



How meditation benefits your body and mind

Story at-a-glance

Evidence shows your mind and body are intricately connected, and that your mind has a direct impact on your physical health. Thousands of genes have been identified that appear to be directly influenced by your subjective mental state

Meditative practices have been shown to lower your heart rate, blood pressure, low-density lipoprotein cholesterol, cortisol and overall stress level, all of which help reduce your risk of heart disease

The American Heart Association recently (2016 / 2017) issued its first guidelines on seated meditation, suggesting it can be a valuable adjunctive intervention in combination with other recommended lifestyle and medical treatments

Stress-related problems account for as much as 70 percent of the average U.S. physician's caseload. Research suggests that practicing meditation and other relaxation techniques could save the average patient between \$640 and \$25,500 a year in medical costs

People who received eight weeks of relaxation-response training reduced the number of doctor's visits by 42 percent, lab use by 44 percent, the use of procedures by 21 percent, and emergency room visits by 46 percent a year after the program

There is growing evidence to show that your mind and body are intricately connected, and that your mind has a direct impact on your physical health. Brain imaging technology suggests meditation alters your brain in a number of beneficial ways, and studies show meditative practices even alter your genetic expression.

Indeed, thousands of genes have been identified that appear to be directly influenced by your subjective mental state. Examples of genetic effects resulting from meditative practices include the down-regulation of genes associated with the pathway responsible for protein breakdown and cellular stress response genes. Expression of certain heat shock proteins is increased, and immune function is amped up through a variety of genetic changes.

One study⁴ investigating genetic changes triggered by the relaxation response determined that meditative or mindfulness practices affect no less than 2,209 different genes, and it didn't really matter which relaxation response technique was used. Findings such as these prove you cannot separate your health from your emotional well-being, and if you want to prevent chronic illness, you'd be wise to incorporate this knowledge.



Meditation Lowers Risk of Heart Disease

For example, a number of studies have demonstrated that a persistent negative state of mind is a risk factor for heart disease. Conversely, happiness, optimism, life satisfaction and other positive psychological states are associated with a lower risk of heart disease. While some people seem born with a sunnier disposition than others, meditation has been shown to improve mood regulation and boost optimism.

Meditative practices have also been shown to lower your:

- Heart rate
- Blood pressure
- Low-density lipoprotein cholesterol level
- Cortisol level

Such findings are consistent with a down-regulation of your hypothalamic-pituitary-adrenal (HPA) axis and the sympathetic nervous system, both of which are over-activated by stress. Stress is also a well-known risk factor for heart disease, making meditation all the more important.

Meditation Guidelines Issued as Adjunctive Intervention for Heart Disease

While the mind-body connection has long been overlooked by conventional medicine, the American Heart Association recently issued its first guidelines on seated meditation, suggesting it can be a valuable adjunctive intervention in combination with other recommended lifestyle and medical treatments.

Dr. James Stahl, a researcher at the Geisel Medical School at Dartmouth College and at Dartmouth-Hitchcock Medical Center in Lebanon, New Hampshire, told Reuters that “Some patients may even be able to try meditation along with diet and lifestyle changes before they move on to drugs.”

Common forms of seated meditation suggested in the guidelines include:

Shamatha (focused attention technique)	Vipassana (insight meditation; an “open monitoring” technique that encourages a broader awareness of your environment or train of thought, allowing feelings you might normally suppress to rise to the surface)	Mindful meditation	Zazen (Zen meditation)
Raja yoga	Metta (loving-kindness meditation)	Transcendental meditation	Relaxation response practice

Other Health Benefits (and Cost Savings) of Meditation

Stress-related problems, including back pain, insomnia, acid reflux and exacerbations to irritable bowel syndrome account for as much as 70 percent of the average U.S. physician's caseload. Research suggests medical costs for these kinds of issues could be drastically reduced simply by practicing meditation and other relaxation techniques. To reach this conclusion, the researchers analyzed data from more than 4,400 people who received eight weeks of relaxation-response training.

For about three hours a week, participants focused on relaxation using techniques like meditation, yoga and stress reduction exercises. They also worked on building resiliency using social support, cognitive skills training and positive psychology. After the program, the participants' use of medical services dropped by 43 percent compared to their usage the previous year.



