

Can Pink Noise Help You Sleep?

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STORY AT-A-GLANCE

- › Listening to pink noise improved sleep and memory among 60- to 84-year-olds, a population that tends to have reduced slow wave sleep, or deep sleep, compared to younger individuals
- › Pink noise enhanced slow wave sleep and was linked to better scores on memory tests
- › The participants scored about three times better on memory tests the morning after listening to pink noise in their sleep

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You probably don't think of noise in terms of colors, but there is a rainbow of noise out there – from the familiar white noise that occurs when a TV turns to static to the higher-pitched blue noise, which sounds similar to a hissing spray of water.¹

Somewhere in the middle is pink noise, gentle sound similar to that of rushing water or wind blowing through leaves on a tree.

Pink noise contains frequencies from 20 to 20,000 hertz, just like white noise, but the lower frequencies are louder and more powerful than the higher frequencies (white noise, in contrast, has equal power in all of its frequencies).²

However, pink noise has equal power per octave (a range of frequencies whose upper frequency limit is twice that of its lower frequency limit), which is why most people hear it as an even noise.³

To an untrained ear, pink noise may sound quite similar to white noise, but the former, it seems, may have particular promise for helping you sleep and improving other areas of human health, including that of your brain.

Pink Noise at Night May Help You Sleep Better and Improve Memory

Research published in *Frontiers in Human Neuroscience* revealed that listening to pink noise could improve sleep and memory among 60- to 84-year-olds, a population that tends to have reduced slow wave sleep, or deep sleep, compared to younger individuals.⁴ Slow wave sleep is also associated with memory consolidation.

While spending the night in a sleep lab, participants listened to pink noise one night and no noise the next. Notably, the pink noise was played in bursts to match the timing of participants' slow wave sleep.

Not only did the pink noise enhance slow wave sleep, it also was linked to better scores on memory tests. The participants scored about three times better on memory tests the morning after listening to pink noise in their sleep.⁵

Senior study author Dr. Phyllis Zee, professor of neurology at Northwestern University Feinberg School of Medicine, told *Time*, "The noise is fairly pleasant; it kind of resembles a rush of water ... It's just noticeable enough that the brain realizes it's there, but not enough to disturb sleep."⁶

Does the Timing of Pink-Noise Exposure Matter?

Zee and her team are working on developing a device you can use to deliver pink noise at home, although there are many apps already available that claim to do so.

Zee said that the memory benefits, however, may depend on the pink noise enhancing slow wave sleep, which means the noise may need to be administered at appropriate times to be most effective.⁷ She said in a press release:⁸

"This is an innovative, simple and safe non-medication approach that may help improve brain health ... This is a potential tool for enhancing memory in older populations and attenuating normal age-related memory decline."

Past research also found that steady pink noise helped to regulate brain waves and led to more stable sleep and improved sleep quality in adults, both during the night (a 23% improvement with pink noise) and during naps (a 45% improvement).⁹

Seventy-five percent of the study participants also said they experienced more restful sleep when exposed to pink noise.¹⁰

Sleeping Too Much or Too Little Linked to Higher Weight

Sleep influences far more than your energy level; it's intricately involved in virtually every aspect of your health, including your weight. Among people genetically predisposed to obesity, the amount you sleep may also make a difference.

A study published in *The American Journal of Clinical Nutrition* found that those who slept less than seven hours or more than nine hours a night weighed more, on average, than those who slept the recommended seven to nine hours.¹¹

The short sleepers weighed about 4.5 pounds more while the long sleepers weighed nearly 9 pounds more than the normal sleepers.¹²

The association persisted regardless of diet, and it was also found that shift work and daytime napping was associated with higher weight among this population. Study co-author, research associate Carlos Celis-Morales, BHF Cardiovascular Research Centre at Glasgow, said:¹³

"It appears that people with high genetic risk for obesity need to take more care about lifestyle factors to maintain a healthy body weight. Our data suggest that sleep is another factor which needs to be considered, alongside diet and physical activity."

In this study, there was not as strong a link between sleep duration and weight among people with low genetic obesity risk; however, other studies have shown links between weight and sleep.

