

Rheumatoid Arthritis and Complementary and Alternative Medicine

Rheumatoid arthritis (RA) is a chronic disease that affects the joints, often those in a person's wrists, fingers, and feet. (Terms that are underlined are defined in the dictionary at the end of this report.) The common symptoms of RA are pain, stiffness, fatigue, sleep disturbances, and fever. There are treatments for RA in conventional medicine, but some people also try complementary and alternative medicine (CAM).^{*} This report answers some frequently asked questions on this topic and suggests sources for more information.

Key Points

- It is very important for people with RA to ensure that (1) their RA was diagnosed by a professional with substantial conventional medical training and (2) their condition is being followed by a rheumatologist (a physician who specializes in rheumatic diseases like RA). This is important to minimize damage to the joints and bones, as well as disability.
- There are many proven conventional treatments for RA. It is important not to replace them with a CAM treatment that is unproven.
- Many CAM therapies for arthritis are heavily advertised and make attractive claims, often based on personal stories (testimonials). However, it is important to find out whether any high-quality scientific research has been done on a CAM therapy.
- None of the CAM therapies discussed in this report have been proven to be of benefit for RA. Some—such as thunder god vine (which is not currently available in a safe American-made product), gamma-linolenic acid, fish oil, and mind-body therapies—have shown some possibility of benefit for RA, but further studies are needed to answer this question for sure. This is discussed in more detail below.

^{*} CAM is a group of diverse medical and health care systems, practices, and products that are not presently considered to be part of conventional medicine. Conventional medicine is medicine as practiced by holders of M.D. (medical doctor) or D.O. (doctor of osteopathy) degrees and by their allied health professionals, such as nurses, physical therapists, and dietitians. Some practitioners of conventional medicine are also practitioners of CAM.

- It is important to tell your health care provider(s) about any CAM therapies you are using or considering for RA. This is for your safety and a comprehensive treatment plan.

What is rheumatoid arthritis?

Rheumatoid arthritis (RA) is what is called an autoimmune disease. In this type of disease, a person's immune system (the system in the body responsible for fighting disease) mistakenly attacks the person's own body. In RA, the parts attacked are the linings of the joints (places in the body where two bones connect). The reasons that this happens are complex and not fully understood. RA causes pain, swelling, and stiffness in a person's joints and problems with functioning. However, RA affects different people in different ways, in terms of the symptoms they have, how serious the symptoms are, and how long the symptoms last. RA is different from other types of arthritis (such as osteoarthritis). For example:

- RA usually occurs in a symmetrical pattern; for example, if one hand is affected, usually the other will be, too.
- RA often affects the wrists and fingers, though it can affect other parts of the body.
- RA is an autoimmune disease affecting the entire body. A person with RA may feel tired and weak, have fevers at times, lose appetite, lose weight, and generally not feel well.

To find out more about RA, contact the National Institute of Arthritis and Musculoskeletal and Skin Diseases (see "For More Information").

How is RA treated in conventional medicine?

There are many proven treatments in conventional medicine for RA. They are used to relieve pain, reduce swelling, slow down or stop the damage to joints, help the person function better, and improve the person's sense of well-being. Medications include nonsteroidal anti-inflammatory drugs (NSAIDs), disease-modifying antirheumatic drugs (DMARDs), biological response modifiers, and corticosteroids. Non-drug treatments include physical therapy; modified exercise programs; devices such as canes, special shoes, and splints (rigid supports that keep a part of the body from moving while it heals); and lifestyle changes—such as balancing activity with rest, eating a healthy diet, and reducing stress. Scientific research is advancing in understanding the many complexities of RA and in uncovering new and promising treatments.

It is important for people with RA to have their condition followed by a rheumatologist (a physician who specializes in diseases of the bones, muscles, and joints). This helps prevent or minimize damage to the joints and disability, which can occur if RA is left untreated over time.

Why do some people with RA use CAM, and what do they use?