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The researchers estimated such as change could save the average patient between \$640 and \$25,500 a year. Specifically, the relaxation group reduced their clinical visits by 42 percent, their lab use by 44 percent and their use of procedures by 21 percent. Visits to the emergency room were also reduced, from 3.7 times per patient in the previous year to 1.7 a year after the program. Aside from reducing stress and related health problems, including protecting your heart health, meditation has also been shown to:

Promote emotional health and increase feelings of happiness	Help you lose or maintain weight
Reduce anxiety and depression	Improve concentration, attention, self-awareness, memory, processing speed and creativity
Increase your immune response and improve immune function	Slow down brain deterioration and counteract age-related loss of brain volume
Reduce pain	Improve sleep quality
Increase kindness and compassion	Reduce inflammation

Meditation More Effective Than Caffeine and Napping

In this Talks at Google segment, meditation expert Emily Fletcher explains the differences between two popular styles of meditation, and how they affect your brain. She also discusses the similarities between meditation and caffeine. Both have the effect of energizing you and boosting your productivity, but meditation accomplishes this without any adverse effects. As explained by Fletcher, caffeine is similar to the chemical adenosine, which is produced by your brain throughout the day.

Adenosine makes you sleepy, and caffeine effectively blocks the adenosine receptors in your brain, thereby disallowing your brain from recognizing how tired it is. Caffeine also stimulates neural activity in your brain that triggers the release adrenaline, a stress chemical involved in the fight-or-flight state. Remaining in a chronic state of fight-or-flight (whether caused by caffeine or actual stress) can lead to any number of stress-related disorders.

Meditation, on the other hand, energizes you and makes you more productive without triggering an adrenaline rush. The reason for this is because meditation de-excites your nervous system rather than exciting it further. This makes it more orderly, thereby making it easier for your system to release pent-up stress. It also makes you more productive.

She notes that many are now starting to recognize meditation as a powerful productivity tool. Contrary to popular belief, taking the time to meditate can actually help you gain more time through boosted productivity than what you put into it. According to Fletcher, meditating for just 20 minutes equates to taking a 1.5-hour nap, and provides your body with rest that is two to five times deeper than sleep. This is why even a short period of meditation each day can help you feel more refreshed and awake.

Meditation More Beneficial Than Vacation, Study Shows

According to Dr. Monique Tello, contributing editor at Harvard Health Publishing, having a regular meditation practice is also more beneficial than taking regular vacations. That's the conclusion reached by a study comparing the mental and physical health outcomes of a one-week yoga retreat with daily meditation versus a regular vacation. A total of 91 non-pregnant healthy women without history of hormone or antidepressant use were enrolled. The volunteers were divided into three groups of about 30 people per group:

Mindfulness intervention for experienced meditators, consisting of 12 hours of meditation, nine hours of yoga, plus other "self-reflective exercises" throughout the week



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Mindfulness intervention for novices who had never meditated before (same schedule as the first group)

Regular vacation, which consisted of listening to health lectures followed by fun outdoor activities throughout the week

After one week, all three groups scored statistically lower for stress and depression, suggesting both meditation and regular vacation helped boost mood and ease stress. The really interesting part of this study emerged during follow-up, 10 months later. As reported by Tello:

“The regular meditators still showed significant improvements on these scores, the novice meditators even more so. However, the vacationers were back to baseline. The researchers had ensured that all three groups were equal in average age, education level, employment status, and body mass index. This finding is in keeping with prior research showing that vacation has beneficial but very temporary effects, and that mindfulness therapies have sustained beneficial effects ...

All three groups showed significant positive changes in the markers of immune function. However, regular meditators also showed additional, more interesting changes. I got in touch with study author Eric Schadt, Ph.D., director of the Icahn Institute at Mount Sinai, who offered this interpretation of the data:

‘Regular meditators showed both the same types of ‘improvements’ at the molecular level as the others, but on top of that exhibited changes that were also associated with some aging/disease processes that also correlated with biomarkers of aging in a favorable direction. I think there is some suggestion there of improved healthy aging ...’

