



© Matthew Lester

Headaches

What's the Bottom Line?

What do we know about the usefulness of complementary approaches for headaches?

Mind and Body Approaches

- **Acupuncture** can be helpful for headaches. Much of its benefit may be due to nonspecific factors including expectation, beliefs, and placebo responses rather than specific effects of needling.
- Some studies indicate that **biofeedback**-based techniques may be helpful for tension headaches and migraines, but not all research results agree.
- For **massage, relaxation techniques, spinal manipulation, and tai chi**, the evidence is too limited or inconsistent to allow conclusions to be reached.

Dietary Supplements

- Guidelines from the American Academy of Neurology and the American Headache Society classify **butterbur** as effective; **feverfew, magnesium, and riboflavin** as probably effective; and **coenzyme Q10** as possibly effective for preventing migraines.

What do we know about the safety of complementary approaches for headaches?

In general, the complementary approaches discussed in this fact sheet have good safety records. However, that doesn't mean that they're risk-free for everyone. Your age, health, special circumstances (such as pregnancy), and medicines or supplements that you take may affect the safety of complementary approaches.

Some Basics About Headaches

Headaches are the most common form of pain. They're a major reason why people miss work or school or visit a health care provider. This fact sheet focuses on two types of headache: tension headaches and migraines. Researchers have studied complementary health approaches for both.

Headaches

Tension Headaches and Migraines: What's the Difference?

- **Tension headaches**—the most common type of headache—are caused by tight muscles in the shoulders, neck, scalp, and jaw. They may be related to stress, depression, or anxiety and may occur more often in people who work too much, sleep too little, miss meals, or drink alcoholic beverages.
- **Migraine headaches**—which affect about 12 percent of Americans—involve moderate to severe throbbing pain, often on one side of the head. During a migraine, people are sensitive to light and sound and may feel nauseated. Some people have visual disturbances before a migraine—like seeing zigzag lines or flashing lights, or temporarily losing their vision. Anxiety, stress, lack of food or sleep, exposure to light, or hormonal changes (in women) can trigger migraines. Genes that control the activity of some brain cells may play a role in causing migraines.

For more information about headaches, visit the [National Institute of Neurological Disorders and Stroke Web site](#).

What the Science Says About Complementary Health Approaches for Headache

Research has produced promising results for some complementary health approaches for tension headache or migraine. For other approaches, evidence of effectiveness is limited or conflicting.

Mind and Body Approaches

Mind and body approaches that have been studied for headache include acupuncture, biofeedback, massage, relaxation techniques, spinal manipulation, and tai chi.

Acupuncture

Acupuncture is a technique in which practitioners stimulate specific points on the body, most often by inserting thin needles through the skin.

There have been many studies of acupuncture for headache. The combined results from these studies indicate that acupuncture may help relieve headache pain, but that much of its benefit may be due to nonspecific effects including expectation, beliefs, and placebo responses rather than specific effects of needling.

Acupuncture is generally considered safe when performed by an experienced practitioner using sterile needles. Improperly performed acupuncture can cause potentially serious side effects.

[More information on acupuncture](#) is available on the NCCIH website.

Headaches

Biofeedback

Biofeedback measures body functions and gives you information about them so that you can become more aware of those functions and learn to control them. For example, a biofeedback device may show you measurements of muscle tension. By watching how these measurements change, you can become more aware of when your muscles are tense and learn to relax them.

Several types of biofeedback have been studied for headaches, including techniques that help people learn to relax and more specific techniques that focus on changes that occur during headaches.

- **Tension headaches.** Many studies have tested biofeedback for tension headaches, and several evaluations of this research have concluded that biofeedback may be helpful. However, an evaluation that included only the highest quality studies concluded that there is conflicting evidence about whether biofeedback is helpful for tension headaches.
- **Migraines.** Studies have shown decreases in the frequency of migraines in people who were using biofeedback. However, it's unclear whether biofeedback is better than a placebo for migraines.

Biofeedback generally does not have harmful side effects.

Massage

Massage therapy includes a variety of techniques in which practitioners manipulate the soft tissues of the body.

Limited evidence from two small studies suggests massage therapy is possibly helpful for migraines, but clear conclusions cannot be drawn.

Massage therapy appears to have few risks when performed by a trained practitioner. However, people with health conditions and pregnant women may need to avoid some types of massage and should consult their health care providers before having massage therapy.

[More information on massage therapy](#) is available on the NCCIH website.

Relaxation Techniques

Relaxation techniques—such as progressive muscle relaxation, guided imagery, and breathing exercises—are practices that can produce the body's natural relaxation response. (Some types of biofeedback are also designed to help people learn relaxation; biofeedback is discussed in a separate section above.)

