

# get the facts

## Osteoarthritis and Complementary Health Approaches



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Osteoarthritis (OA) is a disease that causes pain and difficulty moving joints, particularly in the knees, hips, hands, and spine. This fact sheet provides basic information on OA, summarizes scientific research on selected dietary supplements, mind and body practices, and other complementary health approaches that have been studied for OA, and suggests sources for additional information.

### Key Points

- It is important **not** to replace conventional medical treatments for OA with an unproven complementary health approach.
- Some research has shown that acupuncture may help to reduce pain and improve joint mobility, and a small number of studies on massage and tai chi for OA symptoms suggest that both practices may help to reduce pain and improve physical function (the ability to walk and move).
- There is little conclusive evidence that dietary supplements help with OA symptoms or the underlying course of the disease.
- Tell all your health care providers about any complementary 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.

### About Osteoarthritis

Osteoarthritis is the most common type of arthritis—affecting nearly 27 million Americans—and is an increasing problem among older adults. OA occurs when the cartilage (protective tissue) between the bones of a joint is worn down. As a result, the bones rub together, causing pain and loss of function—such as stiffness or reduced range of motion—in the joints.

OA is different from rheumatoid arthritis, which is an autoimmune disease that also affects other tissues in the body in addition to joints, including the eyes, heart, and lungs. Risk factors include aging, joint injuries, or genetic problems that specifically affect the joint cartilage. Both men and women are affected by OA; although after the age of 45 women tend to be more at risk of developing the disease.

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Treatments for OA address the symptoms, such as pain, swelling, and reduced function in the joints. Nonmedicinal approaches involve lifestyle changes such as exercise, weight control, and rest. Conventional medicinal treatments for OA include nonsteroidal anti-inflammatory drugs (NSAIDs), acetaminophen (a class of pain reliever), and injections of corticosteroids (anti-inflammatory hormones). While important and very helpful for many, these treatments are not always effective and they sometimes result in serious side effects. For example, NSAIDs may cause liver damage, ulcers, and gastrointestinal bleeding and can increase risk of heart attack and stroke.

To find out more about OA, visit the National Institute of Arthritis and Musculoskeletal and Skin Diseases Web site (see “For More Information”).

## **Use of Complementary Health Approaches for Osteoarthritis in the United States**

According to the 2007 National Health Interview Survey, which included a comprehensive survey on the use of complementary health approaches by Americans, 5.2 percent of U.S. adults used complementary health approaches for joint pain or stiffness, and 3.5 percent used them for arthritis.

### **What the Science Says**

#### **Dietary Supplements**

Researchers have found little conclusive evidence that dietary supplements work for OA symptoms or the underlying course of the disease.

#### ***Glucosamine and Chondroitin Sulfate***

Glucosamine and chondroitin sulfate—taken separately or together—are marketed for supporting joint health and have also been widely used for treating OA. Both supplements are forms of chemicals found naturally within the body’s cartilage.

- NCCAM funded a study that examined the use of glucosamine and chondroitin sulfate for knee pain from OA. The Glucosamine/chondroitin Arthritis Intervention Trial (GAIT) enrolled close to 1,600 participants. Results indicated that overall, a 6-month treatment with the dietary supplements was no better than placebo. While there was some evidence suggesting that participants with moderate-to-severe pain had modest reductions in pain with the combined supplements, this has not been confirmed. In a followup study of GAIT participants, researchers examined whether glucosamine and chondroitin could prevent the progression of OA—an evaluation based on measuring joint space width. Results showed no significant change in joint space width or improvement in pain and function.

#### **About Scientific Evidence on Complementary Health Approaches**

Scientific evidence on complementary health approaches includes results from laboratory research as well as clinical trials (studies in people). It provides information on whether an approach is helpful and safe. Scientific journals publish study results, as well as review articles that evaluate the evidence as it accumulates; fact sheets from the National Center for Complementary and Alternative Medicine (NCCAM)—like this one—base information about research findings primarily on the most rigorous review articles, known as systematic reviews and meta-analyses.