What Happens in Your Brain During Meditation?

While there are many variations, meditation typically involves focusing on your breath to the exclusion of everything else. Whenever your attention wanders, you gently bring it back to your breathing. As noted by Forbes, “Through meditation, we get better acquainted with the behavior of our minds, and we enhance our ability to regulate our experience of our environment, rather than letting our environment dictate how we experience life.”

As mentioned, the activity of relaxed focus actually rewires your brain in ways that improve and support physical health. In the short term, effects of meditation include inhibiting inflammation, stress reduction, lowering blood pressure and enhancing attention.

Long-term benefits reaped with consistent practice over time include increased gray matter in brain regions related to memory and emotional processing, increased empathy and kindness and greater emotional resilience, which lowers your chances of getting overwhelmed and sick when stress hits. Different types of meditation produce different brain changes though.

How Different Types of Meditation Affect Your Brain

Here’s a summary of some of the neuroplastic changes induced by three popular sitting meditation practices:

- Transcendental meditation causes your brain to switch into primarily alpha frequency, corresponding to a relaxed yet aware state akin to daydreaming. As the left and right hemisphere of your brain enter into coherence, endorphin production increases, inducing a sense of happiness and bliss. Over time, this kind of meditation expands your sense of self beyond bodily limitations, resulting in a more integrated personality.
- Mindful meditation and shamatha, focused attention techniques in which you concentrate on your breath or a single object, thought, mantra, sound or visualization, activate the executive mode of your brain. The idea behind mindfulness is to remain in the present moment by focusing your attention in the now. The brainwave frequency here typically responds to the gamma range.

Long-term, this type of meditation tends to enlarge your hippocampus, which is where your memories are stored, while shrinking the amygdala, the emotional center and the site of your



fight-or-flight instinct. This is in part why mindfulness training tends to be helpful for depression and anxiety, as it helps improve the regulation of emotions.

- Transcendental meditation or self-induced transcendence (which is the topic of discussion in Fletcher's Talks at Google segment above) is a non-directed style of meditation in which you access a fourth state of consciousness that is different from waking, sleeping and dreaming. Transcendence style meditation strengthens your corpus callosum, the bridge between your two brain hemispheres.

Your left brain is in charge of the past and the future, language, math and critical thought, while your right brain is in charge of "right now," intuition, inspiration, connectedness, creativity and problem-solving. By strengthening the connection between your right and left hemispheres, you gain access to more creative problem-solving and increase your productivity without adding stress.

Beginner's Guide to Meditation

While it's not unusual for the most experienced meditators to have spent decades, even a lifetime, perfecting the art of meditation, you can gain benefits just from meditating in your home for 20 minutes a day. If you'd like to give meditation a try, there are many classes and group sessions available if you want a structured group setting, and free guided meditation apps you can use on your own wherever you are.

Two helpful resources include UCLA's Mindful Awareness Research Center, where you can download free guided meditations in English and Spanish, and Head in the Clouds, a blog dedicated to exploring life with attention deficit disorder. The following suggestions can also help you get started:

1. Set aside 20 to 30 minutes to meditate each day. Choose a quiet place where you can sit comfortably without being disturbed or interrupted. Simply close your eyes and focus on your breath, either entering and exiting your nose, or raising and lowering your belly. You don't need to control your mind or breathe in any unnatural way. When thoughts arise — and they will — simply let them pass through without judgment and return your attention to the breath.

2. As you meditate, you will notice thoughts, sensations and sounds. The next step is to take note of the presence or "witness" that is doing the actual noticing. You'll find that this presence cannot be pinned down to any particular place inside you. As you continue, simply abide in this presence and be the witness.

In the book, "The Untethered Soul, the Journey Beyond Yourself," Michael Singer asserts that happiness and freedom are the result of cultivating "witness consciousness," a state of willfully observing your mind, emotions and behaviors, rather than feeling that you actually are these things.

3. The more you meditate, the easier it will become to quickly enter into a state of calm and relaxed yet focused awareness. It will also become easier to remain in meditation for longer periods of time. The after-effects will also last longer the more you meditate, allowing you to go through your day in a calmer more focused state.

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