Although some experts consider relaxation techniques to be promising for tension headaches, there isn't much evidence to support their effectiveness. An evaluation of high-quality studies on relaxation techniques found conflicting evidence on whether they're better than no treatment or a placebo. Some studies suggest that relaxation techniques are less helpful than biofeedback.

Relaxation techniques generally don't have side effects. However, rare harmful effects have been reported in people with serious physical or mental health conditions.

[More information on relaxation techniques](#) is available on the NCCIH website.

Headaches

Spinal Manipulation

Spinal manipulation is a technique in which practitioners use their hands or a device to apply a controlled force to a joint of the spine. Chiropractors or other health professionals may use this technique.

Spinal manipulation is frequently used for headaches. However, it's uncertain whether manipulation is helpful because studies have had contradictory results.

Side effects from spinal manipulation can include temporary headaches, tiredness, or discomfort in the area that was manipulated. There have been rare reports of strokes occurring after manipulation of the upper (cervical) spine, but whether manipulation actually caused the strokes is unclear. For risks associated with spinal manipulation affecting the cervical spine, see the NCCIH fact sheet [Chiropractic](#).

[More information on spinal manipulation](#) is available on the NCCIH website.

Tai Chi

Tai chi, which originated in China, combines meditation with slow, graceful movements, deep breathing, and relaxation.

One small randomized study has evaluated tai chi for tension headaches. Some evidence of improvements in headache status and health-related quality of life was found among patients on the tai chi program compared to others on a wait list. These data are too limited to draw meaningful conclusions about whether this practice is helpful for tension headaches.

Tai chi is generally considered to be a safe practice.

[More information on tai chi](#) is available on the NCCIH website.

Dietary Supplements

Several dietary supplements have been studied for headaches, particularly for migraine prevention. In 2012, the American Academy of Neurology and the American Headache Society issued evidence-based guidelines that classified certain dietary supplements as “effective,” “probably effective,” or “possibly effective” in preventing migraines. Their findings regarding effectiveness of specific supplements are summarized in the next sections. Also included are brief summaries of evidence on the safety and side effects of each supplement.

Butterbur

In their guidelines for migraine prevention, the American Academy of Neurology and the American Headache Society concluded that butterbur is effective and should be offered to patients with migraine to reduce the frequency and severity of migraine attacks.

The most common side effects of butterbur are belching and other mild digestive tract symptoms. Raw butterbur extracts contain pyrrolizidine alkaloids, which can cause liver damage and cancer. Extracts of butterbur that are almost completely free from these alkaloids are available. It is uncertain whether butterbur products, including reduced-alkaloid products, are safe for prolonged use.

[More information on butterbur](#) is available on the NCCIH website.

Headaches

Coenzyme Q10

Coenzyme Q10 is an antioxidant that cells need to function properly. It's available as a dietary supplement and has been studied for a variety of purposes. The guidelines from the American Academy of Neurology and the American Headache Society say that coenzyme Q10 is possibly effective and may be considered for migraine prevention.

No serious side effects of coenzyme Q10 have been reported. It may interact with some medications, including the anticoagulant (blood-thinning) medication warfarin (Coumadin).

[More information on coenzyme Q10](#) is available on the NCCIH website.

Feverfew

The guidelines from the American Academy of Neurology and the American Headache Society say that a specific feverfew extract called MIG-99 is probably effective and should be considered for migraine prevention.

Side effects of feverfew may include joint aches, digestive disturbances, and mouth ulcers. It may interact with anticoagulants (blood thinners) and some other medications. Feverfew is not safe for use during pregnancy. Its long-term safety has not been established.

[More information on feverfew](#) is available on the NCCIH website.

Magnesium

Magnesium deficiency is related to factors that promote headaches, and people who get migraines may have lower levels of magnesium in their bodies than those who do not. The guidelines from the American Academy of Neurology and the American Headache Society say that magnesium is probably effective and should be considered for migraine prevention.

Magnesium supplements can cause diarrhea and may interact with some medications. Because the amounts of magnesium people take for migraines are greater than the Tolerable Upper Intake Level for this mineral (the largest amount that's likely to be safe for almost everyone), magnesium supplements for migraine should be used only under the supervision of a health care provider.

[More information on magnesium](#) is available on the Office of Dietary Supplements website.

Riboflavin

The American Academy of Neurology and American Headache Society's guidelines say that riboflavin is probably effective and should be considered for migraine prevention.

Riboflavin has minimal side effects, but it can cause an intense yellow discoloration of the urine.

Headaches

NCCIH-Funded Research

NCCIH is supporting several studies of complementary health approaches for headaches.

