells you how many years you age in one year. 1.0 is average. 0.8 means you're aging 20% slower.

How to get it

TruAge is a finger prick, Tally Health a cheek swab and Elysium's Index a saliva kit. Insurance covers none of them.

Tally Health
$249 cheek swab

Elysium Index
$299 saliva kit

TOP PICK

TruDiagnostic TruAge, $499. It's the kit that reports DunedinPACE, the good number above.

Picture: TruDiagnostic

What to do with your result

DunedinPACE over 1.0? Change one or two things and retest with the same company.

Taking 1 g of omega-3 a day for 3 years slowed three aging clocks in adults 70 and over (Bischoff-Ferrari 2025). See Part 1, chapter 5.

2 VO2 max

WHAT IT MEASURES	the most oxygen your body can use at full effort
GOOD NUMBER	the higher the better; aim for the top quarter for your age. In 750,302 US veterans, the risk of dying kept falling up to about 49 mL/kg/min (14 METs), in people in their 70s and 80s too (Kokkinos 2022)
COST	free on a smartwatch (Part 3, chapter 2); about $100 to $600 for a lab test
WHERE TO GET IT	a university or sports lab, a gym with a PNOE machine, a hospital, or your watch
HOW OFTEN	a lab test once to start, then every 6 to 12 months

The least fit were 5 times as likely to die as the fittest.

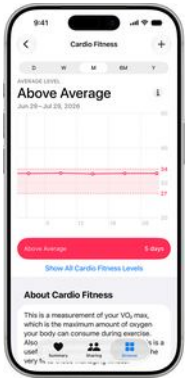
The bottom quarter, against the top 2.3%, in 122,007 people (Mandsager 2018).

A lab test has you run or ride with a mask on for 8 to 12 minutes.

Picture: PNOE

How to get it

A lab test (a CPET) has you run or ride with a mask on for 8 to 12 minutes. It costs about $100 to $300 at a university lab and $300 to $600 at a hospital.



TOP PICK

a lab test at a gym or clinic with a PNOE machine, about $150 to $350; find one near you at PNOE. Then let your watch track the trend between tests.

A sample Apple Watch estimate

Picture: Apple

What to do with your result

Intervals move it fastest. Four 4-minute bursts at 90 to 95% of your max heart rate, with 3 easy minutes between, 3 times a week for 8 weeks, raised VO2 max 7.2% (Helgerud 2007).

Add Zone 2, an easy pace where you can still talk, 3 to 4 hours a week. In inactive adults, a sauna after each workout raised fitness more than exercise alone (Part 4, chapter 1).

GOOD TO KNOW

With heart symptoms or known heart disease, test in a lab with ECG monitoring.

3 ApoB and Lp(a)

WHAT IT MEASURES	ApoB counts the particles that build plaque in your arteries; Lp(a) is an inherited particle that raises heart risk
GOOD NUMBER	ApoB under 90 mg/dL (Peter Diamandis's target), lower is better; Lp(a) under 30 mg/dL (75 nmol/L)
COST	about $45 to $70 each
WHERE TO GET IT	Labcorp OnDemand (ApoB about $69, Lp(a) about $49), Quest, Function Health, or your doctor
HOW OFTEN	Lp(a) once in your life; ApoB once a year

1 in 5 people carry high Lp(a). Almost nobody has checked.

It's set by your genes, so one test tells you for life (Kronenberg 2022).

1. Once ApoB was counted, LDL cholesterol's link to heart disease disappeared (Richardson 2020).
2. In 27,939 women followed for 30 years, the top fifth of Lp(a) had 33% more heart attacks and strokes than the bottom fifth, on top of their LDL (Ridker 2024).

Picture: Akram Huseyn, Unsplash

Why it matters

LDL weighs the cholesterol cargo; ApoB counts the trucks carrying it, the particles that build plaque. Lp(a) is one of those trucks, with an extra sticky protein.

ApoB and Lp(a)

ApoB counts the particles that build plaque in your arteries.

1. Every particle that can lodge in an artery wall carries one ApoB.
2. So ApoB counts the harmful particles, while LDL measures the cholesterol inside them.
3. Lp(a) is an LDL-like particle with an extra sticky protein, and about 90% of your level comes from your genes.

How to get it

Most cholesterol panels include neither, so ask your doctor for “apolipoprotein B” and “lipoprotein(a)” by name. No fasting.

What to do with your result

ApoB over 90? Eat less saturated fat and more fiber, retest in 6 to 12 weeks, then ask your doctor about a statin. Peter Attia keeps his ApoB at 30 to 40 mg/dL (Part 2, chapter 1).

Berberine lowered ApoB against placebo in 337 adults (Lei 2026). See Part 1, chapter 17.

Lp(a) over 30 mg/dL (75 nmol/L)? It barely moves with diet or exercise, so push your ApoB and blood pressure lower than usual.

GOOD TO KNOW

If your Lp(a) is high, have your children tested.

4 HbA1c and fasting insulin

WHAT IT MEASURES	HbA1c is your average blood sugar over 2 to 3 months; fasting insulin shows how hard your body works to hold it there
GOOD NUMBER	HbA1c about 5.0 to 5.4%; fasting insulin about 2 to 6 µU/mL (a common rule of thumb)
COST	$39 for HbA1c and $89 for glucose and insulin, both at Labcorp OnDemand
WHERE TO GET IT	Quest, Labcorp OnDemand, Function Health, Superpower, or your doctor. Fast 8 to 12 hours for glucose and insulin.
HOW OFTEN	once a year; every 3 months after a change

An HbA1c of 6.0 to 6.4% meant 4.5 times the risk of diabetes.

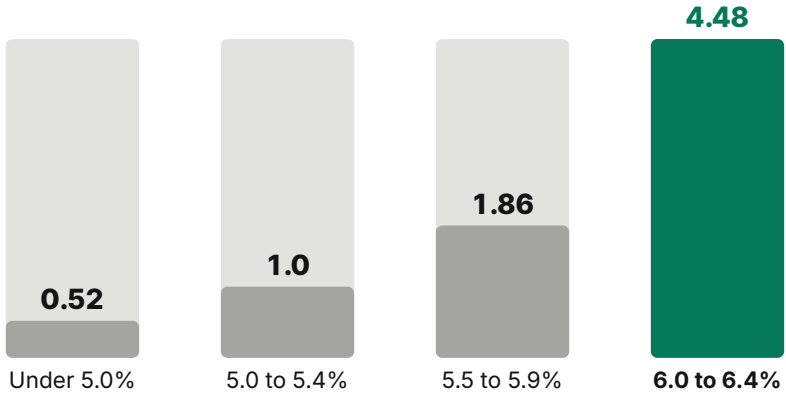
And 78% more heart disease, compared with 5.0 to 5.4%, over about 14 years in 11,092 adults without diabetes (Selvin 2010).

Why it matters

Fasting insulin is the early warning: it often climbs for years before your blood sugar does.

Risk of diabetes over about 14 years by starting HbA1c (5.0 to 5.4% set at 1.0)

Selvin 2010, N Engl J Med, 11,092 adults without diabetes



What to do with your result

HbA1c above 5.4%, or fasting insulin above 6? Walk 10 to 15 minutes after meals, eat vegetables and protein before starch, lose extra fat, and retest in 3 months. GLP-1 drugs and metformin lower blood sugar (Part 4, chapter 2).

