

Practitioner & business name

Address

Phone number

Email

Website

What Is the Immune System?

A journey through the immune system¹

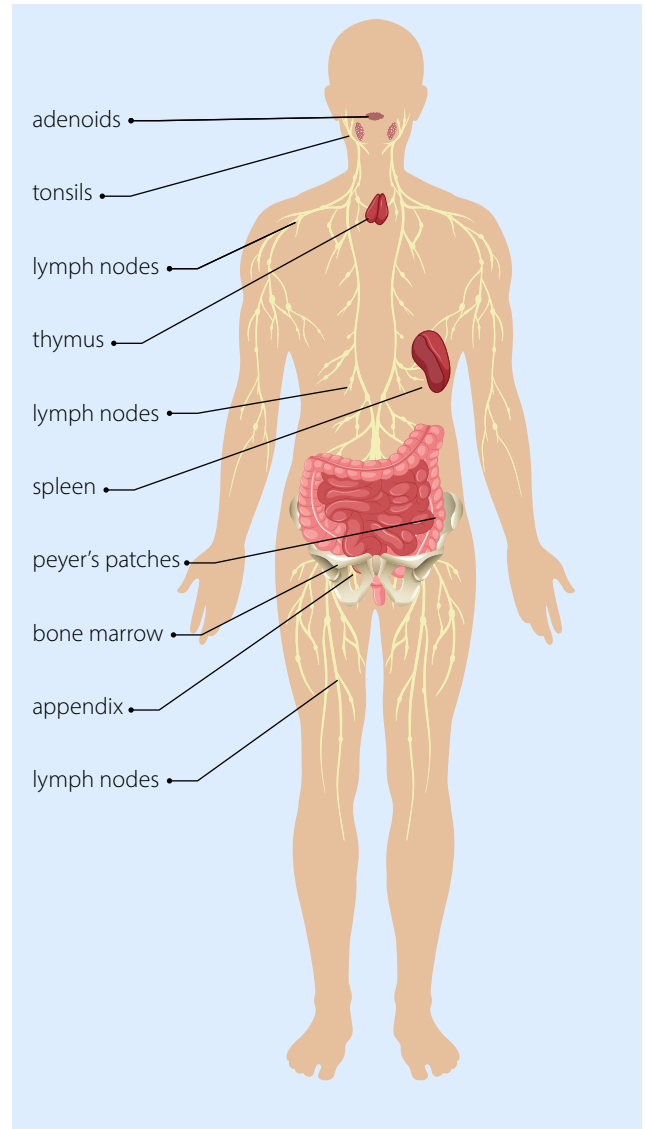
Human beings are exposed to a variety of viruses, bacteria, and parasites (microbes) that may cause harm to the body. The immune system is the body's protection against these microbes and consists of specialized white blood cells. It is broken into two branches, the **innate immune system** and the **adaptive immune system**. It might be interesting to consider that the immune system is mobile, and immune cells use the bloodstream to move to parts of the body where they are needed.

Innate immune system: first line of defense, nonspecific and fast-acting

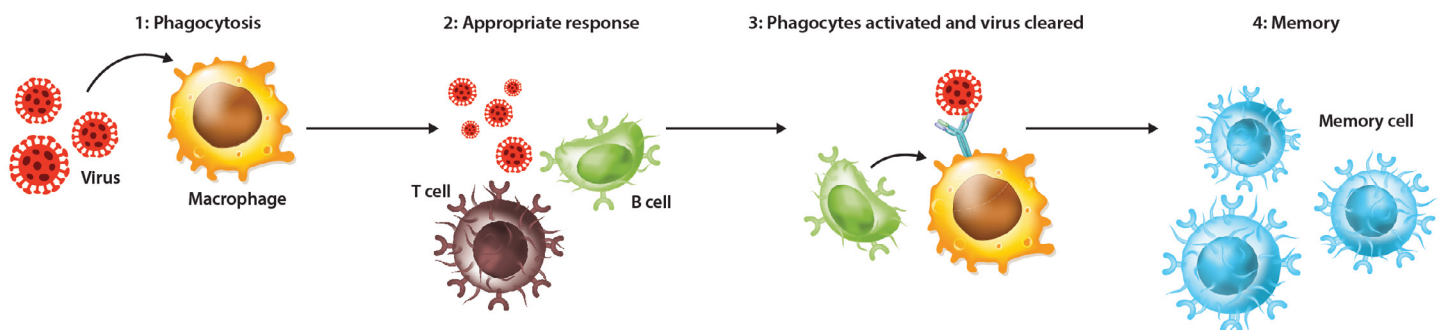
- Barriers (skin, mucous membranes, digestive tract) and their secretions (sweat, saliva, stomach acid, enzymes, mucus)
- White blood cells, including neutrophils and macrophages, constantly patrol the body looking for harmful microbes

