

# NewScientist

## Why relaxation is as important as sleep - and six ways to do it better

*We instinctively know that relaxing feels good, but we are now figuring out what it does to the brain and uncovering the best ways to unwind to maximize its benefits*

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AS YOUR eyes scan these words and absorb this sentence, do you feel you are resting? There is good reason to think you might. In 2016, more than 18,000 people responded to a survey called [The Rest Test](#), which asked them how they unwind, and the top answer was by reading.

This comes with caveats. Sat in your sunny garden fondly perusing a copy of *New Scientist*, you may respond in the affirmative. But if you are a student researching an essay due tomorrow, the answer is probably a definite no. Whether an activity is

restful is clearly contextual. It is also hugely subjective: in The Rest Test, many people reported that their favored forms of rest were either [exercise](#) or becoming absorbed in work.

Such challenges are one reason why this topic has been rather neglected scientifically. In the past, researchers had preferred to study the body or brain engaging in active tasks rather than in difficult-to-define downtime. “In psychology and cognitive neuroscience, scientists can be blind to the importance of something like rest,” says [Erin Wamsley](#), a psychologist at Furman University in South Carolina.

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Sleep studies have been a bona fide branch of neuroscience for decades, but only now are a host of new studies from multiple disciplines beginning to explain why waking rest is also important. When we choose the right activities in the right doses, rest can be a vital process for the optimal functioning of our bodies and minds. This includes our capacity to recover from illnesses such as [covid-19](#), whether we can maintain self-control and our ability to form stronger memories of things we learn.

The right to rest has long been a political and social issue. “The institution of rest breaks was absolutely crucial to the history of labor relations,” says [Felicity Callard](#), an interdisciplinary researcher at the University of Glasgow, UK, who is interested in the history and sociology of science.

## The right to rest

This battle is ongoing. [France has given workers the legal right to be unavailable](#) outside designated work hours, and several countries are exploring [four-day work weeks](#). In the UK, [61 organizations across the country recently trialled the idea and noted benefits for employee well-being](#). Meanwhile, in the US, politician Mark Takano has [attempted to introduce legislation](#) to make a 32-hour week the national standard, which would probably involve working four days. In stark contrast, however, the state of Texas recently outlawed mandatory water breaks for people working in extreme heat.

When it comes to defining rest, [Claudia Hammond](#) – a psychology professor at the University of Sussex, UK, and author of *The Art of Rest* – says people intuitively understand the word, but the struggles to pin it down precisely are a major barrier to scientific investigation. The definition that emerged for Hammond was “an activity that is restorative, intentional, relaxing”. She emphasizes that, to fully relax, people must give themselves permission to rest.

Hammond was part of the team that carried out The Rest Test, which revealed just how wide-ranging and personal people’s favorite restful activities are. After reading,

the most popular activities were – in order of preference – spending time in nature, being alone, listening to music, doing nothing in particular, a good walk, a nice hot bath, daydreaming, watching TV and practicing mindfulness.

Fifteen per cent of respondents chose exercising, which might seem like the antithesis of rest. “There is a proportion of people who feel they can only rest their mind when they exert their body,” says Hammond. What’s more, numerous people said doing nothing makes them restless.

The survey also investigated how the amount of time spent pursuing restful activities was related to measures of life satisfaction. The results were revealing. “People who didn’t feel in need of more rest, and people who believed they got more rest than other people, had well-being levels twice as high as the people who didn’t,” says Hammond.

## **How much rest should you have?**

You can have too much of a good thing, however, since particularly high levels of rest time were associated with lower levels of well-being. This may be because large amounts of downtime imposed by circumstances, such as unemployment or illness, aren’t chosen. The optimal amount of rest seemed to be around 5 or 6 hours daily.

These findings are consistent with other studies. In 2009, Sarah Pressman, now at the University of California, Irvine, and her colleagues found that people who engaged more frequently in pleasurable leisure activities [had lower blood pressure](#), lower stress hormone levels and lower rates of depression. A [2021 survey](#) confirmed that having too little or too much discretionary time can both decrease well-being.

In terms of health, rest has long been associated with resisting, and recovering from, illness. In the past, patients were often recommended “bed rest” for effective recuperation, but today [it is viewed as a last resort](#), since lengthy stints of complete inactivity are now known to diminish cardiovascular function, bone health and muscle function.

