

LIFE / LIFESTYLE

## The science of *shinrin-yoku*: Why forest bathing feels good



Science suggests that three days of “shinrin-yoku” (forest bathing) is enough to boost immunity for an entire month. | GETTY IMAGES

**BY TOMOKO OTAKE**  
STAFF WRITER

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Leaves shimmer in shades of verdant green. Sunlight reflected from a rippling creek dances up a tree trunk. Birds chirp, bullfrogs croak and earthy scents of plants and soil fill the air.

A visit to a forest soothes our senses. But researchers say that volatile organic compounds released from the trees, whose concentration peaks from June through August in Japan, can do a lot more to make us healthier.

Japan is the birthplace of forest bathing, or *shinrin-yoku* — the process of taking in the forest through your five senses as a means of relaxation. Coined in 1982 by then-Forestry Agency chief Tomohide Akiyama, the concept is now well-established in Japanese culture, and most people consider it a given that it’s healing to spend time in the great outdoors.

However, doctors such as Qing Li, a clinical professor at Nippon Medical School in Tokyo, have scientifically proven that spending time in nature offers a plethora of medicinal benefits — from enhancing the

activity of immune cells and lowering blood pressure and heart rate to reducing stress hormones and levels of anxiety, depression and anger.



Qing Li, a clinical professor at Nippon Medical School, has spent decades studying the effects of exposure to nature on the human body. | TOMOKO OTAKE

“It had long been common sense that you can reduce stress by immersing yourself in a beautiful Japanese forest, but it wasn’t proven with evidence at all,” Li, a pioneer in the field of forest medicine, says. “It was only in 2004 that the government gave grants of ¥150 million to look into the science of it to a team of researchers, which I was part of.”

Li has analyzed natural killer cells, a type of white blood cell that protects the body from pathogens and cancers. In a seminal study published in 2007, he took 12 Tokyo-based “healthy but tired salarymen” from the ages of 37 to 55 on a two-night, three-day forest bathing trip to Iiyama, Nagano Prefecture, a location famous for its beech trees. Blood samples taken before and after the trip showed that the activity and number of natural killer cells, as well as the levels of anti-cancer proteins, increased after forest bathing.

But is it really the forest that causes this and not, say, a simple change of scenery? The following year, Li took the same group of corporate warriors on a three-day trip to an urban district of Nagoya with much less greenery than the previous excursion. Li had them walk the same distance and hours as in Iiyama. The trial showed that a trip to the city did not improve the participants’ immune cell activity or levels.

He followed up with more studies, proving that, yes, forest bathing works for women, too, and its effects last as long as 30 days after a three-day trip.

“That means, if you go on one forest bathing trip of three days once a month, immune levels in the human body can always be kept at high levels,” he says.

Other studies have shown that shinrin-yoku reduces the levels of adrenaline, noradrenaline and cortisol, all of which are stress

hormones.



Phytoncides — aromatic substances released from trees and grass to protect themselves from insects, bacteria and fungi — also stimulate an immune response from the human body. | GETTY IMAGES

But why is forest bathing so good for the body? Li says that, while there are still many unknowns, phytoncides — aromatic substances released from trees and grass to protect themselves from insects, bacteria and fungi — play a key role. In a [2009 study](#), Li compared the levels of immune cell activity in two groups of people: one staying in hotel rooms filled with essential cypress oils vaporized and released from humidifiers and another staying in rooms without the aroma.

The results showed that phytoncide exposure in a nonforest environment alone had some effect, Li says. He estimates that the aromatic substances account for about 30% of the therapeutic benefits of forest bathing with the remaining boons coming from the other sensory experiences.

How exactly is forest bathing different from regular hikes or nature walks? In forest therapy, the emphasis is on awakening your five senses through the mindful observation of nature without over-exertion, experts say.

Since two-thirds of Japan is covered in forests, the nation has more than its fair share of forest bathing destinations to choose from.

The [Kitamoto Nature Observation Park](#) in Kitamoto, Saitama Prefecture, is one of around [60 “forest therapy bases”](#) in Japan certified by the nonprofit Forest Therapy Society. Just 90 minutes from Tokyo, the 30-hectare forest is blessed with a mixture of cypress, cedar, oak and cherry trees.

The Kitamoto Tourism Association organizes [forest therapy tours](#), including two-hour standard tour sessions and special tours combining walks and yoga or local history talks. Fees for most sessions, available in English or Japanese, are between ¥3,000 and ¥6,000.



Forest therapy guide Sayuri Ide helps need trekkers not only along hiking routes but through different ways of accepting the positive mental benefits of forest bathing. | TOMOKO OTAKE

During a recent guided tour, forest therapist Sayuri Ide asked me to pick up a fallen leaf at the park's entrance. When I tore it in half, it smelled like cloth incense.

"This is a camphor leaf, and it is used as an insect repellent," she says.

In the forest, Ide walks slowly, often pausing along the trail. She asks me to take a deep breath, listen to the rustling of leaves and the murmur of a stream, and notice the layered shades of green in the canopy overhead.

We drop a leaf into the water and watch how its shadow looks more intricate than the leaf itself. We eat mulberries freshly picked from a tree, take a break for herb tea and, at the end of our two-hour walk, lie down beneath a big tree for a short, restful nap.

At one point, Ide asks me what shape of leaves I like best. I say I like round ones, and she nods in agreement.

"We live in such a square world," Ide says, referring to smartphones and PC screens. "I want more people to appreciate the beauty of roundness in nature."

Li personally recommends Akasawa Recreation Forest, known as the birthplace of shinrin-yoku, in Agematsu, Nagano Prefecture. It is known for a cypress forest so full of phytoncides that it keeps mosquitoes away. The Okutama forest therapy base, featuring five "therapy roads" whose distances range from 1.3 to 12 kilometers and which includes some barrier-free routes, is another good venue, he says.

Even in central Tokyo, numerous phytoncide-rich spots offer relief, such as the Shinjuku Gyoen park in Shinjuku Ward, the Institute for Nature Study in Minato Ward and the Rikugien and the Koishigawa gardens in Bunkyo Ward.

*For more information on forest bathing sites across Japan, check the Forest Therapy Society website and the list of recreation forests designated by the Forestry Agency.*

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**KEYWORDS**

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