Berberine, 500 mg three times a day, took HbA1c from 9.5% to 7.5% in 3 months in newly diagnosed type 2 diabetes (Yin 2008). See Part 1, chapter 17, Berberine.

Sulforaphane, about 27 mg a day for 12 weeks, lowered fasting sugar and HbA1c in people with type 2 diabetes whose sugar was hardest to control (Axelsson 2017). See Part 1, chapter 1, Sulforaphane.

Uthever NMN held insulin resistance steady while it climbed 30.6% on placebo (Huang 2022). See Part 1, chapter 3, NMN.

A continuous glucose monitor shows what each meal does.

Picture: Dexcom

GOOD TO KNOW

Anemia, blood loss, kidney disease and pregnancy can throw HbA1c off.

5 hs-CRP

WHAT IT MEASURES	the low, steady inflammation that rises with age
GOOD NUMBER	under 1.0 mg/L is low risk; 1 to 3 is average; above 3 is high
COST	about $50 to $70
WHERE TO GET IT	Labcorp OnDemand ($69, often $51.75 on sale), Quest ($65 plus a $6 fee), Function Health, Superpower, or your doctor. No fasting.
HOW OFTEN	once a year; every 3 months after a change

People on statins with the highest hs-CRP had 2.4 times the risk of dying.

Picture: Malcolm Choong, Unsplash

The top quarter against the bottom quarter, in 31,245 people. LDL barely predicted it (Ridker 2023).

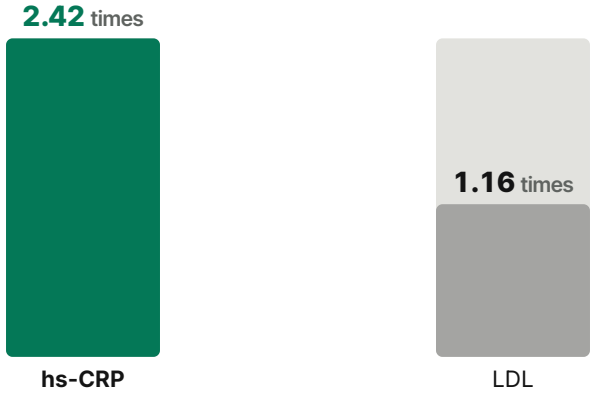
Why it matters

The high-sensitivity test reads the slow, silent inflammation in your blood vessels and belly fat, called inflammaging.

Risk of dying from any cause, top quarter against bottom quarter

In 31,245 people on statins.

Ridker 2023, Lancet



What to do with your result

hs-CRP above 1.0? Lose belly fat first, and retest in 3 months.

In 2,084 Finnish men, CRP averaged 2.41 with one sauna a week and 1.65 with 4 to 7 (Laukkanen 2018).

In overweight adults, broccoli sprouts cut IL-6, the signal behind CRP, and CRP fell too (López-Chillón 2019). See Part 1, chapter 1, Sulforaphane.

Across 34 randomized trials, taurine lowered CRP (Nie 2026). See Part 1, chapter 10, Taurine.

GOOD TO KNOW

A cold or a hard workout can move it, so take two readings at least 2 weeks apart before you act on a high one.

6 Strength, balance and walking tests

WHAT IT MEASURES	your grip, getting up off the floor, standing on one leg and how fast you walk
GOOD NUMBER	10 seconds on one leg; 8 or more out of 10 on the floor test; walking 1.0 meter a second or faster
COST	free; a grip gauge (hand dynamometer) is about $20 to $60
WHERE TO GET IT	your living room floor
HOW OFTEN	every 3 to 6 months

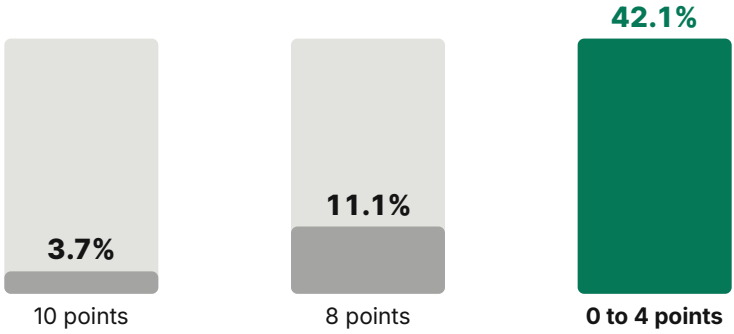
Can you stand on one leg for 10 seconds?

1 in 5 people aged 51 to 75 couldn't, and they were nearly twice as likely to die over the next 7 years (Araujo 2022).

1. Adults aged 46 to 75 who scored lowest at getting up off the floor (0 to 4 out of 10) had a 42% death rate over about 12 years, against 3.7% for a perfect 10 (Araújo 2026).
2. Every 5 kg less grip meant a 16% higher risk of dying, in 139,691 adults in 17 countries (Leong 2015).
3. At 75, a man's chance of living 10 more years ranged from 19% to 87%, depending on how fast he walked (Studenski 2011).

Death rate over about 12 years by sitting-rising score

Araújo 2026, Eur J Prev Cardiol, adults aged 46 to 75



How to do them

Floor test. Barefoot, cross your legs, sit down on the floor and stand back up. Start at 10 points. Lose 1 for each hand, knee, forearm or side of your leg you use, and half a point for a wobble.

One-leg stand. Barefoot, one foot behind your other calf. You get 3 tries to hold 10 seconds.

Walking speed. Time your normal pace over 4 meters and divide 4 by the seconds. Under 0.8 meters a second is slow.

Grip. Take your best of 3 squeezes on each hand. Under 26 kg for men or 16 kg for women counts as weak (Celis-Morales 2018).

A grip gauge (hand dynamometer) is about $20 to $60.

Picture: Camry

What to do with your result

Lift 2 to 3 times a week, working legs, back and grip, and eat enough protein. Stand on one leg while you brush your teeth.

Creatine adds strength on top of training (Part 1, chapter 8). GlyNAC sped up older adults' walking against a placebo in 16 weeks (Kumar 2023; Part 1, chapter 12). NMN, 250 mg a day, sped up walking in older adults (Morifuji 2024). See Part 1, chapter 3, NMN.

GOOD TO KNOW

Do the floor and balance tests near a wall, and stop if you feel dizzy.

7 DEXA scan

WHAT IT MEASURES	your muscle, your bones and the hidden fat around your organs, each one separately
GOOD NUMBER	a bone T-score of -1.0 or higher; visceral fat under about 100 cm^2; muscle (ALMI) above about 7.0 kg/m^2 for men, 5.5 for women
COST	about $40 at BodySpec; a doctor's bone scan is often covered
WHERE TO GET IT	BodySpec, DexaFit (about $90 to $185), a hospital or imaging center, or a longevity clinic
HOW OFTEN	muscle and fat every 6 to 12 months; bone every 2 years

24.2% died within a year of a broken hip.

In 12 studies of 4,220 Irish patients (Walsh 2023). DEXA finds thinning bones years before they break.

