

# Molecular Hydrogen May Reduce Fatigue and Support Physical Function in People with Long COVID

Analysis by [Dr. Joseph Mercola](#)

May 05, 2026

## STORY AT-A-GLANCE

- › In a 14-day pilot trial, hydrogen-rich water was associated with reduced fatigue and gains in strength, endurance, and sleep among 32 adults with long COVID
- › Participants increased their walking distance by about 42 to 62 meters (138 to 203 feet), showing measurable gains in stamina that translate into real-world movement and energy
- › Within the trial, the largest fatigue reductions tracked with the largest strength gains — a within-group correlation that suggests, but does not prove, a feedback effect between energy and physical function
- › Research suggests hydrogen may help lower oxidative stress and inflammation while supporting how mitochondria produce energy
- › Consistent hydrogen use combined with lifestyle approaches that address inflammation may help support recovery of energy, focus, and physical performance

In a 14-day pilot, single-blind randomized controlled trial of 32 adults published in *Nutrients*, hydrogen-rich water was associated with reduced fatigue scores and improved walking distance, strength, and sleep quality in people with long COVID.<sup>1</sup> Fatigue is widely understood as a sign that cells are not producing energy as efficiently as they could. When that system falters, even simple tasks like walking across a room or focusing on a conversation can become exhausting.

For those unfamiliar, long COVID is characterized by persistent fatigue, shortness of breath, poor sleep, and reduced physical capacity that continue for weeks or months after the initial infection clears. This means your body doesn't fully recover, even when standard tests show nothing wrong. Many people also experience brain fog, muscle weakness, and disrupted daily function, which makes work, exercise, and basic routines harder to maintain.

What drives long COVID isn't a single issue but a cascade of problems. Chronic inflammation, oxidative stress, and immune dysfunction keep your system in a constant state of strain. At the same time, your mitochondria – the parts of your cells responsible for producing energy – lose efficiency. That combination creates a cycle where low energy leads to inactivity, which further weakens your physical and metabolic capacity.

Against that backdrop, researchers began testing whether molecular hydrogen could interrupt this cycle at its root by reducing oxidative stress and restoring cellular function. The results point to a targeted way to improve energy, strength, and recovery, which sets up a closer look at exactly what the study uncovered and how those changes showed up in real people.

## **What the Trial Found: Hydrogen Water and Long-COVID Symptoms**

In the featured Nutrients study, one group drank hydrogen-infused water and another drank regular water for 14 consecutive days, twice daily.<sup>2</sup> The trial framework was single-blind, meaning participants did not know which water they received. This reduces participant expectation effects, though researchers were aware of group assignments and a small pilot cannot rule out all sources of bias.

The study included 32 adults who continued to experience fatigue and shortness of breath weeks after their **COVID infection**. These individuals had measurable declines in daily function, including reduced endurance, muscle weakness, and poor sleep quality.

By focusing on people already dealing with lingering symptoms, the researchers tested whether **hydrogen water** could produce real-world improvements that you would actually feel in your day-to-day life.

- **Fatigue dropped noticeably compared to placebo** – The group drinking hydrogen-rich water showed a statistically significant reduction in fatigue scores compared to the placebo group. Participants in the hydrogen group reported feeling less exhausted and more capable of handling daily activities. The effect size was classified as moderate, meaning the change was strong enough to matter in real life, not just on paper.
- **Physical endurance improved in measurable ways** – One of the clearest results came from the six-minute walk test, which measures how far someone can walk in a fixed time.

Participants drinking hydrogen water increased their walking distance significantly more than the placebo group, with improvements ranging between about 42 to 62 additional meters (roughly 138 to 203 feet). Within the trial, this magnitude of improvement reflects gains in cardiovascular and muscular endurance among the studied participants; whether comparable gains generalize beyond this population requires larger trials.

While hydrogen water produced measurable gains in fatigue, endurance, strength, and sleep, it did not lead to a statistically significant change in shortness of breath, nor in depression, anxiety, or stress scores measured by the Depression, Anxiety, and Stress Scale - 21 Items (DASS-21) self-questionnaire. This pattern suggests hydrogen-rich water may be more relevant for fatigue and physical function than for breathing or mood symptoms in this population.

- **Muscle strength and functional movement also increased** – The study used a chair stand test to measure how many times participants could stand up and sit down in 30 seconds. Those in the hydrogen group improved significantly more than the

placebo group, showing better lower-extremity functional capacity. In other contexts, this measure has been linked to balance and fall risk, though those endpoints were not assessed in this trial.

- **Sleep quality improved, especially in those already struggling** – Among participants who had trouble sleeping, hydrogen water was associated with improvement in sleep scores. Poor sleep and fatigue feed each other, creating a cycle that's hard to break. Better sleep may interrupt that cycle, giving the body more opportunity for overnight recovery.
- **Benefits appeared within the 14-day window** – Measurable changes appeared across multiple endpoints, including fatigue, endurance, strength, and sleep, within the two-week intervention. Whether individuals outside the population that was studied would experience similar timing is not established. Larger and longer trials are needed to confirm and extend these findings.

*These findings are from research conducted in clinical settings. Results may not apply to all individuals.*

## **Proposed Mechanisms: How Hydrogen May Influence Cellular Energy**

The results of the featured study are notable, and the proposed mechanisms are worth understanding. The trial also reported a within-group correlation between reduced fatigue and improved muscle function – participants with the largest fatigue reductions showed the largest strength gains.

This within-trial correlation is consistent with the idea that energy and physical performance reinforce each other, though it's important to not jump into general conclusions right away. Such a relationship cannot be confirmed from a single small trial.

