A FREE GUIDE · LONG COVID

The Long COVID Recovery *Roadmap.*

Why your symptoms persist — the five mechanisms behind PASC — and the four-pillar plan that actually moves recovery forward.

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FROM DR. SIMON

You are not imagining *this.*

If you are reading this, there's a good chance you were told your labs look fine while you feel anything but. You get winded on the stairs you used to run. A normal afternoon costs you the next two days. The word "fatigue" doesn't come close.

Here is what I want you to know before you read another page: **post-COVID illness has measurable biology.** It is not deconditioning, it is not anxiety, and it is not a failure of willpower. Researchers have mapped several interacting mechanisms behind persistent symptoms — and mechanisms can be worked on.

As the naturopathic physician who advises the Washington State Department of Health on Long COVID, and as a clinician who treats it every week, I built this guide to give you two things: a clear map of what is happening inside you, and a practical plan you can start on now and bring to any clinician. It won't replace individualized care. But it will change how you think about your recovery — from pushing harder to working smarter.

– Dr. Andrew Simon, ND, BCB

This guide is educational and is not a substitute for individualized medical care. Talk with a qualified clinician before making changes to your treatment, especially if you have cardiac symptoms.

START HERE

What Long COVID actually *is.*

> **Long COVID** — clinically, post-acute sequelae of COVID-19 (PASC) — is a set of symptoms that persist or appear at least three months after a SARS-CoV-2 infection and last at least two months, without another explanation. It can follow mild infections, affects multiple organ systems, and is a recognized medical condition. Common features include fatigue, post-exertional malaise, brain fog, palpitations, and shortness of breath.

~6%
of US adults report ever having had Long COVID (CDC, 2024)

200+
distinct symptoms documented across organ systems

3 mo+
duration that defines PASC under the WHO clinical case definition

The single most important idea in this guide: your symptoms are downstream of specific, identifiable dysfunctions. When you know which mechanisms are driving your case, treatment stops being guesswork.

THE BIOLOGY

Five reasons you still feel *like this.*

Research has converged on a handful of interacting mechanisms. Most people have more than one. Recognizing yours is the first step of the plan.

MECHANISM 01

Immune dysregulation & viral persistence

The immune system stays switched on: lingering inflammation, autoantibodies, and reactivation of latent viruses such as Epstein–Barr. Fragments of the original virus may persist in tissue, keeping the body in a defensive posture long after the infection clears.

MECHANISM 02

Mitochondrial dysfunction

Mitochondria — your cells' power plants — work less efficiently after COVID. The same activity costs more energy and recovers more slowly. This is the biology beneath exercise intolerance and the crash that follows exertion.

MECHANISM 03

Autonomic dysfunction (dysautonomia / POTS)

The autonomic nervous system loses its normal flexibility. Standing up races the heart; stress lingers instead of resolving. Formal POTS — a jump of 30+ bpm on standing — is common and measurable.

MECHANISM 04

Endothelial injury & microclots

The lining of your blood vessels is disturbed, impairing circulation and oxygen delivery to muscle and brain. This contributes to breathlessness, cold extremities, and the sense that your tissues aren't getting enough fuel.

MECHANISM 05

Neuroinflammation

Inflammatory signaling in the nervous system drives brain fog, poor attention, low mood, and disrupted sleep. It is inflammation, not character — and it responds to lowering the body's overall inflammatory load.

ALSO COMMON

The gut and hormones travel with it

Microbiome disruption, new digestive symptoms, menstrual changes, and thyroid or cortisol shifts frequently accompany PASC. A complete evaluation looks here too — these are often the most treatable pieces.

THE PLAN

Four pillars, paced *deliberately.*

This is the structure I use in clinic. The order matters: stabilize the nervous system and energy supply before you ask the body to do more.

1. **Evaluate before you treat.** A targeted workup — inflammatory markers, EBV panel, comprehensive thyroid and cortisol, nutrient status (B12, D, iron, magnesium), and cardiometabolic screening. If you feel your heart race on standing, ask for orthostatic vitals or a stand test to check for POTS.