DEXA takes 6 to 10 minutes, with far less radiation than a chest X-ray.

Picture: GE HealthCare

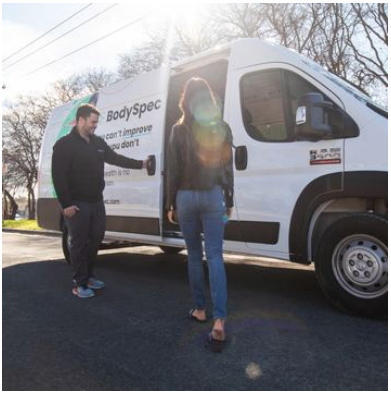
Why it matters

In 6 to 10 minutes, with far less radiation than a chest X-ray, DEXA measures three things a bathroom scale can't:

BONE	a T-score of -1.0 or higher is normal; -1.0 to -2.5 is thinning bone (osteopenia); -2.5 or lower is osteoporosis.
MUSCLE	older Americans with the most muscle for their height had a 20% lower risk of dying than those with the least (Srikanthan 2014).
VISCERAL FAT	the fat around your organs, tied to diabetes, fatty liver and heart disease more strongly than your total fat.

How to get it

A doctor's bone scan looks only at your hip and spine, so ask for a full-body scan if you want muscle and fat too.



BodySpec

DexaFit

What to do with your result

Muscle low, or visceral fat over 100 cm²? Lift heavy, eat enough protein, and rescan on the same machine.

T-score below -1.0? Add impact, like jumping or stairs, and ask your doctor about hormones or bone drugs.

Creatine with weight training slowed hip bone loss in women past menopause (Part 1, chapter 8). Vitamin K2 slowed bone loss in women past menopause too (Knapen 2013; Part 1, chapter 7).

Semaglutide shrank waists 7.7 cm, against 1.3 cm on placebo, over 4 years (Ryan 2024), but GLP-1 drugs take some muscle along with the fat, so lift while you're on one (Part 4, chapter 2).

8 Coronary calcium score

WHAT IT MEASURES	the hardened plaque already in your heart arteries, from a quick CT scan
GOOD NUMBER	0, for as long as possible
COST	about $75 to $150 cash
WHERE TO GET IT	most hospitals and imaging centers, and longevity clinics
HOW OFTEN	if it's 0, again in about 5 years

A calcium score over 1,000 meant 12.5 times the risk of dying.

Compared with a score of 0. Ten-year survival was 99.4% at 0 and 87.8% over 1,000 (Budoff 2007).

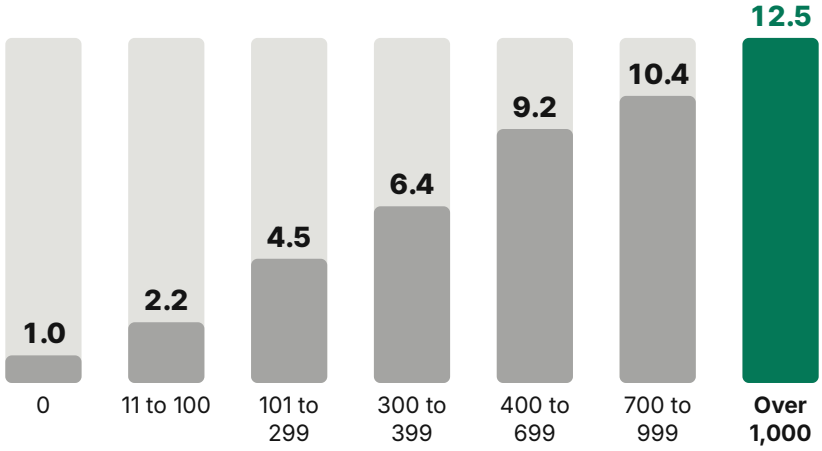
Why it matters

A score of 50 is worse at age 40 than at 70. So the report also gives your percentile for your age, sex and race.

US guidelines say that at 0, a statin can often wait, unless you smoke, have diabetes or have a strong family history. At 100 or more, or the 75th percentile or higher, a statin is recommended (Grundy 2019).

Risk of dying by coronary calcium score (a score of 0 set at 1.0)

Budoff 2007, J Am Coll Cardiol, 25,253 people followed 6.8 years



How to get it

The scan takes about 10 minutes, with no dye and about 1 mSv of radiation.

A CT angiogram (CCTA, about $500 to $2,000) uses dye to show soft plaque too, and Cleerly's AI measures it.

A sample Cleerly report.
Picture: Cleerly

What to do with your result

Your score rarely goes down; the goal is to slow it. Lower your ApoB (Part 7, chapter 3), your blood pressure (Part 3, chapter 4) and your inflammation (Part 7, chapter 5).

GOOD TO KNOW

Calcium score: a 0 can miss soft plaque, especially under 45 and in smokers.

9 Whole-body MRI

WHAT IT MEASURES	a 30- to 65-minute scan, head to thighs, that looks for tumors, aneurysms, cysts and fatty liver, with no radiation
GOOD NUMBER	there isn't one; you want "no significant findings"
COST	$999 at Ezra up to $3,999 at Prenuvo; cash only
WHERE TO GET IT	Prenuvo, from $1,199 for Core, which has a 30-minute scan; Ezra by Function Health; Fountain Life, Human Longevity and Biograph, which include an MRI in their packages (Part 5, chapters 1 to 3)
HOW OFTEN	once as a baseline, then every 1 to 2 years if you choose

1 in 64 people had a cancer they didn't know about.

Across 10 studies of 9,024 people with no symptoms (Martins da Fonseca 2026).

1. About 1 in 3 (32.1%) had a serious or unclear finding. In the studies that tracked them, 16.0% of findings were false alarms (Kwee 2019).
2. No trial has yet shown that these scans help people live longer.

A Prenuvo whole-body MRI scanner.
Picture: Prenuvo

TOP PICK

Ezra's Full Body scan, $999, or $899 with a Function Health membership. It's the lowest full-body price we found.

Picture: Ezra (Function Health)

What to do with your result

Expect follow-ups. Each cyst or unclear spot can mean another scan or a biopsy.

GOOD TO KNOW

An MRI misses small lung nodules and heart plaque (Part 7, chapter 8), and it doesn't replace a colonoscopy, a mammogram or a Pap or HPV test. Check first if you have a pacemaker or metal implants.

10 Galleri multi-cancer blood test

WHAT IT MEASURES	DNA that tumors shed into your blood, from more than 50 types, and where in your body the signal comes from
GOOD NUMBER	"No signal detected"
COST	$699
WHERE TO GET IT	galleri.com, Fountain Life, or Biograph's Black membership
HOW OFTEN	once a year, on top of your standard screening

One blood draw. More than 50 types of tumor.

In 32,007 adults 50 and over, when it found a signal, it was right 60% of the time and named the right organ 91% of the time (Nabavizadeh 2026).