- **Observed effects of hydrogen on oxidative stress** – Researchers have proposed that molecular hydrogen acts as a selective antioxidant – preferentially neutralizing the most reactive species, like hydroxyl radicals, while leaving signaling-essential reactive species intact.

For context, hydroxyl radicals are highly reactive and damage almost anything nearby, including proteins, lipids, and DNA. The beneficial reactive species the body uses for immune signaling and cellular communication are more stable, so the proposed model is that hydrogen passes them by. This selective-antioxidant model remains a hypothesis under active investigation.

- **Mitochondrial possibilities** – Hydrogen has been studied for its potential to influence mitochondrial activity by reducing excess oxidative stress within these structures. When mitochondria function more efficiently, the systems they fuel – including muscles, the brain, and the immune response – have more energy available.
- **Inflammatory signaling properties** – Hydrogen has also been studied for anti-inflammatory effects. Emerging evidence suggests it may help moderate inflammatory signaling. When chronic inflammation is reduced, energy that has been diverted into inflammatory responses can become available for repair and normal activity.

## **Practical Approaches for Long-COVID-Related Fatigue**

Approaches that aim to support cellular energy production and reduce chronic inflammation are areas of active research for people with persistent post-COVID symptoms. Within this context, the following strategies can be explored:

1. **Consider drinking hydrogen-rich water** – Some studies have explored whether hydrogen-rich water may help with cellular energy and oxidative stress. Hydrogen tablets are typically dropped into room-temperature water and consumed once fully

dissolved (when the water turns cloudy, indicating active hydrogen gas). Tablets producing 8 to 10 parts per million (ppm) with independent purity testing are generally considered preferable.

Also, timing matters. Drink it right away because hydrogen escapes quickly. Don't swallow the tablet dry or drink partially dissolved pieces, because the reaction produces heat and can damage your tissues. For persistent fatigue, this approach focuses on the cellular-energy hypothesis as one possible target.

- 2. Patterns of consistent and cycled use are sometimes discussed** – Some users adopt a daily-then-cycled pattern to maintain responsiveness, but the optimal regimen has not been established in clinical trials. The protocol in the Nutrients study used twice-daily consumption for 14 days. People who experiment with longer-term use may use it daily during periods of higher fatigue and pause for a few days before resuming. Whether cycling improves outcomes is not clinically established.
- 3. Spike-protein research is part of the post-COVID conversation** – The Nutrients trial focused on cellular energy. In another study, researchers detected vaccine-derived recombinant spike protein in the blood of vaccinated individuals up to 187 days post-vaccination.<sup>3</sup> Note that the same paper does not directly establish persistence of infection-derived spike protein, which is the subject of separate ongoing investigation.

Some clinicians and researchers have explored whether proteolytic enzymes – enzymes that break down proteins – might support degradation of circulating proteins. Among proteolytic enzymes, some health care practitioners favor lumbrokinase; rigorous head-to-head clinical comparisons with nattokinase and serrapeptase remain limited.

Proteolytic enzymes are typically taken away from protein-containing meals (commonly an hour before or two hours after) to limit competition with digestive demands. Clinical evidence specifically demonstrating spike-protein-fragment

clearance in humans is limited; some individuals report this approach as a complementary strategy when fatigue persists.

- 4. Structured recovery frameworks are available** — Practical resources include the [I-RECOVER protocol from the Independent Medical Alliance](#) (formerly known as the Front Line COVID-19 Critical Care Alliance, or FLCCC).<sup>4</sup> It covers detox, inflammation control, and mitochondrial repair in a clear sequence. If you feel overwhelmed or unsure where to start, this gives you a defined structure so you can move forward without second-guessing every decision.
  
- 5. Cognitive symptoms are sometimes addressed alongside physical recovery** — Fatigue can affect cognition as well as physical function. If focus, memory, or mental speed feel off, brain-training tools paired with light physical movement are sometimes used to support neuroplasticity and brain–body coordination. Regular practice is thought to support these pathways over time.

## **FAQs About Molecular Hydrogen for Long COVID**

**Q: What did hydrogen-rich water improve in the long-COVID pilot trial?**

**A:** In the cited 14-day pilot trial published in *Nutrients*, hydrogen-rich water was associated with measurable improvements in fatigue, strength, endurance, and sleep.

**Q: How quickly do you start seeing results?**

**A:** The improvements showed up in just 14 days of consistent use. That short timeframe gives you a clear expectation. If your energy system is responding, you would notice changes within weeks, not months. This also makes it easier to track your progress and stay motivated instead of guessing whether something is working.

**Q: Why does hydrogen help with fatigue at the root level?**

**A:** Fatigue in long COVID has been associated with disrupted energy production inside cells. Hydrogen has been studied for its potential to reduce oxidative stress and moderate inflammatory signaling, with proposed effects on mitochondrial function. The selective-antioxidant model is currently a hypothesis under active investigation.

**Q: Does hydrogen help with all long COVID symptoms?**

**A:** Results in this trial were stronger for fatigue, strength, endurance, and sleep than for shortness of breath. DASS-21 scores also did not show statistically significant improvement. The data support hydrogen-rich water as more relevant to fatigue and physical function than to breathing or mood symptoms in this population.

**Q: How does improving energy lead to better physical recovery?**

**A:** Within the trial, participants with the greatest fatigue reductions also showed the largest strength gains. Whether this within-group correlation reflects a generalizable feedback loop between energy and movement requires further study.

*This article is for informational purposes only and does not constitute medical advice. Consult a qualified healthcare provider before making changes to your health regimen.*

## Sources and References

---

- [1, 2 Nutrients May 18, 2024](#)
- [3 Proteomics Clin Appl. 2023 Nov;17\(6\):e2300048](#)
- [4 Independent Medical Alliance, I-RECOVER](#)