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Meditation

What's the Bottom Line?

How much do we know about meditation?

Many studies have been conducted to look at how meditation may be helpful for a variety of conditions, such as high blood pressure, certain psychological disorders, and pain. A number of studies also have helped researchers learn how meditation might work and how it affects the brain.

What do we know about the effectiveness of meditation?

Some research suggests that practicing meditation may reduce blood pressure, symptoms of irritable bowel syndrome, anxiety and depression, and insomnia. Evidence about its effectiveness for pain and as a smoking-cessation treatment is uncertain.

What do we know about the safety of meditation?

Meditation is generally considered to be safe for healthy people. However, people with physical limitations may not be able to participate in certain meditative practices involving movement.

What Is Meditation?

Meditation is a mind and body practice that has a long history of use for increasing calmness and physical relaxation, improving psychological balance, coping with illness, and enhancing overall health and well-being. Mind and body practices focus on the interactions among the brain, mind, body, and behavior.

There are many types of meditation, but most have four elements in common: a quiet location with as few distractions as possible; a specific, comfortable posture (sitting, lying down, walking, or in other positions); a focus of attention (a specially chosen word or set of words, an object, or the sensations of the breath); and an open attitude (letting distractions come and go naturally without judging them).

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What the Science Says About the Effectiveness of Meditation

Many studies have investigated meditation for different conditions, and there's evidence that it may reduce blood pressure as well as symptoms of irritable bowel syndrome and flare-ups in people who have had ulcerative colitis. It may ease symptoms of anxiety and depression, and may help people with insomnia.

Pain

- Research about meditation's ability to reduce pain has produced mixed results. However, in some studies scientists suggest that meditation activates certain areas of the brain in response to pain.
- A small 2016 study funded in part by the National Center for Complementary and Integrative Health (NCCIH) found that mindfulness meditation does help to control pain and doesn't use the brain's naturally occurring opiates to do so. This suggests that combining mindfulness with pain medications and other approaches that rely on the brain's opioid activity may be particularly effective for reducing pain. Visit the NCCIH Web site for more information on this [study](#).
- In another 2016 NCCIH-funded study, adults aged 20 to 70 who had chronic low-back pain received either mindfulness-based stress reduction (MBSR) training, cognitive-behavioral therapy (CBT), or usual care. The MBSR and CBT participants had a similar level of improvement, and it was greater than those who got usual care, including long after the training ended. The researchers found that participants in the MBSR and CBT groups had greater improvement in functional limitation and back pain at 26 and 52 weeks compared with those who had usual care. There were no significant differences in outcomes between MBSR and CBT. Visit the NCCIH Web site for more information on this [study](#).

High Blood Pressure

- Results of a 2009 NCCIH-funded trial involving 298 university students suggest that practicing Transcendental Meditation may lower the blood pressure of people at increased risk of developing high blood pressure.
- The findings also suggested that practicing meditation can help with psychological distress, anxiety, depression, anger/hostility, and coping ability.
- A literature review and scientific statement from the American Heart Association suggest that evidence supports the use of Transcendental Meditation (TM) to lower blood pressure. However, the review indicates that it's uncertain whether TM is truly superior to other meditation techniques in terms of blood-pressure lowering because there are few head-to-head studies.

Irritable Bowel Syndrome

- The few studies that have looked at mindfulness meditation training for irritable bowel syndrome (IBS) found no clear effects, the American College of Gastroenterology stated in a 2014 report. But the authors noted that given the limited number of studies, they can't be sure that IBS doesn't help.
- Results of a 2011 NCCIH-funded trial that enrolled 75 women suggest that practicing mindfulness meditation for 8 weeks reduces the severity of IBS symptoms.
- A 2013 review concluded that mindfulness training improved IBS patients' pain and quality of life but not their depression or anxiety. The amount of improvement was small.

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Ulcerative Colitis

- In a 2014 pilot study, 55 adults with ulcerative colitis in remission were divided into two groups. For 8 weeks, one group learned and practiced mindfulness-based stress reduction (MBSR) while the other group practiced a placebo procedure. Six and twelve months later, there were no significant differences between the two groups in the course of the disease, markers of inflammation, or any psychological measure except perceived stress during flare-ups. The researchers concluded that MBSR might help people in remission from moderate to moderately severe disease—and maybe reduce rates of flare-up from stress.

Anxiety, Depression, and Insomnia

- A 2014 literature review of 47 trials in 3,515 participants suggests that mindfulness meditation programs show moderate evidence of improving anxiety and depression. But the researchers found no evidence that meditation changed health-related behaviors affected by stress, such as substance abuse and sleep.
- A 2012 review of 36 trials found that 25 of them reported better outcomes for symptoms of anxiety in the meditation groups compared to control groups.
- In a small, NCCIH-funded study, 54 adults with chronic insomnia learned mindfulness-based stress reduction (MBSR), a form of MBSR specially adapted to deal with insomnia (mindfulness-based therapy for insomnia, or MBTI), or a self-monitoring program. Both meditation-based programs aided sleep, with MBTI providing a significantly greater reduction in insomnia severity compared with MBSR.