The Galleri test kit.
Picture: GRAIL

1. In that trial, it found a confirmed tumor in about 1 in every 185 people tested.

2. It finds late tumors far better than early ones: 16.8% at stage I, 90.1% at stage IV (Klein 2021).

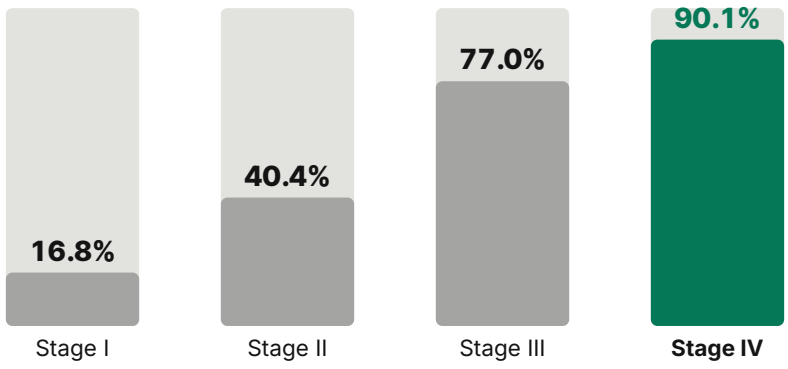
Why it matters

Most of the deadliest tumors, in the pancreas, ovaries, liver, stomach and esophagus, have no standard screening test.

NHS-Galleri, a trial of 142,250 adults aged 50 to 77 in England, missed its main goal: three yearly tests didn't lower stage III and IV cases of 12 deadly types (Sasieni 2026). Stage IV cases were 14% lower by the third round, a borderline result.

Share of tumors Galleri found, by stage

Klein 2021, Ann Oncol, 4,077 people



How to get it

Order online and GRAIL's telehealth doctor writes the prescription. You give blood at a partner lab or a mobile visit, and results come in about 2 weeks. Insurance usually doesn't cover it.

What to do with your result

A positive needs a scan or a biopsy, and the predicted organ tells your doctor where to look first.

GOOD TO KNOW

A negative isn't an all-clear. Galleri misses most stage I and II tumors, and about 0.4 to 0.5% of people without one get a false positive.

11 The full longevity blood panel

WHAT IT MEASURES	the rest of a longevity checkup: omega-3, homocysteine, liver, kidneys, NAD+, vitamin D and hormones
GOOD NUMBER	Omega-3 Index 8% or higher; eGFR 90 or more; homocysteine and GGT low in the normal range
COST	$349 to $365 a year for a membership panel; single tests $29 to $198
WHERE TO GET IT	Function Health, Superpower, Quest, Labcorp OnDemand, at-home kits, or your doctor
HOW OFTEN	once a year; retest 3 to 4 months after a change

An Omega-3 Index above 6.8% meant a 34% lower risk of dying.

Against an index below 4.2%, in about 2,500 Framingham adults (Harris 2018). A $55 finger prick measures it.

1 Each 5 µmol/L rise in homocysteine meant a 34% higher risk of dying, across 11 studies and 27,737 people (Fan 2017).

2 In 9.24 million people, the top third on GGT, a cheap liver test, had a 60% higher risk of dying than the bottom third (Kunutsor 2014).

Why it matters

OMEGA-3 INDEX	aim for 8% or more; under 4% is high risk.
LIVER AND KIDNEYS	GGT and ALT rise with alcohol and fatty liver. An eGFR of 90 or more is healthy.
NAD+	your cells' energy and repair molecule, which falls with age. Jinfiniti, which sells the test, calls 40 to 100 µM optimal.
THE REST	a blood count (CBC), vitamin D, thyroid and sex hormones.

How to get it

Superpower is $349 a year with 2 draws. At Quest or Labcorp OnDemand, a lipid panel is $59, a CMP $49 and a CBC $29. Fast 8 to 12 hours.

At home, OmegaQuant's Omega-3 Index is $54.95 and Jinfiniti's NAD+ test $198.

Superpower
$349 a year with 2 draws

OmegaQuant Omega-3 Index
$54.95, finger prick, at home

Jinfiniti NAD+ test
$198, at home

TOP PICK

Function Health, $365 a year. Its membership also covers ApoB, Lp(a), HbA1c, insulin and hs-CRP from Part 7, chapters 3 to 5.

Picture: Function Health

What to do with your result

OMEGA-3 LOW	see Part 1, chapter 5, and retest at 4 months.
HOMOCYSTEINE HIGH	folate, B12 and B6.
NAD+ LOW	see Part 1, chapter 3, NMN, and Part 4, chapter 7, for NAD+ drips.
GGT OR ALT HIGH	drink less and lose weight; GLP-1 drugs help (Part 4, chapter 2).

For example, the tests to watch for three of the supplements in Part 1:

OMEGA-3	the Omega-3 Index.
VITAMIN D3 AND K2	25-hydroxyvitamin D, the vitamin D blood test.
CREATINE	grip and the floor test (Part 7, chapter 6).

GOOD TO KNOW

Test 100 things at once and a few will land out of range by chance, so recheck before you act.

SOURCES **1** Sugden 2022, PMID 35794023 · **2** Bischoff-Ferrari 2025, PMID 39900648 · **3** Mandsager 2018, PMID 30646252 · **4** Kokkinos 2022, PMID 35926933 · **5** Helgerud 2007, PMID 17414804 · **6** Richardson 2020, PMID 32203549 · **7** Ridker 2024, PMID 39216091 · **8** Kronenberg 2022, PMID 36036785 · **9** Lei 2026, PMID 41543854 · **10** Selvin 2010, PMID 20200384 · **11** Yin 2008, PMID 18442638 · **12** Axelsson 2017, PMID 28615356 · **13** Huang 2022, PMID 35821806 · **14** Ridker

2023, PMID 36893777 · **15** Laukkanen 2018, PMID 29209938 · **16** López-Chillón 2019, PMID 29573889 · **17** Nie 2026, PMID 41275513 · **18** Araujo 2022, PMID 35728834 · **19** Araújo 2026, PMID 40569873 · **20** Leong 2015, PMID 25982160 · **21** Studenski 2011, PMID 21205966 · **22** Celis-Morales 2018, PMID 29739772 · **23** Kumar 2023, PMID 35975308 · **24** Morifuji 2024, PMID 38789831 · **25** Walsh 2023, PMID 36869882 · **26** Srikanthan 2014, PMID 24561114 · **27** Knapen 2013, PMID 23525894 · **28** Ryan 2024, PMID 38740993 · **29** Budoff 2007, PMID 17481445 · **30** Grundy 2019, PMID 30586774 · **31** Martins da Fonseca 2026, PMID 40884613 · **32** Kwee 2019, PMID 30932247 · **33** Nabavizadeh 2026, PMID 42773207 · **34** Klein 2021, PMID 34176681 · **35** Sasieni 2026, PMID 42776074 · **36** Harris 2018, PMID 29559306 · **37** Fan 2017, PMID 28684797 · **38** Kunutsor 2014, PMID 24585856

Your 2026 plan

The whole book, on a few pages: what to do and when, the words you'll meet, where to find every brand, and how the lab tests worked.

Your one-page checklist

You don't need all of it. Start with the lines that fit your life, and add more as they stick.

Every day

SUPPLEMENTS	your stack from "Your starter routine at three budgets" at the front, or "Putting it together" at the end of Part 1. Each chapter says when to take it.
SLEEP	the same bedtime every night (Part 3, chapter 1).
LIGHT	get outside within an hour of waking (Part 2, chapter 2).
STEPS	7,000 or more (Part 3, chapter 2).
COLD	end your shower with 30 to 90 seconds of cold (Part 4, chapter 4).