For instance, people who typically slept five hours or less a night showed a 32% gain in visceral fat (a dangerous type linked to heart disease and other chronic diseases) versus a 13% gain among those who slept six or seven hours per night, and a 22% increase among men and women who got at least eight hours of sleep each night.¹⁴

Night Owls May Eat Less Healthy Than Morning People

There are various reasons why sleep affects weight. Lack of sleep also decreases levels of the fat regulating hormone leptin while increasing the hunger hormone ghrelin. The resulting increase in hunger and appetite can easily lead to overeating and weight gain.

In addition, according to a study in the journal *Sleep*, later bedtimes correlate to greater weight gain even in healthy, non-obese people.¹⁵

Late-night snacking further increases that risk. In fact, avoiding food at least three hours prior to bedtime is one of my standard recommendations as it will lower your blood sugar during sleep and help minimize mitochondrial damage.

A study published in the journal *Obesity* further revealed that the types of foods chosen by morning and evening types of people differ, with night owls tending to eat less healthy, perhaps as a consequence of "living against their internal biological time."¹⁶

Specifically, on weekdays the night owls tended to choose breakfast foods that were higher in sugar and lower in fiber compared to those chosen by the morning types. In the evening, the night owls also tended to eat more sugar.

"On weekends, the differences were even greater," The New York Times reported. *"Evening people ate significantly more sugar and fats, had more irregular mealtimes, and ate meals and snacks twice as often as morning people."*¹⁷

Since "our society is pretty much structured to suit morning types better," the study's lead author Mirkka Maukonen of the Finnish National Institute for Health and Welfare told the Times, "awareness of one's own chronotype [when you are naturally predisposed to sleep and wake] may encourage paying more attention to overall healthier lifestyle choices."¹⁸

Sleeping More Than Nine Hours a Night Linked to Dementia

Your brain is also affected by how much you sleep, and research again shows that there appears to be a "Goldilocks" zone that's best – neither too much nor too little. Those who sleep for more than nine hours a night consistently, for instance, had a six-fold greater risk of developing dementia in the next 10 years compared to those who slept less.¹⁹

Long sleep duration was also associated with smaller brain volume and poorer executive function, which suggests prolonged sleep duration may be a marker of early neurodegeneration, the researchers said. Too little sleep has also been linked to dementia.²⁰ As Newsweek reported:²¹

"Missing out on deep non-REM (rapid eye movement) sleep may allow proteins linked to dementia to have easier access to the brain.

Beta-amyloid, a protein suspected of triggering Alzheimer's, aggregates in higher concentrations in the brains of those who chronically suffer from poor sleep. As beta-amyloid accumulates, the protein further inhibits the ability to sleep, which feeds into a terrible cycle linked to dementia."

The Link Between Sleep and Mental Health

Episodes of **insomnia** may also be predictive of mental illness, while addressing sleep problems may support mental health. Russell Foster, professor of circadian neuroscience at the University of Oxford, wrote in Epoch Times:²²

"To date a surprisingly large number of genes have been identified that play an important role in both sleep disruption and mental illness. And if the mental illness is not causing disruption in sleep and circadian rhythm, then sleep disruption may actually occur just before an episode of mental illness under some circumstances.

Sleep abnormalities have indeed been identified in individuals prior to mental illness. For example, we know that sleep disruption usually happens before an episode of depression. Furthermore, individuals identified as 'at risk' of developing bipolar disorder and childhood-onset schizophrenia typically show problems with sleep before any clinical diagnosis of illness."

In the case of schizophrenia, for instance, up to 80% of those affected have sleep disturbances such as insomnia.²³ Separate research found that 87% of depression patients who resolved their insomnia had major improvements to their depression, with symptoms disappearing after eight weeks whether the person took an antidepressant or a placebo pill.²⁴

Interestingly, exposure to dim light at night, which can also interfere with your sleep, has also been linked to depression. The link could be due to the production of the hormone **melatonin**, which is interrupted when you're exposed to light at night.