- A 2010 meta-analysis that analyzed 10 glucosamine and chondroitin trials involving 3,803 patients with knee or hip OA published similar results. Compared with placebo, glucosamine, chondroitin, or a combination of both did not significantly reduce pain or change joint space.
- Glucosamine and chondroitin appear to be relatively safe and well tolerated when used in suggested doses over a 2-year period. In a few specific situations, however, there are concerns that side effects or drug interactions might occur:
  - Glucosamine may interact with the anticoagulant (blood-thinning) drug warfarin.
  - There is conflicting evidence about whether glucosamine might have negative effects on glucose metabolism, especially in people with insulin resistance or impaired glucose tolerance; more research on this topic is needed.
  - It is possible that glucosamine might make asthma worse, although this has not been proven.
  - There have been concerns that glucosamine—which is often derived from the shells of shrimp, lobsters, or crabs—might trigger allergic reactions in people with allergies to these shellfish. However, no such allergic reactions have been reported.
  - Finally, although recent studies conducted by the U.S. Food and Drug Administration show that high doses of glucosamine hydrochloride taken by mouth in rats may promote cartilage regeneration and repair, this dose was also found to cause severe kidney problems in the rats—a serious side effect of the treatment.

### ***Dimethyl Sulfoxide (DMSO) and Methylsulfonylmethane (MSM)***

DMSO and MSM are two chemically related dietary supplements that have been used for arthritic conditions. A 2009 meta-analysis of a small number of studies looked at topical (applied to skin) DMSO and oral (taken by mouth) MSM as potential products for OA of the knee. There was no evidence of significant reductions in pain compared to placebo. Although there is limited safety data available, some side effects from topical DMSO have been reported, including upset stomach, skin irritation, and garlic taste, breath, and body odor. Only minor side effects are associated with MSM in humans including allergy, upset stomach, and skin rashes.

### ***S-Adenosyl-L-methionine (SAME)***

SAME is a molecule that is naturally produced in the body and is often taken as a dietary supplement. A 2009 systematic review concluded that there was not enough evidence to use SAME for OA of the knee or hip. The reviewers did indicate that small improvements in pain and function were seen in some but not all studies. SAME is generally considered safe. Common side effects include gastrointestinal problems, dry mouth, headache, sweating, dizziness, and nervousness.

### ***Herbal Remedies***

Although some results suggest that a few herbs may be beneficial for OA symptoms, the overall evidence is weak. In addition, not all herbs have been studied or prepared in a consistent way, and conclusions among reviews of the literature provide conflicting interpretations. There is also a general lack of safety data available for many herbal medicines.

Be aware that **an herbal supplement may contain dozens of compounds** and that its composition may not be well characterized or fully understood. Researchers are studying

many of these products in an effort to identify active ingredients and understand their effects in the body. It is also important to keep in mind that although many dietary supplements (and some prescription drugs) come from natural sources, **“natural does not always mean safe.”**

## **Mind and Body Practices**

Mind and body practices—such as acupuncture, massage, tai chi, qi gong, and yoga—have been studied for OA. Results from clinical trials suggest that acupuncture may be beneficial for some OA symptoms. There are a limited number of quality studies for tai chi, qi gong, and yoga.

In 2012, the American College of Rheumatology issued recommendations for using pharmacologic and nonpharmacologic approaches for OA of the hand, hip, and knee. The guidelines conditionally (cautiously) recommend tai chi, along with other nonpharmacologic approaches such as self-management programs and walking aids, for managing knee OA. Acupuncture is also conditionally recommended for those who have chronic moderate-to-severe knee pain and are candidates for total knee arthroplasty but can't or won't undergo the procedure. It is important to talk with your health care provider before beginning any new conventional or complementary approach.

**Acupuncture** has been studied in clinical trials for pain in a number of conditions including OA. Studies focused primarily on OA of the knee. There is also evidence that acupuncture may help to lessen pain and improve function in other joints such as the hip.

- A 2009 NCCAM-funded literature review examined acupuncture for chronic back pain, OA, and headache. The authors concluded that acupuncture typically appears better than usual, or conventional, care or wait list controls for people with OA but may not provide additional benefit for people with OA who are receiving advice and exercise.
- In a 2008 NCCAM-funded systematic review of randomized controlled trials of acupuncture for OA of the knee, researchers examined 10 trials involving 1,456 participants. The authors concluded that these studies provide evidence that acupuncture is an effective treatment for pain and improving mobility in people with OA.
- Authors of a 2007 meta-analysis suggested that although some large, high-quality trials have shown that acupuncture may be effective for osteoarthritis of the knee, differences in the design, size, and protocol of the studies make it hard to draw any definite conclusions from the body of research. These authors concluded that it is too soon to recommend acupuncture as a routine part of care for patients with osteoarthritis.
- Authors of a 2010 systematic review looked at the effects of acupuncture in people with OA in peripheral joints of the body—knee, hip, or hand. The reviewers examined 16 trials involving 3,498 people and found that although acupuncture, when compared to a sham treatment, showed statistically significant, short-term improvements in osteoarthritis pain, the benefits were small and were not found to be clinically relevant (useful in a clinical setting). In contrast, the reviewers also found that acupuncture, when compared to a waiting list control, showed statistically significant and clinically relevant benefits in people with peripheral joint osteoarthritis. The researchers suggest the beneficial effects in the latter studies were due in part to expectation or placebo effects.

