

A Doctor's Guide to Managing Your Immune System

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Introduction

Several associations between lifestyle and health have been clearly established in the research record. Other influences, such as genetic and environmental factors, are also well-known to affect health outcomes, but are often more difficult to modify, even by motivated individuals. In this brief review, three major contributors to a healthy lifestyle will be addressed, with specific attention to the links between these healthy activities and immune system function. The relevant research will be summarized, and concrete evidence-based suggestions will be presented. In the context of the COVID-19 pandemic and approaching influenza season, the goal of this review is to support informed decision-making and healthy behaviors.

SLEEP

What the research shows

- Healthy sleep improves immune system function [Dimitrov]
- Healthy sleep reduces incidence of colds [Prather]
- Healthy sleep improves response to vaccines [Lange]

The right way to do it

- 7-9 hours for adults, regardless of perceived need
- Daytime naps reduce, but do not eliminate, the negative effects of nighttime sleep disturbance
- Maintaining a consistent bedtime maximizes the value of sleep hours
- Avoiding electronic devices and heavy exercise near bedtime improves the quality of sleep
- Medication-induced sleep is inferior: sleeping pills, alcohol, and other depressants interfere with the neurologic structure of healthy sleep

EXERCISE

What the research shows

- Exercise enhances the immune response to challenges [Simpson]
- Moderate exercise *reduces* risk of infections, but overtraining *increases* the risk [Nieman]
- Strength training is good for other reasons, but does not seem to influence immune function

The right way to do it

- All forms of aerobic exercise (eg., swimming, running, cycling) likely have similar benefit
- Exercise must be vigorous enough that you couldn't sing a song, but you don't have to be completely out of breath
- 150 minutes per week is adequate to lower your risk of health complications [Blair]
- 30-45 minutes per day for 4-5 days per week seems ideal based on multiple studies
- Moderate exercise includes things like shoveling and brisk walking; many other guides to determining exercise intensity are available on the internet

STRESS

What the research shows

- Acute stresses (public speaking, exams) have mixed effects, but chronic stress is clearly detrimental [Vitlic]
- Chronic stress suppresses activity of multiple types of immune cells, and reduces the response to vaccinations [Segerstrom]
- Wound healing is *impaired* by stress [Ebrecht] and *improved* by social support [Detillion]

The right way to do it

- Meditation: any kind is okay.
- Consider walking meditation, an app, and other tools available for beginners or skeptics
- Play promotes a healthy balance of stress hormones
- Play is anything fun: best if open-ended rather than goal-oriented
- Social support systems play an essential role in reducing the effects of stress
- Contact with family, friends, and even acquaintances improves resilience
- Participation in group activities promotes resilience to external stressors

CONCLUSION

Healthy sleep, regular exercise, and stress management are pillars of a generally healthy lifestyle. The positive effects of the behaviors described here range well beyond supporting a robust immune system, and these suggestions can be considered appropriate for everyone without limitation. In addition to the generally positive health effects of these behaviors, there is strong evidence that demonstrates a direct contribution to a resilient immune system. Please discuss with your own primary care physician if you have private questions related to your own health; otherwise please feel free to ask me anything about what you've read here.

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