

# The Science of Meditation

**Meditation may help squash anxiety. The practice brings about dramatic effects in as little as a 10-minute session.**

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By Cary Barbor, published on May 01, 2001



In the highlands of the Qinghai-Tibet Plateau, people look at life differently. Upon entering the local Buddhist monastery, there is a spectacular sculpture the size of a large oak. The intricate carving of clouds and patterns are painted in powerful colors. But as soon as winter gives way, this magnificent work will melt to nothing. The sculpture, in fact, is made of butter, and it is one of the highland people's

symbols of the transient nature of life.

And life here is not easy. Villagers bicycle to work before dawn and return home long after sunset. Many live with nothing more than dirt floors and rickety outhouses. Upon entering these modest mud-brick homes, you'll find no tables or chairs—just a long platform bed, which sleeps a family of eight. However, when the people invite you in for tea, their smiles are wide and welcoming. How do they possess such inner calm in conditions we would call less than ideal?

When villagers cook, sew or plow the fields, they do so in a tranquil state. As an approach to life, weaving meditation seamlessly into almost every action throughout the day seems unfamiliar to Western cultures. Is there something we can glean from this way of life that will improve our own? The romantic notion of quitting everything and joining Tibetan monks on a mountaintop is not the only way to meditate. You don't need to quit your job, give up your possessions and spend 30 years chanting. Recent research indicates that meditating brings about dramatic effects in as little as a 10-minute session. Several studies have demonstrated that subjects who meditated for a short time showed increased alpha waves (the relaxed brain waves) and decreased anxiety and depression.

To explore exactly what part of the brain meditation acts on, researchers at Harvard Medical School used MRI technology on participants to monitor brain activity while they meditated.

They found that it activates the sections of the brain in charge of the autonomic nervous system, which governs the functions in our bodies that we can't control, such as digestion and blood pressure. These are also the functions that are often compromised by stress. It makes sense, then, that modulating these functions would help to ward off stress-related conditions such as heart disease, digestive problems and infertility.

## **Meditation: What is It?**

Aside from determining its physiological effects, defining the actual act of meditation can be as elusive as imagining the sound of one hand clapping. In his book, *"What is Meditation?"* (Shambhala Publications, 1999), Rob Nairn talks about it as a state of "bare attention." He explains, "It is a highly alert and skillful state of mind because it requires one to remain psychologically present and 'with' whatever happens in and around one without adding to or subtracting from it in any way."

The physical act of meditation generally consists of simply sitting quietly, focusing on one's breath, a word or phrase. However, a meditator may also be walking or standing. It isn't unusual, in fact, to see a meditating monk in the highlands walking a few steps and then lying prostrate over and over again until he reaches his destination many miles away.

There are many traditions and countless ways to practice meditation, and perhaps because of its polymorphous nature new meditators wonder whether they are doing it correctly. According to Roger Thomson, Ph.D., a psychologist in private practice in Chicago and a Zen meditator, there is one way to know for sure: "If you're feeling better at the end, you are probably doing it right."

Thomson makes it sound easy, but many people can't seem to get the hang of it, no matter how often they try. "It can be difficult," says Steven Hendlin, Ph.D., a clinical psychologist in Irvine, California. "It may be a struggle to overcome the internal chatter that we all experience."

Seeking methods for quieting that internal chatter and reducing stress are what initially attract many people to meditation. "It is a very effective stress-reducer, which is a way into the practice for many people," says Thomson, who sometimes refers clients to meditation. "If someone is struggling with feelings of anxiety, he or she may benefit from its calming aspects. And it's absolutely facilitative of mental health because it brings about a higher level of self-acceptance and insight about oneself."

But greater awareness about oneself can be a double-edged sword. Mark Epstein, M.D., a New York City psychiatrist in private practice and a meditation practitioner, extends a caution about one of the ironies of meditating. "It could actually raise your level of anxiety if there are certain feelings you are not owning." In other words, there's nowhere to hide when you're practicing "bare attention." And this, for some people, is both the good and the bad news.

That's why some experts suggest marrying meditation to psychotherapy. "Both allow the person to be present for the moment, open and non-defensive," says Thomson, who explores the complementary nature of the two in a paper published in the *American Journal of Psychotherapy*. "In both meditation and psychotherapy, we are trying not to get caught up in internal preoccupation, but to be intimately present with what is happening here and now."

To explain his thoughts on the connection, Thomson compares Zen to relational psychoanalytical theories. He writes that it "encourages its practitioners to become aware of the fundamentally distorted aspects of an overly individualistic view of human experience. Recognizing that the true nature of all individuals is emphatically non-individual, neither lasting nor separate, is the wisdom of Zen."