Current NCCIH-funded research includes

- A study of mindfulness meditation for migraine that includes measurement of brain changes with magnetic resonance imaging (MRI)
- A combined analysis of many studies of acupuncture for various types of pain, including headaches

More To Consider

- Most dietary supplements have not been tested in pregnant women, nursing mothers, or children. If you're pregnant or nursing a child, or if you're considering giving a child a dietary supplement, consult your (or your child's) health care provider.
- Be aware that some dietary supplements may interact with conventional medical treatments.
- If you're considering a practitioner-provided complementary health practice such as biofeedback or acupuncture, ask a trusted source (such as your health care provider or nearby hospital) to recommend a practitioner. Find out about the training and experience of any complementary health practitioner you're considering. To learn more, see [NCCIH's resources on how to find a complementary health practitioner](#).
- 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

National Institute of Neurological Disorders and Stroke (NINDS)

NINDS conducts and supports research on how the brain and nervous system function and on treatments for neurological diseases.

Web site: www.ninds.nih.gov

Toll-free in the U.S.: 1-800-352-9424

Headaches

PubMed®

A service of the National Library of Medicine (NLM), PubMed contains publication information and (in most cases) brief summaries of articles from scientific and medical journals.

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

MedlinePlus

To provide resources that help answer health questions, MedlinePlus (a service of NLM) brings together authoritative information from the National Institutes of Health as well as other Government agencies and health-related organizations.

Web site: www.nlm.nih.gov/medlineplus/

Key References

- Abbott RB, Hui KK, Hays RD, et al. A randomized controlled trial of tai chi for tension headaches. *Evidence-Based Complementary and Alternative Medicine*. 2007;4(1):107-113.
- Andrasik F. Biofeedback in headache: an overview of approaches and evidence. *Cleveland Clinic Journal of Medicine*. 2010;77(Suppl 3):S72-S76.
- Bendtsen L, Jensen R. Treating tension-type headache—an expert opinion. *Expert Opinion on Pharmacotherapy*. 2011;12(7):1099-1109.
- Chaibi A, Tuchin PJ, Russell MB. Manual therapies for migraine: a systematic review. *Journal of Headache and Pain*. 2011;12(2):127-133.
- Haynes MJ, Vincent K, Fischhoff C, et al. Assessing the risk of stroke from neck manipulation: a systematic review. *International Journal of Clinical Practice*. 2012;66(10):940-947.
- Holland S, Silberstein SD, Freitag F, et al. Evidence-based guideline update: NSAIDs and other complementary treatments for episodic migraine prevention in adults. Report of the Quality Standards Subcommittee of the American Academy of Neurology and the American Headache Society. *Neurology*. 2012;78(17):1346-1353.
- Levin M. Herbal treatment of headache. *Headache*. 2012;52(S2):76-80.
- Nestoriuc Y, Martin A. Efficacy of biofeedback for migraine: a meta-analysis. *Pain*. 2007;128(1-2):111-127.
- Nestoriuc Y, Martin A, Rief W, et al. Biofeedback treatment for headache disorders: a comprehensive efficacy review. *Applied Psychophysiology and Biofeedback*. 2008;33(3):125-140.
- Nestoriuc Y, Rief W, Martin A. Meta-analysis of biofeedback for tension-type headache: efficacy, specificity, and treatment moderators. *Journal of Consulting and Clinical Psychology*. 2008;76(3):379-396.
- Office of Dietary Supplements. *Magnesium. Fact Sheet for Health Professionals*. Office of Dietary Supplements Web site. Accessed at <http://ods.od.nih.gov/factsheets/Magnesium-HealthProfessional/> on March 18, 2014.
- Posadzki P, Ernst E. Systematic reviews of spinal manipulations for headaches: an attempt to clear up the confusion. *Headache*. 2011;51(9):1419-1425.
- Verhagen AP, Damen L, Berger MY, et al. Behavioral treatments of chronic tension-type headache in adults: are they beneficial? *CNS Neuroscience & Therapeutics*. 2009;15(2):183-205.
- Vickers AJ, Cronin AM, Maschino AC, et al. Acupuncture for chronic pain: individual patient data meta-analysis. *Archives of Internal Medicine*. 2012;172(19):1444-1453.

Headaches

This publication is not copyrighted and is in the public domain.

Duplication is encouraged.

NCCIH has provided this material for your information. It is not intended to substitute for the medical expertise and advice of your primary health care provider. We encourage you to discuss any decisions about treatment or care with your health care provider. The mention of any product, service, or therapy is not an endorsement by NCCIH.

U.S. Department of Health & Human Services • National Institutes of Health • National Center for Complementary and Integrative Health

nccih.nih.gov