Every week

- **Lift** 2 to 3 times, full body: legs, back and grip (Part 2, chapter 10; Part 7, chapter 6).
- **Zone 2**, 3 to 4 hours, plus one hard interval session (Part 2, chapter 1; Part 7, chapter 2).
- **Sauna**, 4 to 7 times, 20 minutes or more (Part 4, chapter 1).

Every 3 to 12 months

- **Strength, balance and walking tests**, every 3 to 6 months, on your living room floor (Part 7, chapter 6).
- **After starting a supplement:** a blood test at 4 months, to see what's changed (Part 1, "The blood tests that show it's working").
- **Biological age test**, every 6 to 12 months while you're changing something (Part 7, chapter 1).

Every year

- **Blood:** ApoB, HbA1c and fasting insulin, hs-CRP, and the full panel with your Omega-3 Index (Part 7, chapters 3 to 5 and 11).

Once

- **Lp(a)**, once in your life (Part 7, chapter 3).
- **Coronary calcium score.** If it's 0, again in about 5 years (Part 7, chapter 8).

Glossary

ApoB. A blood test that counts the particles that build plaque in your arteries. Part 7, chapter 3.

Biological age. How old your body acts, not your age in years. Part 7, chapter 1.

Certificate of analysis. A lab report on what's in a batch. Part 1, the opening pages.

GLP-1. A gut hormone that curbs appetite and steadies blood sugar. GLP-1 drugs copy it. Part 4, chapter 2; Part 6, chapter 5.

Glutathione. The body's master antioxidant. Sulforaphane raised it in 7 days. Part 1, chapter 1.

HbA1c. Your average blood sugar over 2 to 3 months. Aim for about 5.0 to 5.4%. Part 7, chapter 4.

hs-CRP. A blood test for slow, silent inflammation. Under 1.0 mg/L is low risk. Part 7, chapter 5.

IGF-1. One of the body's main growth signals. Part 2, chapter 17; Part 4, chapter 10.

Insulin resistance. When your body needs more and more insulin to hold your blood sugar steady. Part 7, chapter 4.

Lp(a). A cholesterol particle set by your genes that raises heart risk. Part 7, chapter 3.

Mitochondria. The parts of your cells that make energy. Part 1, chapters 3 and 4.

NAD+. Your cells' energy and repair molecule. It falls with age, and NMN and NR raise it. Part 1, chapter 3.

Placebo-controlled trial. One group gets the real thing and another gets a dummy, to show what the treatment itself did.

Telomeres. The caps on the ends of your chromosomes. They shorten as you age. Part 1, chapter 7.

VO2 max. The most oxygen your body can use at full effort. Part 7, chapter 2.

Index of brands and products

Numbers point to the part and chapter: 4.7 means Part 4, chapter 7. "Intro" is a part's opening pages, "extra" is its "Also worth a look" or "Also worth knowing" section, and "1 stacks" is "Putting it together", at the end of Part 1.

A Abbott Lingo 3.3; AgelessRx 4.2, 4.3, 4.7, 4.10, 6.12; Airthings 3.9; AKI 1.1; The Akkermansia Company 1 intro, 1.21; Almost Heaven 4.1; Altos Labs 6.1; Amgen 6.5, 6.6; Apple (Watch, AirPods) 3.2, 3.11, 7.2; Aquagear 3.10; AquaTru 3.10; Aranet4 3.9; Avinity Health 4.9; Aviv Clinics 5 extra; Avmacol 1.1; AX3 1.16

B BedJet 3.7; Bein Doux 1.1; BEMER 4.11; BENEV 4.8; BioAge Labs 6.7; BioAstin (Nutrex Hawaii) 1 intro, 1.16, 1 stacks; Biograph 5 intro, 5.3, 7.9, 7.10; BioViva 6.3; Black Forest 1.3; Blueair 3.9; Blueprint (Bryan Johnson) 2.5, 4.3; BlueRock 6.10; BodySpec 3.5, 7.7; The Brain & Performance Centre 4.6; Brita 3.10; BROQ 1 intro, 1.1, 1 stacks; Buchinger Wilhelmi 5.10, 5 extra; BulkSupplements 1.8, 1.10, 1.12

C Camry 3 extra; Carlson 1.5, 1.7; Carlyle 1.1; Celltrient 1.12; Chi Longevity 2.16, 5 intro, 5.11; Chilipad 3.7; Circulate 4.9, 6.9; Clearly Filtered 3.10; Cleveland Clinic 2.7, 5 extra, 6.6; Clinique La Prairie 5 intro, 5.8, 5.9; Coop 3.7; Costco 1.19, 3.11; Coway 3.9; Create (creatine gummies) 1.8; CRISPR Therapeutics 6.6; Cuorips 6.10

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I Ice Barrel 4.4; iCRYO 4.4; InBody 3.5; Insilico Medicine 6.7; Integrative Therapeutics (Theracurmin) 1 extra; IQAir 3.9; Isomorphic Labs 6.7

J Jabra Enhance 3.11; Jamar 3 extra; Jarrow 1.1, 1.20; Jinfiniti 7.11

K KardiaMobile 3.4; Kirkland Signature 1.20; Klotho Neurosciences 6.3; KOYAH 1.1

L Labcorp OnDemand 7.3, 7.4, 7.5, 7.11; Lanserhof 5 intro, 5.10; Levels 2.13, 3.3; Levoit 3.9; Life Biosciences 2.4, 6.1; Life Extension 1 intro, 1.6, 1.9, 1.12, 1.13, 1.16, 1.18, 1 extra, 1 stacks; Lifeforce 2.6; LifePro 3 extra; LifeSpan 3.12; Longeveron 6.10, 6.12; Longevity Labs (spermidineLIFE) 1.2; Loyal 6.4

M Manta Sleep 3.8; Mara Labs 1.1; Mayo Clinic 1.6, 5 intro, 5.7, 5 extra, 6.2; Member's Mark 1.13; Minicircle 6.3, 6.12; Mitopure (Timeline) 1 intro, 1.4, 1 stacks; Momentous 1 intro, 1.5, 1.8, 1.9, 1.19, 1 extra, 1 stacks, 2.2; MRM 1.15; MZOO 3.8

N Natural Factors 1.15; Nature Made 1.13; NeoRhythm 4.11; NeuroBrocc 1.1; NewLimit 6.1; Newtowne Hyperbarics 4.6; Next Health 3.5, 4.7, 5 intro, 5.4; Niagen (Tru Niagen, Niagen IV) 1.3, 4.7; Nidra 3.8; NMN-99 1 intro, 1.3, 1 stacks; Novo Nordisk 6.5; NOW Foods 1 intro, 1.7, 1.10, 1.12, 1.20, 1 stacks; Nurosym 3.6; Nutricost 1.2, 1.3, 1.16

O Ombre 1.21; OmegaQuant 7.11; Omnilux 4.5; OMRE 1.2; Omron 3.4; Optispan 2.9; Osasuna 1.1; Oura 1.9, 2.20, 3.1