## Silence and Science

Certainly anything that helps us fight stress as a welcome tool. But what else might meditation be doing for us? Since researchers like Herbert Benson, M.D. began amassing data, many studies have shown that indeed meditation has not only a mental but a profound physiological effect on the body. Studies have shown that, among other benefits, meditation can help reverse heart disease, the number-one killer in the U.S. It can reduce pain and enhance the body's immune system, enabling it to better fight disease.

More new research offers additional encouragement. In [a study published last year in the journal \*Stroke\*](#), 60 African-Americans with atherosclerosis, or hardening of the arteries, practiced meditation for six to nine months. (African-Americans are twice as likely to die from cardiovascular disease as are whites.) The meditators showed a marked decrease in the thickness of their artery walls, while the nonmeditators actually showed an increase. The change for the meditation group could potentially bring about an 11 percent decrease in the risk of heart attack and an 8 percent to 15 percent decrease in the risk of stroke.

A second study, [published last year in \*Psychosomatic Medicine\*](#), taught a randomized group of 90 cancer patients mindful meditation (another type of practice). After seven weeks, those who had meditated reported that they were significantly less depressed, anxious, angry and confused than the control group, which hadn't practiced meditation. The meditators also had more energy and fewer heart and gastrointestinal problems than did the other group.

Other recent research has looked at precisely what happens during meditation that allows it to cause these positive physical changes. Researchers at the Maharishi School of Management in Fairfield, Iowa, found that [meditation has a pervasive effect on stress](#). They looked at a group of people who had meditated for four months and found that they produced less of the stress hormone cortisol. They were therefore better able to adapt to stress in their lives, no matter what their circumstances were.

Diana Adile Kirschner, Ph.D., a Philadelphia-area clinical psychologist, sometimes refers her clients to learn meditation and has seen firsthand how helpful it can be. "Not only is meditation an absolutely marvelous destressor, it helps people better relate to one another," she says. "I can tell when clients are following through with meditation. For instance, I had a couple who consistently bickered. After they started meditating, they came in less angry, more self-reflective and more loving."

So why aren't more people taking up the practice? "Because it puts us in the middle of ourselves, which is not always where we want to be," suggests Thomson. "Often, we want to fix things rather than accept them the way they are. Many of us feel as though we can't afford the time and energy to meditate, when in fact we can't afford not to."

Epstein and several other experts feel that meditation's effectiveness has to do with putting aside attachment to one's ego. As he says, "When you look directly at a star at night, it's difficult to see. But when you look away slightly, it comes into focus. I find it to be the same way with the ego and meditating. When one zeroes in on a sense of self through a practice of meditation, the self-important ego paradoxically becomes elusive. You become more aware that you are interconnected with other beings, and you can better put your own worries into their proper perspective."

A group of elderly Chinese maintain their connection by meeting every daybreak in the village common in Monterey Park, California. They swoop their arms and stretch their torsos in graceful harmony, and then stand absolutely still, simply meditating. Only puffs of warm air flow from their nostrils. All of them look vibrant and relatively young, when in fact they are well into their years.

While western scientists are still exploring exactly how and why meditation works, we already know that it has both physiological and psychological benefits. And many therapists consider it a valid complement to more traditional therapies. So perhaps we should simply take Thomson's advice—and the Tibetans' lead—and do what makes us feel better in the end.

The Science of Meditation. by Martijn Schirp. Over the past few hundred years the power of organized religion has steeply declined in the west. State & church and science & religion are separated and free inquiry is now more encouraged than ever.Â Meditation that involves concentrating on an object (like Shamatha mentioned in the focus study) has a kind of top-down control and increases slow alpha and theta brain waves. Another type of meditation that has no object of focus but instead tries to cultivate a whole state of being (compassion becoming the sole content of experience) shows an increase in gamma waves. These increases indicate neural synchronization. For the purpose of this article, research on meditation concerns research into the psychological and physiological effects of meditation using the scientific method. In recent years, these studies have increasingly involved the use of modern scientific techniques and instruments, such as fMRI and EEG which are able to directly observe brain physiology and neural activity in living subjects, either during the act of meditation itself, or before and after a meditation effort, thus allowing linkages to Richie's own experiences with meditation led to decades pursuing the science that supports our theory of altered traits. His research group has now generated the data that lend credence to what could otherwise seem mere fanciful tales. And by leading the creation of a fledgling research field, contemplative neuroscience, he has been grooming a coming generation of scientists whose work builds on and adds to this evidence.Â Now we can share scientific confirmation of these profound alterations of being-a transformation that dramatically ups the limits on psychological science's ideas of human possibility. The very idea of "awakening"-the goal of the deep path-seems a quaint fairy tale to a modern sensibility.