There are many studies that suggest melatonin levels (and by proxy light exposures) control mood-related symptoms, such as those associated with depression. For instance, one study about melatonin and circadian phase misalignment (in which you are "out of phase" with natural sleeping times) found a correlation between circadian misalignment and severity of depression symptoms.²⁵

Does Daylight Saving Time Affect Your Health?

Daylight Saving Time (DST), the practice of moving clocks ahead one hour in the summer months and returning them back an hour in the winter, may not seem like a big

deal in the scheme of things, but it's enough of a shift to throw off your body's sensitive circadian rhythm. As such, there are consequences to both health and productivity.

One study found that the shift to DST results in a "dramatic increase in cyberloafing behavior," or the tendency to waste time surfing the web while at work.²⁶ This drop in productivity was linked to lost sleep (quality and quantity wise) the night before.²⁷ Night owls also fared worse following the DST switch, feeling more fatigued during the day for up to three weeks compared to those who went to sleep earlier.²⁸

Your heart health may also suffer. One 2012 study found that heart attacks increased by 10% on the Monday and Tuesday following the time change to DST.²⁹ Heart attacks decreased by 10% on the first Monday and Tuesday after clocks are switched back in the fall. Other consequences include an increase in workplace accidents and injuries, increases in traffic accidents and a compromising effect on immune function.

While some studies have suggested a slight benefit to the extra hour of daylight for people suffering from seasonal affective disorder (SAD), as well as the potential to burn more calories during exercise (because it stays light outside later),³⁰ it's likely not enough to compensate for the negative effects.

Pink Noise and Other Tips for Improving Your Sleep

Taking steps to improve your sleep quality is crucial for optimal health. Adding soothing noise to your bedroom, such as pink noise, soothing music, nature sounds, white noise or a fan, is one simple tip that helps many people sleep better.

If you're having trouble sleeping, I suggest reading my article "[Top 33 Tips to Optimize Your Sleep Routine](#)" for tips on improving your sleep. Getting back to the basics of improving your sleeping environment is important. No. 1 on my list? Avoid exposure to blue light, including LEDs, after sunset. Wearing blue-blocking glasses is a simple way to achieve this. Further:

Avoid watching TV or using your computer/smartphone or tablet in the evening, at least an hour or so before going to bed.

Make sure you get BRIGHT sun exposure regularly — Your pineal gland produces melatonin roughly in approximation to the contrast of bright [sun exposure](#) in the day and complete darkness at night. If you are in darkness all day long, it can't appreciate the difference and will not optimize your melatonin production.

Get some sun in the morning — Your circadian system needs bright light to reset itself. Ten to 15 minutes of morning sunlight will send a strong message to your internal clock that day has arrived, making it less likely to be confused by weaker light signals during the night.

Sleep in complete darkness, or as close to it as possible — Even the tiniest glow from your clock radio could be interfering with your sleep, so cover your clock radio up at night or get rid of it altogether. Move all electrical devices at least 3 feet away from your bed. You may want to cover your windows with drapes or blackout shades, or wear an eye mask when you sleep.

Install a low-wattage yellow, orange or red light bulb if you need a source of light for navigation at night — Light in these bandwidths does not shut down melatonin production in the way that white and blue bandwidth light does. Salt lamps are handy for this purpose, as are natural, nontoxic candles.

Keep the temperature in your bedroom no higher than 70 degrees F — Many people keep their homes too warm (particularly their upstairs bedrooms). Studies show that the optimal room temperature for sleep is between 60 and 68 degrees F.

Take a hot bath 90 to 120 minutes before bedtime — This increases your core body temperature, and when you get out of the bath it abruptly drops, signaling your body that you are ready to sleep.

Avoid using loud alarm clocks – Being jolted awake each morning can be very stressful. If you are regularly getting enough sleep, you might not even need an alarm, as you'll wake up naturally.

Be mindful of electromagnetic fields (EMFs) in your bedroom – EMFs can disrupt your pineal gland and its melatonin production, and may have other negative biological effects as well.

A gauss meter is required if you want to measure **EMF** levels in various areas of your home. If possible, install a kill switch to turn off all electricity to your bedroom. If you need a clock, use a battery-operated one.

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