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Q Quest Diagnostics 5 intro, 5.5, 7.3, 7.4, 7.5, 7.11

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S Sagol Center 4.6; Samsung 3.1, 3.11; Sennheiser 3.11; SHA Wellness Clinic 5 intro, 5.9; Silence Therapeutics 6.6; Sleep Swannies 3.8; SM Nutrition 1.1; Solaray 1.17; SPMD-99 1 intro, 1.2, 1 stacks; Sports Research 1.7, 1.16; Standard Process 1.1; Stem Cell Institute 4.8; Sumitomo Pharma 6.10; Summit to Sea 4.6; Sunlighten 4.1; Superpower 7.4, 7.5, 7.11

T Tally Health 2.4, 7.1; Thorne 1 intro, 1.1, 1.5, 1.7, 1.8, 1.9, 1.12, 1.13, 1.15, 1.17, 1.19, 1 stacks; Toniiq 1.4, 1.14, 1.17, 1.18; TruDiagnostic 6.11, 7.1; TrueDark 3.8; Trunature 1.19; Truvaga 3.6

U Ultrahuman 3.1; United Therapeutics 6.8; Until Labs 6.8; UPLIFT 3.12; Urevo 3.12; Uvex 3.8

V Vertex 6.10; Verve Therapeutics 6.6; Viome 1.21; Vital Proteins 1.19

W WalkingPad 3.12; Waterdrop 3.10; Ways2Well 4.10; Wegovy and Ozempic 2.10, 4.2; WHOOP 3.2; Withings 3.4, 3.5

X Xen by Neuvana 3.6; XPRIZE 2.6, 6.12; XYMOGEN 1.1

Z Zepbound and Mounjaro 4.2; ZeroWater 3.10; Zoe 1.21

How the lab tests worked

What the lab tested. An independent 3rd-party lab received the 21 top-selling sulforaphane supplements, six of the top-selling spermidine supplements and six of the top-selling NMN supplements, each in unopened retail packaging, and tested how much sulforaphane each one delivers, or how much spermidine or NMN each one contains.

What it found. Per serving, as each brand's label defines a serving.

SUPPLEMENT	BRANDS TESTED	MOST FOUND	LEAST FOUND
Sulforaphane	21	25.0 mg	none found (under 0.1 mg), in 7 of the 21
Spermidine	6	21.9 mg	0.7 mg
NMN	6	1,139.6 mg	260.7 mg

Each result is from the pack the lab received.

Every brand's result is in Part 1, chapters 1 to 3. Source: independent 3rd-party lab reports, autumn 2024 (sulforaphane) and 17 September 2026 (spermidine and NMN).

The other 18 supplements. We favored brands with outside testing. Where a pick carries a seal or an outside test, its chapter names it.

Prices. Every price comes from the brand, clinic or lab linked in its chapter. Prices change, so check before you buy.

A note on sources

We read the research through 2026 and checked each study against PubMed.

Human trials come first, then big studies that followed people for years, then animal and cell work. When a finding comes from mice, we say so.

A short citation like (Laukkanen 2015) gives the first author's last name and the year. Every chapter ends with a short list of the studies it cites, most with a PMID you can type into PubMed.

This book is for information, and it isn't medical advice. Consult a medical doctor before taking any supplement if you are pregnant, nursing, have a medical condition or are taking any medications.

Picture credits

How to use this book

Broccoli. Picture: Katherine Jenswold, Unsplash
Manta Sleep Mask. Picture: Manta Sleep
Sauna. Picture: HUUM, Unsplash
Prenuvo scanner. Picture: Prenuvo
Cells under a microscope. Picture: Lorenzo2697, CC BY 4.0, via Wikimedia Commons
Running track. Picture: Lysander Yuen, Unsplash

1. Sulforaphane

Opening picture. Picture: Artelle Creative, Unsplash
BROQ. Picture: Opus Longevity
Pure TheraPro Rx OncoProtect ES. Picture: Pure TheraPro Rx

2. Spermidine

Opening picture. Picture: Dylann Hendricks, Unsplash
SPMD-99. Picture: Opus Longevity
Renue By Science Liposomal Spermidine. Picture: Renue By Science

3. NMN

Opening picture. Picture: Thought Catalog, Unsplash
NMN-99. Picture: Opus Longevity
Black Forest NMN 1000 mg. Picture: Black Forest
Tru Niagen 300 mg. Picture: Niagen Bioscience

4. Urolithin A

Your gut bacteria make urolithin A from compounds called ellagitannins, found in pomegranates, berries and walnuts. Picture: Mockup Graphics, Unsplash
Timeline Mitopure Softgels. Picture: Timeline

5. Omega-3

EPA and DHA are long-chain omega-3 fats. You get them from oily fish like salmon, sardines, anchovies and mackerel. Picture: Abstral Official, Unsplash
Momentous Omega-3. Picture: Momentous

6. Fisetin

Strawberries are the richest food source. Picture: Sandy Millar, Unsplash
Renue By Science LIPO Fisetin. Picture: Renue By Science

7. Vitamin D3 and K2

Vitamin D3, the vitamin your skin makes from sunlight. Picture: CHUTTERSNAP, Unsplash

Thorne Vitamin D + K2 Liquid. Picture: Thorne

Carlson Super Daily D3 + K2, ConsumerLab's MK-7 pick. Picture: Carlson Laboratories

8. Creatine

Creatine is the most-studied supplement in sports science. Picture: HowToGym, Unsplash

Thorne Creatine. Picture: Thorne

PUSH creatine gummies. Picture: Push

BulkSupplements Creatine Monohydrate, ConsumerLab's top pick. Picture: BulkSupplements

9. Magnesium

Eat it too: pumpkin seeds, almonds, cashews, spinach, black beans, dark chocolate, avocado and whole grains. Picture: Mockupo, Unsplash

Thorne Magnesium Bisglycinate. Picture: Thorne

10. Taurine

Opening picture. Picture: Content Pixie, Unsplash

NOW Foods Taurine. Picture: NOW Foods

11. Ca-AKG

Opening picture. Picture: Supliful, Unsplash

Rejuvant LifeAKG. Picture: Ponce de Leon Health

12. GlyNAC

Opening picture. Picture: Joanna Kosinska, Unsplash

ProHealth Longevity Glycine + NAC Pack. Picture: ProHealth Longevity

Celltrient range. Cellular Protect is the blue packs at the left. Picture: Nestlé Health Science

13. CoQ10

Opening picture. Picture: Edouard Dognin, Unsplash

Pharma Nord Bio-Quinone Active Q10 Gold. Picture: Pharma Nord

14. Resveratrol and pterostilbene

Resveratrol is why red wine got its reputation, but a glass gives you a few milligrams at most. Picture: Alexander Schimmeck, Unsplash

partiQlar Pure Resveratrol. Picture: partiQlar

15. Quercetin

The best foods are red onions, capers, kale, apples with the skin, and tea. Picture: K8, Unsplash

Dasatinib is a prescription drug (Sprycel). Picture: Bristol Myers Squibb

Thorne Quercetin Phytosome. Picture: Thorne

MRM Quercetin 500 mg, ConsumerLab's top pick for capsules. Picture: MRM Nutrition