## **Rest and immunity**

Nevertheless, reduced energy expenditure can help the body devote more resources to the immune system, which helps fight infections more effectively. This may be the thinking behind the UK and US’s recommendations for coping with covid-19. Both the [National Health Service \(NHS\)](#) and the [Centers for Disease Control and Prevention \(CDC\)](#) recommend that people should rest as much as possible during active infections to decrease the risk of long covid, and also to manage this chronic condition if it develops. Unfortunately, the advice remains vague: neither the NHS

nor the CDC specifies how we should rest, so it remains unclear what kinds of activities we should allow ourselves when we are ill.

Rest and a good work-life balance are also increasingly viewed as important means of protecting against stress-related illnesses, such as burnout, as well as maintaining good mental health overall.

## How to rest better

Occupational health psychologist [Jessica de Bloom](#) at the University of Groningen in the Netherlands studies how employees recover, day-to-day, from the stress of demanding jobs. There are six key aspects to the most beneficial restful activities, she says, but vital is autonomy, the sense you are in control of what you are doing and who it is with (see [“The six ways to rest and recover”](#)).



**Being able to choose your own restful activity is key to maximizing its benefits**  
Gary Yeowell/Getty Images

While actually at work, we should consider incorporating regular “microbreaks” – as brief as 10 minutes long – from demanding activities, with [studies](#) showing that short periods of rest that are completely detached from your job can increase vigour, reduce fatigue and [improve overall well-being](#). “There’s research showing that we tend to postpone breaks as a reward when we finish what we’ve got to do,” says Hammond, whereas microbreak studies indicate that it is more beneficial to build regular downtime into a busy schedule.

Neuroscientists have shown that continuous mentally taxing work can even lead to poorer decision-making, since it reduces “cognitive control”, which is our ability to flexibly direct our thoughts and behavior in order to reach a long-term goal.

“Cognitive control is something we use any time we are not doing something automatic,” says [Antonius Wiehler](#), a behavioral researcher at the Paris Brain Institute. For example, learning the piano, where every movement is consciously executed, requires this, whereas accomplished pianists can play without it. Making

rational decisions, such as choosing to take a larger reward later over a smaller one now or selecting a healthy meal over pizza, also requires cognitive control.

Such decisions typically [get harder as we become fatigued](#) – consider the lure of junk food after a hard day's slog. [Wiehler's research helps us understand why](#). In a recent experiment, he and his colleagues asked participants to perform simple or demanding tasks on a computer for 6.5 hours. For instance, each group would look at long, continuous sequences of individual letters that flashed up every second. For an easy task, the participant had to say if each new letter was the same as the previous one; for a hard task, they said if it matched the one three letters prior in the sequence. The harder tasks constantly required – and so depleted – cognitive control.

To measure the running-down of cognitive control, the computer periodically interrupted the participants to ask questions such as “Would you like £22 now or £50 in six months?”. “In the morning, you're fresh. And you know the optimum choice is to take the money later,” says Wiehler. But the people doing exhausting tasks increasingly chose the immediate rewards of lower value.

Why would this be? Previous neuroimaging work had shown that diminished cognitive control is linked to reduced activity in the brain's lateral prefrontal cortex. One popular idea is that the energy stores become depleted in this region. This has been [difficult to prove definitively](#), however, so Wiehler and his team looked for other explanations.

## **How rest helps your brain**

Using imaging tools that measure levels of glutamate – the brain's main excitatory neurotransmitter – they showed that people who had done harder cognitive tasks had higher levels of glutamate in their prefrontal cortex than those doing easy ones, and that the neurotransmitter was freer to diffuse.

The implication was that perhaps it is the build-up of glutamate that causes a reduction in cognitive control. Wiehler's study didn't prove this, but it was striking that only the prefrontal cortex showed these changes. Alterations to the metabolism and distribution of this essential neurotransmitter are expected to disrupt neuronal function.

Although the exact mechanism is unclear, glutamate's greater diffusion rate suggests it may accumulate outside neurons, where it could change their activity. “There are tonnes of exciting questions waiting,” says Wiehler, not least concerning how brains recover and how much rest is needed to maintain or restore normal glutamate levels and cognitive control.

