




PROJECT IMMUNITY





Covid still paces among us, and peak cold and flu season is around the corner – so it's time to make sure your immune system is firing on full power to keep you happy and healthy this winter. **Helen Foster** finds out more...

With the explosion of new Covid variants, and research suggesting that the efficacy of a second booster jab may decline rapidly, you might be feeling a bit concerned about how well your immune system will cope this winter. So it's worth remembering that not only can we strengthen our natural immunity through lifestyle choices but that our bodies' immune response to Covid infection is more robust than scientists initially believed.

'The headlines might claim the new variants evade immunity, but that's a bit of a simplification,' says Dr Jennifer Juno from the Peter Doherty Institute for Infection and Immunity in Melbourne, Australia. 'Our research shows that there are several layers to your immune system that will help protect you.'

For starters, we have our physical immune system – membranes and cells that stop bacteria and viruses entering our system. Then there's a second army of cells, called T-cells, ready to go into battle. These fight *all* variants of Covid – and for a long time, too; Dr Juno's study found that T-cell immunity lasts for at least 15 months after vaccination, or a case of Covid. What this means is that we're not defenceless against even the new variants of Covid. We now have access to the fourth booster, and we can help our body's immune response by eating the right foods, moving our bodies and sleeping well.

'You can't control the appearance of a novel virus from the other side of the world, but you can control your own personal health and immunity in order to fight it,' says Dr James DiNicolantonio, author of *The Immunity Fix* (drjamesdininic.com). Here's how...

'Our immune response to Covid infection is more robust than scientists initially believed'

WHAT TO EAT

Diet plays a major role in fuelling our immune system. 'There's not one magic nutrient that will keep your immune system working perfectly – there are lots,' says nutritional immunologist Philip Calder, a professor at the University of Southampton. 'And there is a way of eating that can help provide most of them – a mainly plant-based diet with lots of different fruits, vegetables and sources of fibre.'

That's the foundation on which good immunity is built.' But you can then add to those foundations.

● **Eat a palm-size portion of protein at every meal** 'When your body mounts an immune response, you make lots of new cells, and you need protein to fuel this,' says Professor Calder. To meet this demand he suggests adding a small serving of protein at every meal, mixing up sources like meat, fish, eggs, dairy, beans and pulses.

● **Bring down your blood sugar**

'A study in 2021 found that elevated blood sugar is the most likely single risk factor to explain why otherwise healthy patients get severe Covid-19,' says immunologist Dr Jenna Macciochi, author of *Your Blueprint for Strong Immunity* (Yellow Kite, £14.99). 'Elevated blood sugar weakens anti-viral defences and promotes viral replication. Eating slower-release carbohydrates like wholegrains and adding protein to meals helps balance blood sugar, as does acetic acid in vinegar.'

● **Chew your food to a paste** Chewing well makes it easier for your body to extract all the nutrients your immune system needs from food, plus researchers at the University of Manchester found chewing releases ➤



immune cells called Th17 cells in the mouth. These act as one of our first defences against infection.

● **Eat oil-rich fish twice a week** As we get older, our immune system doesn't work as well, but research at Ohio State University found that reducing inflammation in the body 'made old immune cells act young again'. One of the best ways to do this is by consuming Omega-3 fats, found in oil-rich fish.

HOW TO MOVE

The right type of exercise acts as a gentle stress on the body that actually makes our immune system work more effectively. So how hard, how often and how long should you exercise for?

● **Abide by the three 'Ms': More Movement, More Often, More Ways** 'Just as you need a variety of nutrients in your diet to aid immunity, you need a variety of movement,' says Dr Macciochi. She suggests starting the day with 10 minutes of stretching, then adding activities like walking, running, swimming or cycling later in the day to get your heart and lungs working. The NHS recommends 150 minutes a week of moderate-intensity activity like brisk walking, riding a bike, or playing tennis, spread over four to five days. Or download the Couch to 5k app, which counts as a moderate-to-vigorous workout.

● **Strength train two to three times a week** 'This is often ignored in favour of cardio exercises, but strength training positively affects the thymus gland in the neck that makes T-cells. This gets smaller as we get older, but strength training seems to have a potent effect in reducing the speed of decline,' says Dr Macciochi. If you're new to exercise, visit [nhs.uk/conditions/nhs-fitness-studio/](https://www.nhs.uk/conditions/nhs-fitness-studio/) for instructor-led videos that cover aerobics, strength and stretching.