16. Astaxanthin

Opening picture. Picture: Elizabeth Gottwald, Unsplash

BioAstin Hawaiian Astaxanthin. Picture: Nutrex Hawaii

Nutricost Astaxanthin, ConsumerLab's top pick for a high dose. Picture: Nutricost

17. Berberine

Opening picture. Picture: Anton Kotov, Unsplash

Thorne Berberine. Picture: Thorne

18. Ergothioneine

Mushrooms are the top source. Across 13 species, porcini had the most. Picture: Alex Skobe, Unsplash

Oyster, king oyster, shiitake and maitake mushrooms have roughly 7 to 15 mg per 100 g. Picture: Odiseo Castrejon, Unsplash

Life Extension Essential Youth L-Ergothioneine. Picture: Life Extension

19. Collagen

Opening picture. Picture: Tracey Parish, Unsplash

Momentous Collagen Peptides. Picture: Momentous

20. Glucosamine

Most glucosamine comes from shellfish shells. Picture: James Tiono, Unsplash

Dona Crystalline Glucosamine Sulfate. Picture: Dona

21. Akkermansia

Opening picture. Picture: Melissa Di Rocco, Unsplash

The Akkermansia Company Akkermansia Essential. Picture: The Akkermansia Company

Also worth a look

Momentous Apigenin. Picture: Momentous

Nuchido TIME+. Picture: Nuchido

Doctor's Best PQQ with BioPQQ. Picture: Doctor's Best

Doctor's Best Alpha-Lipoic Acid 600 mg. Picture: Doctor's Best

ProHealth HMB. Picture: ProHealth Longevity

Theracurmin HP. Picture: Integrative Therapeutics

Life Extension Lightly Caffeinated Mega Green Tea Extract. Picture: Life Extension

Real Mushrooms Organic Lion's Mane Extract Capsules. Picture: Real Mushrooms

Life Extension Melatonin 300 mcg. Picture: Life Extension

Momentous Ashwagandha. Picture: Momentous

HRW Rejuvenation Molecular Hydrogen Water Tablets. Picture: HRW

Putting it together

Jinfiniti NAD+ test. Picture: Jinfiniti

OmegaQuant Omega-3 Index. Picture: OmegaQuant

Microplastics, and what you can do about them

AquaTru Classic. Picture: AquaTru

22 Experts to Follow

Peter Attia. Picture: Peter Attia

Outlive. Picture: Penguin Random House (Harmony)

The Drive. Picture: Peter Attia, MD

Andrew Huberman. Picture: Jamesbrianbounds, CC BY-SA 4.0, via Wikimedia Commons

Huberman Lab. Picture: Scicomm Media LLC

Protocols. Picture: Simon & Schuster (Simon Element)

Rhonda Patrick. Picture: Rhonda Patrick, FoundMyFitness

FoundMyFitness. Picture: FoundMyFitness

David Sinclair. Picture: Sinclair Lab, Harvard Medical School

Lifespan. Picture: Simon & Schuster (Atria Books)

Lifespan, the podcast. Picture: Lifespan Communications LLC

Tally Health. Picture: Tally Health

Bryan Johnson. Picture: M Robertson, CC BY 4.0, via Wikimedia Commons

Peter Diamandis. Picture: Peter Diamandis

Moonshots. Picture: PHD Ventures

Galleri. Picture: GRAIL

Fountain Life. Picture: Fountain Life

Mark Hyman. Picture: Mark Hyman

Young Forever. Picture: Hachette Book Group (Little, Brown Spark)

The Dr. Hyman Show. Picture: Dr. Mark Hyman

Function Health. Picture: Function Health

Valter Longo. Picture: Valter Longo

The Longevity Diet. Picture: Penguin Random House (Avery)

ProLon. Picture: L-Nutra

Matt Kaeberlein. Picture: MatthewGorelik1, CC BY-SA 4.0, via Wikimedia Commons

Gabrielle Lyon. Picture: Gabrielle Lyon

Forever Strong. Picture: Simon & Schuster (Atria Books)

The Forever Strong Playbook. Picture: Simon & Schuster (Atria Books)

Ozempic. Picture: Hims and Hers

Wegovy. Picture: Novo Nordisk

Mary Claire Haver. Picture: Mary Claire Haver

The New Menopause. Picture: Penguin Random House (Rodale Books)

The New Perimenopause. Picture: Penguin Random House (Rodale Books)

unPAUSED. Picture: Mary Claire Media, LLC

The Optispan Podcast. Picture: Optispan

22 Experts to Follow

Stacy Sims. Picture: Stacy Sims

ROAR. Picture: Penguin Random House (Rodale Books)

Next Level. Picture: Penguin Random House (Rodale Books)

Casey Means. Picture: Stacie Flinner, for Casey Means

Good Energy. Picture: Penguin Random House (Avery)

Levels. Picture: Levels Health Inc

Eric Topol. Picture: Cmichel67, CC BY-SA 4.0, via Wikimedia Commons

Super Agers. Picture: Simon & Schuster

Dan Buettner. Picture: Blue Zones

The Dan Buettner Podcast. Picture: Dan Buettner

Andrea Maier. Picture: Healthy Longevity Medicine Society

Chi Longevity. Picture: Four Seasons Hotels

Nir Barzilai. Picture: Montefiore Einstein

Age Later. Picture: Macmillan (St. Martin's Press)

Vonda Wright. Picture: Vonda Wright

Unbreakable. Picture: Penguin Random House (Rodale Books)

The Dr. Vonda Show. Picture: VMD Global Media, LLC

Lisa Mosconi. Picture: Lisa Mosconi

The Menopause Brain. Picture: Penguin Random House (Avery)

Matthew Walker. Picture: The University of Texas at Dallas

Why We Sleep. Picture: Simon & Schuster (Scribner)

The Matt Walker Podcast. Picture: The Matt Walker Podcast

Oura Ring. Picture: Oura Health

Brad Stanfield. Picture: Brad Stanfield

Nick Norwitz. Picture: Nick Norwitz

12 Products Worth Owning

Smart ring, opening picture. Picture: Andrey Matveev, Unsplash

Every morning it shows you how well you slept, how recovered you are, and whether your body is fighting something off. Picture: Oura Health Oy