2. **Retrain the nervous system.** Heart rate variability (HRV) biofeedback is one of the most practical, measurable tools in PASC care — it rebuilds autonomic regulation without requiring exertion. More on this next page.

3. **Repair the cellular and nutritional base.** An anti-inflammatory, whole-foods diet; protein at each meal to protect muscle; and targeted support for mitochondria and antioxidant capacity, graded honestly by evidence. IV nutrient therapy has a role for some patients during depleted phases.

4. **Expand capacity without crashing it.** Pacing — not pushing — guided by your energy envelope and, where appropriate, your heart rate. Add function in small, sustainable increments while the mechanisms above are treated.

> **The one-line version:** calm the system, fuel the cells, then slowly grow the envelope — in that order.

PILLAR 2, UP CLOSE

The tool most people never *hear about.*

Heart rate variability is the tiny variation in time between your heartbeats. Counterintuitively, **more variability is healthier** — it signals an autonomic nervous system that can shift smoothly between stress and recovery. In Long COVID, that flexibility is often lost.

HRV biofeedback trains it directly. By breathing at a slow, personalized pace — usually around six breaths per minute — while watching your heart-rhythm response in real time, you strengthen the vagal "brake" that calms the body. It is skills training, not a pill, and it asks nothing of your energy reserves.

Why it fits PASC

- Directly targets dysautonomia and POTS symptoms
- Requires no exertion — safe with post-exertional malaise
- Gives you an objective number to track progress
- Evidence base for anxiety, hypertension, and stress recovery

A starter breath

Inhale gently through the nose for a count of four; exhale, slightly longer, for a count of six. Five minutes, once or twice a day. The longer exhale is the active ingredient — it engages the parasympathetic "recover" branch. If it makes you lightheaded, shorten the counts.

A board-certified practitioner can tailor your resonance breathing rate and pair it with equipment for faster gains. Dr. Simon is BCIA board certified in biofeedback.

THE CRASH

Why "just exercise" makes it *worse.*

Post-exertional malaise (PEM) is the hallmark that separates Long COVID from ordinary deconditioning: a delayed, disproportionate crash — often 12 to 72 hours later — after physical, cognitive, or emotional effort. Graded exercise pushed past your limit doesn't build tolerance; it triggers relapse.

The alternative is **pacing**: staying inside your energy envelope, and expanding it only as the underlying mechanisms improve. Think of energy like a daily bank balance, not a muscle to exhaust.

INSTEAD OF	DO THIS
"Push through" the fatigue	Stop at ~70% of your limit — leave energy in the tank
One big productive day	Spread activity across the week; alternate exertion with rest
Ignoring early warning signs	Track heart rate; rest when it spikes for the effort
Silent recovery days	Plan proactive rest *before* you need it
All-or-nothing exercise	Start with recumbent, low-intensity movement within tolerance

RULE OF THUMB

If you crash the next day, you did too much today

Recovery is not linear — expect good and bad weeks. The trend over a month matters more than any single day.

TAKE THIS WITH YOU

What to bring to your *clinician.*

Copy this into a note. Walking in organized shortens the road to a real plan.

Symptoms to log for 2 weeks

- ✓ Daily energy (0–10) morning and evening
- ✓ Any crash — and what preceded it
- ✓ Heart rate lying vs. standing
- ✓ Sleep quality and hours
- ✓ Brain fog episodes and triggers

Tests worth discussing

- ✓ Comprehensive thyroid + morning cortisol
- ✓ Ferritin, B12, vitamin D, magnesium
- ✓ Inflammatory markers (hs-CRP)
- ✓ EBV antibody panel
- ✓ Orthostatic vitals / stand test for POTS

SELECTED SOURCES

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Centers for Disease Control and Prevention. Long COVID Household Pulse Survey, 2024.

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World Health Organization. Post COVID-19 condition (Long COVID) clinical case definition, 2021.

YOUR NEXT STEP

Get a plan built on *your* mechanisms.

Every case of Long COVID is a different mix of the five mechanisms. An evaluation sorts out which ones are driving yours — so your energy goes toward what will actually help.

BOOK A LONG COVID EVALUATION

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