

# Couch potato or elite athlete? A happy medium keeps colds at bay

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Battling colds and doing (or pledging to do) more exercise are familiar activities for most of us in January. But different levels of exercise can actually significantly increase or decrease your chances of catching a respiratory infection, says Professor Mike Gleeson from Loughborough University.

While regular moderate exercise can reduce the risk of catching cold-like infections, prolonged strenuous exercise, such as marathons, can make an individual more susceptible. This is a topical area of research in the year of the Olympics, says Professor Gleeson talking at the Association for Science Education (ASE) Conference on Friday, on behalf of the Society for General Microbiology and the British Society for Immunology.

Upper- [respiratory tract infections](#) (URTIs) are [acute infections](#) that affect the nose, throat and sinuses, and include the common cold, tonsillitis, sinusitis and flu. Viruses that circulate in the environment usually cause URTIs. While we are constantly exposed to these viruses, it is the status of our immune system that determines whether we succumb to infection or not. Exercise can have both a positive and negative effect on [immune function](#), combined with genetics and other external factors like stress, [poor nutrition](#) and [lack of sleep](#). Collectively these factors determine an individual's susceptibility to infection.

Professor Gleeson explains why the exercise factor is an interesting one. "If you have a tendency to be a [couch potato](#) then you probably have an

average risk of catching an infection – typically 2-3 URTIs per year. Research shows that those undertaking regular moderate exercise (e.g. a daily brisk walk), can reduce their chance of catching a respiratory infection, such as a cold, by up to almost a third." This effect has been shown to be the result of the cumulative effect of exercise leading to long-term improvement in immunity. "Conversely, in periods following prolonged [strenuous exercise](#), the likelihood of an individual becoming ill actually increases. In the weeks following a marathon, studies have reported a 2-6 fold increase in the risk of developing an upper [respiratory infection](#)," said Professor Gleeson. "The heavy training loads of endurance athletes make them more susceptible to URTIs and this is an issue for them as infections can mean missing training sessions or underperforming in competitions."

The major players in this immune regulation are immune cells called Natural Killer (NK) cells which are important weapons in the fight against viral infections. NK cells recognise viral-infected cells as foreign invaders and force them to commit suicide." During moderate exercise the activity of NK cells is enhanced, whereas stressful endurance activities such as marathons can turn down NK cell activity. These changes are tightly regulated by stress hormones and other immune cells," explained Professor Gleeson.

There is a clear take-home message from our current understanding of the link between exercise and immune function. "[Moderate exercise](#) has a positive effect on the immune system. So to keep colds at bay, a brisk daily walk should help - it's all about finding a happy medium," said Professor Gleeson.

Provided by Society for General Microbiology

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