Oura Ring 5. Picture: Oura Health

Smartwatch, opening picture. Picture: Káplár Bálint Áron, Unsplash

Apple Watch Series 12. Picture: Apple

Apple Watch SE 3. Picture: Apple

Google Pixel Watch 4. Picture: Google

Glucose sensor, opening picture. Picture: Salahuddin Ahmed, Unsplash

Dexcom Stelo. Picture: Dexcom

Omron Platinum BP5465. Picture: Omron Healthcare

KardiaMobile. Picture: AliveCor

Smart scale, opening picture. Picture: i yunmai, Unsplash

InBody Dial H20N. Picture: InBody USA

Vagus nerve stimulator, opening picture. Picture: Artem Kovalev, Unsplash

Truvaga Plus. Picture: Truvaga

Nurosym. Picture: Parasym

Bed cooling, opening picture. Picture: Wemel Wood, Unsplash

Eight Sleep Pod 6. Picture: Eight Sleep

Sleep mask, opening picture. Picture: Skinby DrG, Unsplash

Manta Sleep Mask. Picture: Manta Sleep

Sleep Swannies. Picture: Swanwick Sleep

MZOO 3D Contoured. Picture: MZOO

Air purifier, opening picture. Picture: Darryl Low, Unsplash

Coway Airmega Mighty AP-1512HH. Picture: Coway

Aranet4 HOME. Picture: Aranet

Water filter, opening picture. Picture: Irvin Zheng, Unsplash

AquaTru Classic. Picture: AquaTru

Hearing aid, opening picture. Picture: GN Group, Unsplash

AirPods Pro 3. Picture: Apple

Jabra Enhance Select. Picture: Jabra

Sennheiser All-Day Clear. Picture: Sennheiser Hearing

Standing desk, opening picture. Picture: ergonofis, Unsplash

WalkingPad P1. Picture: WalkingPad

UPLIFT V3 Standing Desk. Picture: UPLIFT Desk

Power Plate. Picture: Power Plate

LifePro Waver. Picture: LifePro

Treatments and Protocols

Sauna, opening picture. Picture: Almost Heaven Saunas

Almost Heaven Salem 2 Person Barrel Sauna. Picture: Almost Heaven Saunas

GLP-1 drugs and metformin, opening picture. Picture: Diana Polekhina, Unsplash

Semaglutide, sold as Wegovy and Ozempic. Picture: Hims & Hers

Ro. Picture: Ro

AgelessRx metformin. Picture: AgelessRx

A soil bacterium from Easter Island makes it. Picture: Thomas Griggs, Unsplash

Generic sirolimus. Picture: Glenmark Pharmaceuticals

AgelessRx rapamycin. Picture: AgelessRx

Cold plunge, opening picture. Picture: Renu Therapy

Cryotherapy is standing for 2 to 3 minutes in dry air at -110 to -140°C. Picture: CryoBuilt

Ice Barrel 300, the best-value rigid tub. Picture: Ice Barrel

Red light, opening picture. Picture: PlatinumLED Therapy Lights

Laser hair caps work on a schedule, for example 30 minutes every other day. Picture: iRestore

Face masks: 10 minutes, 3 to 5 times a week. Picture: CurrentBody

Eyes treated with the Valeda red light device gained 6.2 letters on the eye chart. Picture: LumiThera

Hyperbaric oxygen, opening picture. Picture: Aviv Clinics

The Sagol Center at Shamir Medical Center, the team behind the aging trials. Picture: Aviv Clinics

Hard home chambers run about $18,000 to $80,000. Picture: Macy-Pan

The Brain & Performance Centre, Dubai. Picture: The Brain & Performance Centre

Treatments and Protocols

IV drips, opening picture. Picture: Next Health

Tru Niagen 300 mg. Picture: Niagen Bioscience

Stem cells, opening picture. Picture: Girl with red hat, Unsplash

Vials of cells. Picture: Next Health

Stem Cell Institute, Panama City. Picture: Stem Cell Institute

The Regenerative Medicine Institute, San José. Picture: RMI, The Regenerative Medicine Institute

BENEV Exosome Regenerative Complex+. Picture: BENEV

Plasma exchange, opening picture. Picture: R. Henrik Nilsson, CC BY 4.0, via Wikimedia Commons

A plasma exchange session. Picture: Next Health

The machine removes about one plasma volume (2.5 to 3 liters) and returns your cells with 5% albumin in saline. Picture: Terumo BCT

Avinity Health, Scottsdale. Picture: Avinity Health

Global Apheresis, Mill Valley. Picture: Global Apheresis

Circulate runs the trial's protocol at about 35 partner clinics around the US. Picture: Circulate Health

Lanserhof Tegernsee in Germany offers a version that filters your own plasma. Picture: Lanserhof

Peptides, opening picture. Picture: Markus Spiske, Unsplash

PEMF, opening picture. Picture: HigherDOSE

For sleep and calm, the NeoRhythm headband is $359. Picture: OmniPEMF

Orthofix Physio-Stim. Picture: Orthofix

Orthofix Cervical-Stim. Picture: Orthofix

BEMER Evo. Picture: BEMER Group

11 Longevity Clinics, in the US and Abroad

Fountain Life. Picture: Fountain Life

Human Longevity Inc. in San Diego. Picture: Human Longevity Inc.

Biograph in New York's Financial District. Picture: Biograph

Next Health. Picture: Next Health

A sample Function Health report, in the app. Picture: Function Health

One scan, about an hour, no radiation and no dye. Picture: Prenuvo

Mayo Clinic in Rochester, Minnesota. Picture: Mayo Clinic

Clinique La Prairie in Montreux, on Lake Geneva. Picture: Clinique La Prairie

GlycanAge reads aging from the sugars on your antibodies. Picture: GlycanAge

SHA in Costa Mujeres, north of Cancún, Mexico. Picture: SHA Wellness Clinic

SHA in L'Alfàs del Pi, near Alicante, Spain, since 2008. Picture: SHA Wellness Clinic

Lanserhof Lans, near Innsbruck, Austria. Picture: Lanserhof (Patrick Graf)

Chi Longevity at the Four Seasons Hotel, Singapore. Picture: Four Seasons Hotels

Cleveland Clinic Executive Health. Picture: Cards84664, CC BY 4.0, via Wikimedia Commons

Buchinger Wilhelmi. Picture: Buchinger Wilhelmi

The 12 Most Exciting Innovations Coming Soon

Dasatinib is a prescription drug (Sprycel). Picture: Bristol Myers Squibb

The first drug ever approved for a longer life could be for your dog. Picture: Loyal

AI picks the target and invents molecules that fit it. Picture: National Institute of Allergy and Infectious Diseases, Unsplash

The Buck Institute. Its CEO, Eric Verdin, co-founded Circulate Health. Picture: Buck Institute for Research on Aging

A BlueRock lab. Its cells have been in a phase 3 trial since 2025. Picture: BlueRock Therapeutics

GRAIL's Galleri blood test kit. Picture: GRAIL

Tests That Show How Fast You're Aging

A sample TruDiagnostic report. Picture: TruDiagnostic

TruDiagnostic TruAge. Picture: TruDiagnostic

A lab test has you run or ride with a mask on for 8 to 12 minutes. Picture: PNOE

Apple Watch. Picture: Apple

ApoB and Lp(a), opening picture. Picture: Akram Huseyn, Unsplash

A continuous glucose monitor shows what each meal does. Picture: Dexcom

hs-CRP, opening picture. Picture: Malcolm Choong, Unsplash

A grip gauge (hand dynamometer) is about $20 to $60. Picture: Camry

DEXA takes 6 to 10 minutes, with far less radiation than a chest X-ray. Picture: GE HealthCare

A sample Cleerly report. Picture: Cleerly

A Prenuvo whole-body MRI scanner. Picture: Prenuvo

The Galleri test kit. Picture: GRAIL

Superpower. Picture: Superpower

OmegaQuant Omega-3 Index. Picture: OmegaQuant

Jinfiniti NAD+ test. Picture: Jinfiniti

Ezra Full Body scan. Picture: Ezra (Function Health)

BodySpec. Picture: BodySpec

DexaFit. Picture: DexaFit

Function Health. Picture: Function Health

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