

DOES SLEEP QUALITY AFFECT IMMUNE FUNCTION?



Sleep is more than just the time to recharge the body and mind. It also directly impacts our immune system, affecting our overall health in several ways.

[Years of research show that people who get insufficient or poor quality rest are more likely to get sick.](#) Sleep also plays a role in recovery time after illness. Those who get less sleep often take longer to get over everyday illnesses like the common cold or flu. We all know how crucial sleep is to our overall well being, but there are still a couple of questions that need answering.

We must understand *how and why* sleep enhances our immune defense, so we are motivated to make the necessary lifestyle changes to get enough quality rest on a daily basis.

SLEEP, STRESS, & IMMUNE HEALTH

There's a bidirectional relationship between sleep and stress. Both psychological stress and adrenal activation (the definition of stress) can affect our ability to fall and remain asleep. Conversely, lack of sleep leaves us irritable, with reduced focus, acuity, and decision-making capability, all of which compound stress levels.

Doctors and scientists now know that stress impacts more than just our emotional well-being. It also has physiological consequences. [Acute stress is associated with the up-regulation of specific parameters of immune function and down-regulation of others.](#) [Chronic stressors are immunosuppressors on both a cellular and humoral level.](#) In layman's terms, stress directly impacts our immune system, and sleep directly affects stress.

When we sleep, our entire system slows down. It gives our cardiovascular system a chance to recuperate and our endocrine system resets, meaning insulin and glucagon are better regulated with proper rest. As part of this, our adrenal system takes a breather. So, the HPA axis (hypothalamic-pituitary-adrenal axis and cortisol production also gets a reprieve. This is not a passive state; it just looks that way. While we are laying there still in bed, there is a lot of activity happening in our brains and our bodies on a cellular level. Tissues repair, telomeres are maintained, and toxins that build up in the brain during the day get removed.

People who experience prolonged short sleep duration or low-quality of sleep have a higher risk of cardiovascular issues, insulin resistance, and neurocognitive challenges. These common health risks have been linked to low-grade systemic inflammation associated with poor sleep and stress, which brings us to cytokines. Cytokines are our immune and inflammatory response regulators.

SLEEP, CYTOKINES, & IMMUNE FUNCTION



Cytokines are part of our peripheral immune system and help our bodies respond to infections. They regulate various aspects of immunity, including innate (inborn), acquired, and inflammatory response. The role cytokines play in our immune health is so vast that entire papers are written on this subject alone. I simply wish to highlight that cytokines significantly influence white blood cells, which are the human body's frontline warriors against infection and disease.

[In the early stages of nocturnal sleep, proinflammatory cytokine activity peaks.](#) while anti-inflammatory cytokines peak during the day. This suggests that sleep plays a role in regulating cytokine activity and helps with the distribution of T cells to the lymph nodes. T cells are lymphocytes that actively participate in our immune response. However, much like sleep and stress, the interaction between the T cells and lymphocytes is give-and-take. Cytokines also help to regulate our circadian rhythm. Although more research is needed, we do know the sleep-wake cycle affects cytokine production, which directly impacts immune and inflammatory response.



The long-standing assumption that sleep and human immune function are related, is still a relatively new area of scientific investigation. Although we don't have all of the answers yet, science has determined that sleep and our immune health are unequivocally linked.

So if you are taking proactive steps to improve your overall health, you now understand more specifics about how and why sleep affects our immune system—all the more reason to make quality rest a priority!



[Contact Us](#)

centraldrug@centraldrug.net

(361) 575 4713

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