Immune health

The immune system is the body’s primary defense mechanism against potentially harmful invaders, such as pathogens, antigens, and immunogens. The immune system is made up of various cells, tissues, and substances, including the skin, red and white blood cells, microbiota, antibodies, and cytokines (cell-signaling molecules).

The immune system’s defenses are generally classified as two responses. The innate immune response, your first line of defense, is described as “non-specific” since the defensive actions do not differ between foreign substances. The adaptive immune response is the body’s acquired or learned response to specific pathogens or other compounds that it has previously encountered.

Causes and risk factors for compromised immune health

Several factors may be associated with immune dysfunction and increased susceptibility to disease, including:

- Antibiotic use
- Certain health conditions (e.g., allergic asthma, certain cancers, depression, obesity)
- Certain nutrient deficiencies (e.g., vitamins A, B, C, D, and E, copper, iron, selenium, zinc)
- Chronic stress
- Excessive alcohol consumption
- Intense or excessive exercise
- Intestinal dysbiosis (i.e., imbalanced gut microbiota)
- Chronic sleep deprivation
- Sedentary lifestyle
- Smoking and e-cigarette use
Supporting immune health

The following lifestyle interventions may improve immune health and reduce disease risk.

Diet

Research suggests that a poor nutritional state impairs immune function and increases susceptibility to infectious and chronic diseases. Consuming a balanced, whole foods diet, such as the Mediterranean diet, supports overall health and immune function. The table below summarizes some immune-supportive dietary components and their dietary sources.

<table>
<thead>
<tr>
<th>Component</th>
<th>Function</th>
<th>Dietary sources</th>
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<tbody>
<tr>
<td>Probiotics</td>
<td>May inhibit the growth of pathogens and reduce the risk of respiratory and gastrointestinal infections</td>
<td>Cultured dairy (e.g., kefir, yogurt) Fermented soy products (e.g., miso, tempeh) Fermented vegetables (e.g., kimchi, sauerkraut, unpasteurized pickles)</td>
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<tr>
<td>Quercetin</td>
<td>May reduce the incidence and duration of upper respiratory tract infection symptoms</td>
<td>Apples Berries Brassica vegetables (e.g., broccoli) Onions Tea (e.g., black tea, green tea)</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>Supports immune cell production and function</td>
<td>Bell peppers Broccoli Brussels sprouts Citrus fruit (e.g., grapefruit, oranges) Strawberries</td>
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<tr>
<td>Vitamin D</td>
<td>Modulates the immune response Enhances the antimicrobial effect of certain immune cells</td>
<td>Beef liver Cod liver oil Eggs Fish (e.g., salmon, sardines, trout)</td>
</tr>
<tr>
<td>Zinc</td>
<td>Required to activate certain immune cells</td>
<td>Animal proteins (e.g., beef, chicken, pork) Cashews Pumpkin seeds Seafood (e.g., oysters, crab, lobster) Yogurt</td>
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</tbody>
</table>
Physical activity

Research has shown that regular physical activity may have immunoprotective effects and may reduce the risk of certain cancers, such as breast cancer. On the other hand, strenuous exercise, such as competitive athletic training, may result in an impaired immune system and increase the risk of infections, such as upper respiratory infections. Current exercise guidelines for adults include a minimum of 150 minutes of moderate activity per week, such as brisk walking, biking, doing water aerobics, and playing tennis.

Sleep

Chronic sleep loss has been associated with immunodeficiency, increased inflammatory markers, an impaired response to influenza vaccination, and increased susceptibility to the common cold. According to the Centers for Disease Control and Prevention (CDC), adults require seven or more hours of sleep per night. Sleep hygiene practices, such as minimizing your exposure to blue light and maintaining a regular sleep schedule, may help you to improve sleep quality.

Stress management

Long-term or chronic stress may suppress immune function by decreasing immune cell count and increasing inflammatory responses. Incorporate ways to manage your stress, such as counseling, mindfulness, breathing exercises, and yoga.
References


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For more educational content and resources: www.fullscript.com/learn

This handout was developed and medically reviewed by Fullscript’s Integrative Medical Advisory team.

*These statements have not been evaluated by the Food and Drug Administration. This information is not intended to diagnose, treat, cure, or prevent any disease.

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