Adaptive immune system: slow-acting, highly specific, has a memory

- Specialized white blood cells known as lymphocytes (B and T cells) work together to produce antibodies
- Much of this happens within the lymph nodes of the lymphatic system, including tonsils and adenoids



Normal immune response



A healthy immune response is a sign of balance in the body. The immune system relies on and is responsible for the health of every other tissue and organ; therefore, supporting immune health is really about supporting the overall body. Lifestyle and nutritional strategies that optimise gut health, support skin, aid the liver, and reduce inflammation are all ALSO immune-supportive!

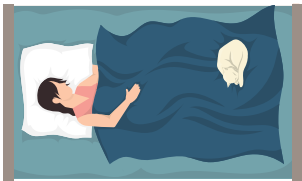
Here are a few strategies to consider for a healthy immune system:



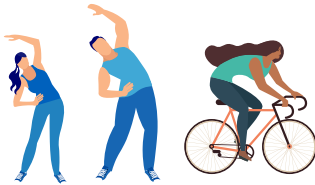
1. Focus on food first.²⁻⁵ Consume a whole-foods diet high in fibre and rich in a wide variety of colourful plant food such as fruits and vegetables to ensure adequate consumption of essential vitamins, minerals, and immune-supporting phytonutrients.



2. Manage your stress.^{6,7} Stress of any kind can weaken the immune system. Long-term, chronic stress, particularly of psychological origin, creates an increase in inflammation and alters innate and adaptive cell function that ultimately leads to an abnormal immune response. Strategies to reduce stress include meditation, exercise, spending time in nature, journaling, connections with community, and deep breathing practices.



3. Restorative sleep.⁸ Adequate sleep of at least eight hours nightly helps promote an optimal immune response and offers time for the body to rest and repair. Initiate healthy sleep behaviors to include regular sleep and wake times, keep your room dark and quiet, and avoid too much stimulation from electronics at least two hours before bedtime.



4. Move your body.⁹ Physical activity is an important aspect of immune health and necessary to support the lymphatic system to remove toxins from your body. Aim for a minimum of 30 minutes 5x/week in an activity you enjoy. Make time to get outdoors daily.



5. Stay connected with friends and family.¹⁰ Strong relationships and social support help improve quality of life. Being connected helps prevent depression and reduce feelings of loneliness, which can negatively impact immune health. Stay in touch with friends and family by phone, email, video, and in-person whenever possible.

For additional information on how to support immune health, speak to your healthcare provider.

References:

1. Yatim KM et al. A brief journey through the immune system. *Clin J Am Soc Nephrol*. 2015;10(7):1274-1281.
2. Makki K et al. The impact of dietary fibre on gut microbiome in host health and disease. *Cell Host Microbe*. 2018;23(6):705-715.
3. Frond AD et al. Phytochemical characterization of five edible purple-reddish vegetables. *Molecules*. 2019;24(8):e1536.
4. Miller V et al. Fruit, vegetable, and legume intake, and cardiovascular disease and deaths in 18 countries. *Lancet*. 2017;390(10107):2037-2049.
5. Bazzano LA et al. Fruit and vegetable intake and risk of cardiovascular disease in US adults. *Am J Clin Nutr*. 2002;76(1):93-99.
6. Dhabhar FS et al. Acute stress enhances while chronic stress suppresses immune function in vivo: a potential role for leukocyte trafficking. *Brain Behav Immun*. 1997;11:286-306.
7. Dhabhar FS. Effects of stress on immune function: the good, the bad, and the beautiful. *Immunol Res*. 2014;58(2-3):193-210.
8. Okun ML. Biological consequences of disturbed sleep. *Jpn Psychol Res*. 2011;53(2):163-176.
9. Simpson RJ et al. Exercise and the regulation of immune functions. *Prog Mol Bio Transl Sci*. 2015;153:355-380.
10. Jaremka LM et al. Loneliness predicts pain, depression, and fatigue: understanding the role of immune dysregulation. *Psychoneuroendocrinology*. 2013;38(8):1310-1317.