

Four easy ways to reduce your risk of severe COVID-19

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Spices and herbs, whether fresh or dried, are important foods for the microbes in our gut that help keep our bodies in balance. Credit: Unsplash/CC0 Public Domain

Lifestyle choices—such as eating healthy, staying active as well as

resting after exercise, and managing stress—may help prevent people from developing severe COVID-19 and mitigate post-infection conditions and symptoms, reports a new CU Boulder paper.

Recently published in the *American Journal of Lifestyle Medicine*, the paper details various biological mechanisms, resulting from modern living, that predispose humans to chronic, low-level inflammation and incline them toward even more damaging inflammation when fighting off the SARS-CoV-2 virus that causes COVID-19.

"Many of the problems that we're seeing from COVID are being attributed to how our body ramps up an [immune response](#) that is way over the top compared to what is needed," said Elizabeth Enichen, lead author and 2021 Honors graduate in the Department of Ecology and Evolutionary Biology.

COVID can also shut down our antiviral defenses before we're able to develop a more robust and specific response, preventing us from regulating our own immune system, said Enichen.

The publication details how existing [chronic inflammation](#) combined with an out-of-balance gut microbiome (the collection of resident bacteria in one's lower digestive system) predisposes the immune system to overreact. In humans, this overzealous inflammatory response to SARS-CoV-2 can lead to [severe disease](#), organ damage and death.

Bats, on the other hand—who likely harbored the virus before it jumped to humans—are able to coexist with viruses like this one because of their lower propensity for inflammation and an at-the-ready antiviral defense, according to the paper.

The basic science of what individuals can do to protect themselves comes at a crucial time. Although President Biden told news program 60

Minutes on Sept. 18 that "the pandemic is over," about 400 people still die of COVID-19 every day, and more than 23,000 Americans remain hospitalized due to the virus. And the lingering or new symptoms of Long COVID, categorized as post-acute sequelae (PASC) of SARS-CoV-2, remain a concern for millions of those still recovering.

Barbara Demmig-Adams, co-author on the study, and professor of distinction and director of the EBIO Honors Program within the Department of Ecology and Evolutionary Biology, suspects that imbalances in our immune response and microbiome also play a large role in PASC, which can include brain fog, memory issues, shortness of breath, exhaustion and [chronic pain](#).

The surest way to prevent PASC: Don't get infected, she said. But those who do can mitigate lasting [health impacts](#) through basic [lifestyle choices](#), according to Demmig-Adams.

That's because much of our modern lifestyle—the food we eat, how sedentary we are, and how stressed out we are on a regular basis—throws our immune system and microbiome off-balance.

"Many of the things you can do to lower the risk of chronic disease also apply to infectious disease," said Demmig-Adams. "If you make small tweaks in exercise, diet and stress, those can all act together to help reduce this uncontrolled inflammation that COVID is superimposed upon."

Here's how:

Spice up your life

When we eat food, we're also feeding the swarm of symbiotic creatures inside of our gut, known collectively as the microbiome. These microbes

play a big role in regulating our immune system, said Enichen.

And when we're not eating a balanced diet, that can shift the composition of our microbiome. This can cause the body to turn on itself, as our immune system sees too many of certain bacteria as a threat.

"That contributes to underlying inflammation," said Enichen. "If you already have an unbalanced microbiome and then you get infected with COVID, you can have an excessive immune response."

Berries and fiber-rich fruit and vegetables support the lung and gut microbiome, enhancing our defenses against viral disease. Dark leafy greens like kale and spinach, as well as canned fish (sardines, tuna) high in omega-3 fatty acids and canned corn can all help rebalance inflammatory responses, the authors report. Whole-grains, nuts and seeds support the kinds of microbes that restore balance, according to the paper.

Demmig-Adams also notes that what we eat is often too bland for our microbiome's palette. Spices and herbs—both fresh and dried—aren't just flavorful, but food for the microbes we depend on.

Add cinnamon to your oatmeal, rosemary to your potatoes, and nutmeg, cloves and ginger to your pumpkin-themed food or drink this fall. And when takeout is tempting, Demmig-Adams suggests modifying what you buy: Add extra dried oregano or fresh basil to pizza or pasta, cardamom to your chicken or cumin in your breakfast burrito.

Demmig-Adams suggests, for the most part, to skip the supplements, especially high-dose ones. The best way to get the necessary nutrition on your microbes' menu is to get them directly from your favorite foods. For example: Quercetin, a promising antioxidant currently being studied

for its ability to suppress SARS-CoV-2 cell entry and replication, is naturally found in onions, green tea, berries and red wine. The carotenoid zeaxanthin, which Demmig-Adams' group has studied for decades, can also help suppress cell entry and oppose run-away inflammation. It's found in eggs and corn.

Pace yourself

We should be just as careful about overexerting our bodies as not moving them enough, said Demmig-Adams.

While regular physical activity can reduce run-away inflammation and boost immunity, "exhaustive exercise without sufficient recovery can actually promote non-resolving inflammation and may exacerbate COVID-19 disease risk," according to the new paper.

So, if you regularly push your body, make sure to build in time for adequate rest and recovery. And if you are actively sick or recently recovered, realize that the amount of physical activity your body can handle will likely be different for a while.

"Exercise doesn't have to be this crazy, intense time that you dread. Rather, the evidence suggests that doing that more moderate and enjoyable exercise seems to be what creates the right balance of those pro and anti-inflammatory signals," said Enichen.

Demmig-Adams is a fan of the "goldilocks" approach: not too much, not too little.

"Anything that you can do again the next day should be fine—and that varies. It's very personal."

Taking the stairs, going on walks and doing stretches and exercises at

home all offer substantial benefits. And if you do want to ramp up your workout routine, do so gradually and build in plenty of recovery time, she said.

Take time to manage stress

Unfortunately, chronic psychological stress can also wear us down and contribute to non-resolving inflammation in the body, as well as disrupt our gut microbiome, according to the study. And research shows women have been more likely to experience intense stress, eat poorly and move their bodies less since the start of the pandemic.

Yoga, therapy, mindfulness-based meditation practices and acupuncture have all been shown to reduce the harmful chronic, non-resolving inflammation that contributes to severe COVID-19. Our bodies and minds also reap benefits from just 5 to 10 minutes a day of deep-breathing, journaling or letting one's mind wander while on a walk, according to research compiled in the new publication.

Something over nothing

The good news, the authors stress, is that everything counts: Every time you take the stairs instead of the elevator, eat something with herbs and spices, or sit down and just breathe deeply for five minutes can have an impact.

"It doesn't have to be perfect," said Enichen. "All those small improvements can really act together to play a big role in improving our gut and our immune system."

People are also quick to blame themselves for not doing something well enough, when often there are barriers we can't control, she said. Can't

afford healthier meals? Don't feel safe going on walks in your neighborhood? Simply do what you can.

"It's really important to emphasize that there are also all these structural factors at play that do influence who has the education and access to healthy foods, or who has the time to be exercising," said Enichen.

"There needs to be structural level work done to expand access and make it more equitable for everybody to access these recommendations."

More information: Elizabeth Enichen et al, COVID-19 Spotlights Connections between Disease and Multiple Lifestyle Factors, *American Journal of Lifestyle Medicine* (2022). [DOI: 10.1177/15598276221123005](https://doi.org/10.1177/15598276221123005)

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