● **Take rest days** If you don't give your body time to recover from workouts, immunity suffers. Take a rest day between sessions.

● **Head to the sauna** 'Heat and cold also stress the body in positive ways that promote better immunity,' explains Dr DiNicolantonio. 'Visiting a sauna, for example, increases white blood cell count, and one study found that two to three sauna trips a week reduced the risk of respiratory diseases by 27%.' Adding a 30-90 second blast of cold water to the end of your shower has a similar effect - but maybe isn't as much of a treat in winter.

WHAT TO CHANGE

'Think of yourself as a coach and your immune cells as a team - what do the two of you need to change to perform better?' suggests Dr Macciochi. While every person answers this question differently, it's likely that at least one of two things will come up - too much stress, or too little sleep - and both can have negative effects on immunity. Aside from good



'A mainly plant-based diet with lots of different fruits, vegetables and sources of fibre is the foundation on which good immunity is built'





bedroom hygiene – ensuring light doesn't interrupt your sleep and your room is kept cool – new research suggests that 'pink noise' (a mix of high and low sound frequencies) has been shown to help older adults fall asleep faster. It also helped them to stay in deep sleep longer – and that's when your immune system is busiest.

'During sleep, your T-cells are able to stick to infected particles more easily and remove them from the body. Good sleep also enhances response to vaccines,' says Dr DiNicolantonio. You'll find pink noise on the White Noise app in the app store.

● **Don't try too hard** Generally, being optimistic is recognised as good for your immune health – but only in the right circumstances, says Dr DiNicolantonio. 'Trying to stay positive when times are tough is associated with weaker immunity – possibly because trying to maintain a positive outlook becomes yet another stressor.' So, ask for help if you need it.

● **Practise slower breathing** 'Prolonged stress can dampen many areas of immune function, including T-cell response,' says Dr Macciochi. 'But a "sighing" breath can quickly calm things down. Take a short inhale through the nose, followed by a long exhale through the mouth, making a sighing sound – this pattern causes the heart rate to slow, taking you back into a relaxed state.'

HOW TO LIVE

Lastly, add these simple tweaks to your daily routine to get some extra immunity benefits.

● **Start your day with a gargle** A study at Japan's Kyoto University found gargling with water washes out bugs, reducing the risk of catching a cold by a third. For an extra immunity boost, try sipping thyme tea, which strengthens the lining in the mouth and throat against invaders. To brew, simply pop some sprigs in a mug and let steep for a few minutes. Sweeten with honey if needed.

● **Get outside at lunchtime.** Exposing your skin to sunlight revs up immunity. When UV rays are strongest (between March to October), it promotes the formation of vitamin D, which is essential for immune function. But according to researchers at Georgetown University, that's not all. Blue light in sunlight also triggers a chemical reaction in T-cells that stimulates their movement – and you only need 5-10 minutes in full sunlight for this to take effect.

● **Be social** Feeling lonely is bad for immunity. It causes white blood cells that normally protect us against infection to be released from the bone marrow too early, and these immature cells aren't as effective at fighting viruses as they should be. Try to make time to see friends and family – or at the very least pick up the phone for a chat.



The immunity Fruit and veg box

Dr Macciochi recommends at least eight, ideally 10, 80g portions a day of fruit or vegetables to increase immunity levels. There are a few specific ones you might want to make sure are regularly on your plate...

1 ROCKET, BROCCOLI AND ONIONS

'These contain sulphur that the body turns into sulphoraphane, which optimises immune function. 'Slice onions and let them sit before cooking to activate more compounds,' says Dr Macciochi.

2 BERRIES AND GRAPES

Berries, grapes, tomatoes and citrus fruit (as well as fresh herbs, soya beans, onion, red wine and tea) contain 'vitamin P', which refers to a specific group of plant compounds called flavonoids, known to enhance immune resilience.

3 MUSHROOMS

Eating just four button mushrooms a day increases activity of immunity cells called NK cells. 'Keep mushrooms upside down on your windowsill, as exposure to sunlight can help increase their vitamin D content,' says Dr Macciochi. ■