Besides improving decision-making, regular periods of downtime may also aid effective learning. Neuroscientists have long known that memory consolidation

occurs during sleep, but now studies suggest that waking rest can also strengthen the brain's records of what we have just learned. For instance, just 15 minutes of quiet contemplation can help [participants recall more content](#) from a story they have just heard. "If you rest for a few minutes after you learn something," says Wamsley, "your memory is better later. And not just immediately later – hours later and days later."

The effect holds across [numerous types of memory](#), including memories of words, navigation memory and procedural memory, such as learning new physical tasks. And the effect is as strong as that of sleep.

What's more, when researchers looked carefully at the brain's electrical activity during waking rest, they found most of the patterns sleep researchers had linked to memory consolidation. "That biology occurs equally frequently in waking rest in both humans and animals," says Wamsley.

## **Rest and memory**

She suggests there may be [two main waking brain states](#), one "online" in which the brain attends to incoming sensory information, and one "offline" where internal processes dominate the brain's activities. To investigate this, Wamsley tracked people's brain activity as they rested, using electrodes placed on the scalp (a technique called electroencephalography, or EEG). At random intervals, she tested their reaction times or asked them what they were thinking.

The offline state, says Wamsley, was characterized by longer reaction times and a slower EEG pattern. In these periods, people were also more likely to report daydreaming. She is now gathering evidence that memory consolidation occurs while in this state.

Other neuroscientists have studied the brain ostensibly at rest using neuroimaging to examine activity patterns while people simply lie down and stare at a cross on a screen. They found that rather than the brain being largely inactive, there is pronounced activity in a group of areas called the default mode network or DMN. Subsequent studies have suggested DMN activity is linked to the mind wandering.

"We are constantly generating spontaneous cognition and spontaneous brain activity, which, to a large degree, shapes our experience as humans," says Wamsley. How DMN activity and daydreaming or mind wandering are linked to memory consolidation – and also just how many types of offline states there are – needs more research, she says.

The DMN's discovery required that scientists made the resting brain an object of study in its own right – and not just something to compare an active brain with during experiments. Wamsley saw that by comparing slumbering brains only with active, awake brains, sleep researchers had missed a vital in-between state of

conscious restfulness. With Wiehler's work separately revealing the underlying nature of fatigue, perhaps it is time to bring our ideas on rest together.

If it is placed fully in the foreground, might a singular science of rest one day emerge? Hammond hopes so, with disparate concepts of rest – which currently flit on the edges of multiple fields – being pulled into one coherent discipline. Sleep, after all, had once been neglected, but is now a major field of scientific investigation, and its health benefits are “now taken very seriously, as something that matters”, says Hammond.

“Rest, in the last five years, feels as though it has risen to the top of so many different debates,” says Callard. “It intersects with debates around burnout, quiet quitting and people refusing hustle culture at work.”

Hammond suggests that younger generations may instigate a greater valuing of rest and balance. When she was recently invited to address students at her former school, Hammond expected to be asked to share advice on having a successful career – but no. “I said, ‘What would you like to talk about?’” she says. “They said, ‘Oh, could you talk about rest and kindness?’”

### **The six ways to rest and recover**



#### **Make sure your rest allows you to distance yourself from negative thoughts**

When faced with the responsibilities of work and family, many of us may look to our holidays as the best chance to restore our bodies and minds, but research suggests their benefits are short-lasting. When occupational health psychologist Jessica de Bloom at the University of Groningen in the Netherlands [questioned people before, during and after their vacations](#), she found that their happiness and well-being went back to baseline within a week.

Clearly, we need to find better means of resting throughout the rest of the year. According to de Bloom, the most beneficial "extracurricular" activities can be captured by the acronym [DRAMMA](#).

D stands for (psychological) detachment – which is distancing yourself from negative or stressful thoughts – and R is for relaxation, be that getting a massage or just lounging around. The first A is for autonomy. "This is the feeling that you're really in control, that you can decide yourself how to invest your time and with whom to spend your time," says de Bloom. "It's very important." The two M's stand for mastery and meaning, both of which add a sense of value to what we are doing. Mastery could involve learning new skills or getting fitter, while meaningful activities include volunteering or advocating for causes we believe in. Finally, there is affiliation, which is a sense of social connectedness with either co-workers or people outside of work.

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