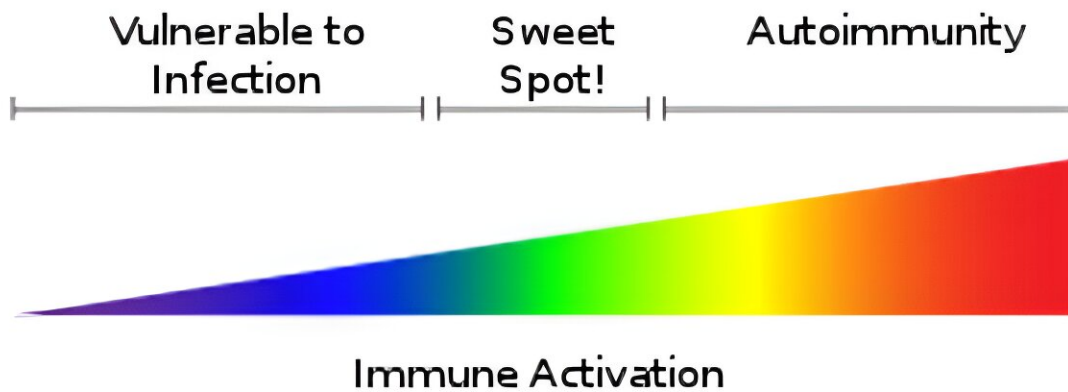


# Immune health—an immunologist explains why both too strong and too weak an immune response can lead to illness

November 20 2023, by Aimee Pugh Bernard

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Too much or too little immune activation can lead to illness. Credit: [Keybonham/Wikimedia Commons, CC BY-SA](#)

For immune health, some influencers seem to think the Goldilocks philosophy of "just right" is overrated. Why settle for less immunity when you can have more? Many social media posts push supplements and other life hacks that "boost your immune system" to keep you healthy and fend off illness.

However, these claims are not based on science and what is known about immune function. Healthy immune systems don't need to be "boosted." Instead, the immune system works best when it is [perfectly balanced](#). Scientific experts on the immune system—immunologists—know that too much of an immune reaction could result in allergies, autoimmune disorders or chronic inflammation. On the flip side, too little of an immune reaction could result in illness or infection.

Your immune system requires a delicate balance to operate properly. When it's out of balance, your immune system itself can cause disease.

## Cellular balance

The immune system is the mobile defense system of your body. It is a complex network of cells and organs that work together to protect your body from infection and disease. Your immune cells are continually on patrol, traveling throughout your body, looking for infectious invaders and damage.

New immune cells are created in your bone marrow. Certain immune cells—called B and T cells—are the special forces of the immune system, playing an important role in the elimination of infectious invaders. Because of this role, these cells undergo a rigorous boot camp during their development to ensure they will not discharge friendly fire on [healthy cells](#) in the body.

Any [B cell](#) or [T cell](#) exhibiting activity against the self—or autoreactivity—is killed during training. Millions of newly created B and T cells are killed every day because they fail this training process. If these self-reactive cells escape destruction, they could turn against the body and carry out an inappropriate [autoimmune attack](#).

[My research](#) investigates how B cells are able to slip past the checkpoints

the immune system has in place to guard against autoreactivity. These [tolerance checkpoints](#) ensure that autoreactive immune cells are either purged from the body or held in permanent lockdown and unable to engage in inappropriate responses that would target healthy tissue.

## More isn't necessarily better

You've likely seen advertisements for [dietary supplements](#) that promise to "boost [immune function](#)." While this may sound appealing, it is important to keep in mind that the immune system functions best when perfectly balanced.

If the immune system is like a thermostat, turning it up too high results in overactivation and uncontrolled inflammation, while turning it down too low results in a failure to respond to infection and disease.

Because sustaining [immune balance](#) is critical, tinkering with the immune system through the use of supplements is not a good idea unless you have a clinical deficiency in certain vital nutrients. For people with healthy levels of nutrients, taking supplements could lead to a false sense of security, particularly since the fine print on the back of supplements usually has [this disclaimer](#) about their listed benefits: "This statement has not been evaluated by the FDA. Not intended to diagnose, treat, cure, or prevent any disease."

Eating a [well-balanced diet](#), exercising regularly, reducing stress and getting decent sleep, on the other hand, can help your body maintain a functioning and healthy immune system. Although these lifestyle behaviors are not foolproof, they contribute to overall good health and ultimately to a more healthy immune system.

In reality, [vaccines are the only safe and effective tool](#) beyond healthy [lifestyle behaviors](#) to support your immune system. Vaccines contain

harmless forms of pathogens that help to train your [immune cells](#) to recognize and fight them. When you come into contact with the real and harmful version of the pathogen out in the wild—whether it's at a [grocery store](#), social event or school—at a later date, these fully trained immune memory cells will immediately begin to fight and destroy the pathogen, sometimes so quickly that you don't even realize you've been infected.

In a world where people are continually bombarded by the marketing mantra that more is better, rest assured that when it comes to the [immune system](#), maintaining perfect balance is just right.

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