There are few complications associated with acupuncture, but adverse effects such as minor bruising or bleeding can occur; infections can result from the use of nonsterile needles or poor technique from an inexperienced practitioner.

**Massage therapy** has been studied for pain; however, there are very few studies that look at massage therapy and OA specifically. The results of one clinical trial, which did examine massage on adults with OA of the knee, indicated that massage may reduce pain and improve function.

**Tai chi** is an ancient meditative practice that originated in China as a martial art.

- In 2009, *Arthritis and Rheumatism* published a small NCCAM-funded randomized controlled trial on the effects of tai chi on knee OA. The results indicated that participants who practiced tai chi had improvement in pain and physical function as well as in depression and health-related quality of life when compared to participants enrolled in an education and stretching program. Although previous tai chi studies have shown an improvement in balance, this study did not find a statistically significant improvement in participants' balance tests.
- Tai chi is considered to be a relatively safe practice.

**Qi gong** is a group of traditional Chinese exercises, breathing techniques, and meditation practices. There are studies on qi gong and pain, but there is very little research specifically on qi gong and OA.

- A randomized controlled trial funded by NCCAM studied the effects of practitioner-led qi gong on OA of the knee. The results from this study were inconclusive.
- Qi gong is generally considered to be a safe practice.

**Yoga**—while numerous studies have been published on yoga for anxiety and stress, little research has been done to study yoga and OA. Yoga is generally low-impact and safe for healthy people when practiced appropriately under the guidance of a well-trained instructor, however overstretching can occur particularly in diseased joints and ligaments. If you have a medical condition, consult your health care provider before starting yoga.

### **Mind and Body Practices and Placebo**

Researching mind and body interventions for pain management presents many challenges. One such challenge is the role of placebo effects—a term which describes improvements that are not related specifically to the treatment being studied. It is well known that placebo effects can be quite large in pain studies. A “placebo control” pill (which is identical in appearance but contains no active ingredient) can be useful in separating product-related effects from placebo effects when researching a dietary supplement. However, it is much more difficult—and often impossible—to conceal the nature of mind and body practices from study participants because they involve activities in which the person must engage. They also often involve interactions with providers that are known to activate placebo effects (e.g., touch). In the case of studies of mind and body practices for pain, investigators must give very careful attention to study design and steps to ensure that measurements of improvement are as objective as possible.

## Other Complementary Health Approaches for Osteoarthritis

- **Homeopathy**—a 2006 literature review concluded that there is little evidence to support homeopathy as an effective therapy for OA symptoms, particularly pain. There has been no recent research studying the effects of homeopathy on OA.
- **Magnets**—the available scientific evidence does not support the use of magnets for pain relief.

## If You Have OA and Are Thinking Complementary Health Approaches for Osteoarthritis

- Do not replace proven conventional medical treatments for OA with unproven complementary health approaches.
- Be aware that some complementary health approaches—particularly dietary supplements—may interact with conventional medical treatments. It is important to keep in mind that although many supplements (and some prescription drugs) come from natural sources, “natural” does not always mean “safe.” To learn more about using dietary supplements, see the NCCAM fact sheet *Using Dietary Supplements Wisely* at [nccam.nih.gov/health/supplements/wiseuse.htm](http://nccam.nih.gov/health/supplements/wiseuse.htm).
- Women who are pregnant or nursing should consult their health care provider before using any complementary health approach.
- Tell all your health care providers about any complementary 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 tips about talking with your health care providers about complementary health approaches, see NCCAM’s Time to Talk campaign at [nccam.nih.gov/timetotalk](http://nccam.nih.gov/timetotalk).

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## **Other Types of Complementary Health Approaches**

### **Homeopathy**

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## **For More Information**

### **NCCAM Clearinghouse**

The NCCAM Clearinghouse provides information on NCCAM and complementary 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.

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## **National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)**

NIAMS supports research into the causes, treatment, and prevention of arthritis and musculoskeletal and skin diseases; the training of scientists; and the sharing of research-based information.

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