Smoking Cessation

- The results of 13 studies of mindfulness-based interventions for stopping smoking had promising results regarding craving, smoking cessation, and relapse prevention, a 2015 research review found. However, the studies had many limitations.
- Findings from a 2013 review suggest that meditation-based therapies may help people quit smoking; however, the small number of available studies is insufficient to determine rigorously if meditation is effective for this.
- A 2011 trial comparing mindfulness training with a standard behavioral smoking cessation treatment found that individuals who received mindfulness training showed a greater rate of reduction in cigarette use immediately after treatment and at 17-week follow-up.
- Results of a 2013 brain imaging study suggest that mindful attention reduced the craving to smoke, and also that it reduced activity in a craving-related region of the brain.
- However, in a second 2013 brain imaging study, researchers observed that a 2-week course of meditation (5 hours total) significantly reduced smoking, compared with relaxation training, and that it increased activity in brain areas associated with craving.

Other Conditions

- Results from a 2011 NCCIH-funded study of 279 adults who participated in an 8-week Mindfulness-Based Stress Reduction (MBSR) program found that changes in spirituality were associated with better mental health and quality of life.
- Guidelines from the American College of Chest Physicians published in 2013 suggest that MBSR and meditation may help to reduce stress, anxiety, pain, and depression while enhancing mood and self-esteem in people with lung cancer.

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- Clinical practice guidelines issued in 2014 by the Society for Integrative Oncology (SIO) recommend meditation as supportive care to reduce stress, anxiety, depression, and fatigue in patients treated for breast cancer. The SIO also recommends its use to improve quality of life in these people.
- Meditation-based programs may be helpful in reducing common menopausal symptoms, including the frequency and intensity of hot flashes, sleep and mood disturbances, stress, and muscle and joint pain. However, differences in study designs mean that no firm conclusions can be drawn.
- Because only a few studies have been conducted on the effects of meditation for attention deficit hyperactivity disorder (ADHD), there isn't sufficient evidence to support its use for this condition.
- A 2014 research review suggested that mind and body practices, including meditation, reduce chemical identifiers of inflammation and show promise in helping to regulate the immune system.
- Results from a 2013 NCCIH-supported study involving 49 adults suggest that 8 weeks of mindfulness training may reduce stress-induced inflammation better than a health program that includes physical activity, education about diet, and music therapy.

Meditation and the Brain

Some research suggests that meditation may physically change the brain and body and could potentially help to improve many health problems and promote healthy behaviors.

- In a 2012 study, researchers compared brain images from 50 adults who meditate and 50 adults who don't meditate. Results suggested that people who practiced meditation for many years have more folds in the outer layer of the brain. This process (called gyrification) may increase the brain's ability to process information.
- A 2013 review of three studies suggests that meditation may slow, stall, or even reverse changes that take place in the brain due to normal aging.
- Results from a 2012 NCCIH-funded study suggest that meditation can affect activity in the amygdala (a part of the brain involved in processing emotions), and that different types of meditation can affect the amygdala differently even when the person is not meditating.
- Research about meditation's ability to reduce pain has produced mixed results. However, in some studies scientists suggest that meditation activates certain areas of the brain in response to pain.

What the Science Says About Safety and Side Effects of Meditation

- Meditation is generally considered to be safe for healthy people.
- People with physical limitations may not be able to participate in certain meditative practices involving movement. People with physical health conditions should speak with their health care providers before starting a meditative practice, and make their meditation instructor aware of their condition.
- There have been rare reports that meditation could cause or worsen symptoms in people with certain psychiatric problems like anxiety and depression. People with existing mental health conditions should speak with their health care providers before starting a meditative practice, and make their meditation instructor aware of their condition.

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NCCIH-Funded Research

NCCIH-supported studies are investigating meditation for:

- Teens experiencing chronic, widespread pain, such as from fibromyalgia
- Stress reduction for people with multiple sclerosis
- Post-traumatic stress disorder, headaches, reducing blood pressure.

More to Consider

- Don't use meditation to replace conventional care or as a reason to postpone seeing a health care provider about a medical problem.
- Ask about the training and experience of the meditation instructor you are considering.
- Tell all your health care providers about any complementary or integrative health approaches you use. Give them a full picture of what you do to manage your health. This will help ensure coordinated and safe care.

For More Information

NCCIH Clearinghouse

The NCCIH Clearinghouse provides information on NCCIH and complementary and integrative health approaches, including publications and searches of Federal databases of scientific and medical literature. The Clearinghouse does not provide medical advice, treatment recommendations, or referrals to practitioners.

Toll-free in the U.S.: 1-888-644-6226

TTY (for deaf and hard-of-hearing callers): 1-866-464-3615

Web site: nccih.nih.gov

E-mail: info@nccih.nih.gov

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Web site: www.ncbi.nlm.nih.gov/pubmed

NIH Clinical Research Trials and You

The National Institutes of Health (NIH) has created a Web site, NIH Clinical Research Trials and You, to help people learn about clinical trials, why they matter, and how to participate. The site includes questions and answers about clinical trials, guidance on how to find clinical trials through ClinicalTrials.gov and other resources, and stories about the personal experiences of clinical trial participants. Clinical trials are necessary to find better ways to prevent, diagnose, and treat diseases.

Web site: www.nih.gov/health/clinicaltrials/

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Research Portfolio Online Reporting Tools Expenditures & Results (RePORTER)

RePORTER is a database of information on federally funded scientific and medical research projects being conducted at research institutions.

Web site: projectreporter.nih.gov/reporter.cfm

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