Among the many reasons that some people use CAM for RA are:

- Because conventional treatment is not working as well as they would like
- A wish for greater relief of symptoms and/or disability
- Issues with side effects of drug treatment
- A desire to reduce some of the stress that comes from living with a chronic illness and to cope better
- A belief that CAM therapies are safer and more “natural”
- Widespread advertising and attractive claims for many CAM products

What CAM therapies for RA are discussed in this report?

Many types of CAM are tried for RA, such as:[†]

- Preparations made from botanicals (plants and their products, including herbs)
- Vitamins and minerals in unconventional amounts
- Other products taken by mouth, such as fish oil
- Dietary approaches
- Preparations applied to the skin, such as balms and liniments
- Hydrotherapy
- Items that are worn (for example, magnetic clothing or copper bracelets)
- Mind-body therapies such as relaxation techniques, meditation, prayer for health purposes, and tai chi
- Whole medical systems, such as Ayurveda (a traditional medicine of India), traditional Chinese medicine, homeopathy, and chiropractic
- Other therapies delivered by CAM practitioners—for example, acupuncture or massage

It is beyond the scope of this report to discuss the scientific evidence about all CAM therapies used for RA. The therapies listed below were selected because they are among those most frequently discussed in the scientific literature and inquired about at the NCCAM Clearinghouse.[‡] In reading about them, you will also see some general points to consider about similar therapies (for example, other botanicals). You can seek science-based information on any CAM therapy that interests you through some of the resources listed in “For More Information.”

[†] Information on these or any other CAM therapies can be obtained from the NCCAM Clearinghouse (see “For More Information”).

[‡] References for the discussions on therapies are listed at the end of this report. They consist of recent peer-reviewed literature in English in the National Library of Medicine’s PubMed database; two evidence-based databases on natural products; and other Federal Government publications.

Therapies Discussed in This Report:	Discussion Starts on Page:
• Botanical supplements and other dietary supplements	5
o Thunder god vine	6
o Gamma-linolenic acid (GLA)	7
o Fish oil	7
o Valerian	8
o Ginger	9
o Curcumin	9
o Boswellia	9
o Feverfew	9
o Glucosamine and chondroitin	10
• Special diets	11
• Acupuncture	11
• Magnets	12
• Hydrotherapy	13
• Homeopathy	14
• Selected mind-body techniques	14

About Dietary Supplements

Dietary supplements were defined in a law passed by Congress in 1994. A dietary supplement must meet all of the following conditions:

- It is a product (other than tobacco) intended to supplement the diet, which contains one or more of the following: vitamins; minerals; herbs or other botanicals; amino acids; or any combination of the above ingredients.
- It is intended to be taken in tablet, capsule, powder, softgel, gelcap, or liquid form.
- It is not represented for use as a conventional food or as a sole item of a meal or the diet.
- It is labeled as being a dietary supplement.

Other important information about dietary supplements:

- They are regulated as foods, not drugs, so there could be quality issues in the manufacturing process.
- Supplements can interact with prescribed or over-the-counter medicines, and other supplements.
- “Natural” does not necessarily mean “safe” or “effective.”
- Consult your health care provider before starting a supplement, especially if you are pregnant or nursing, or considering giving a supplement to a child.

What are some important points to keep in mind if I have RA and am thinking about using CAM?

- It is important to make sure you have been diagnosed with RA by a health care provider who has substantial conventional medical training and experience with arthritis patients. RA can be hard to diagnose, there is no single test for it, and its symptoms can be similar to those of other conditions.
- Proven conventional treatments for RA should not be replaced with a CAM treatment that is unproven. This is especially important in the early stages of RA, when researchers believe the most damage to joints and bones occurs.
- Tell your health care provider(s) about any supplements or medications (prescription or over-the-counter) that you are using or considering. Prescribed medicines may need to be adjusted if you are also using a CAM therapy. Supplements can interact with medications (whether prescription or over-the-counter) and can affect how the body responds to them. Pharmacists can also be a helpful source of information about dietary supplements (though their advice is not a substitute for that of your provider).
- If you decide to use supplements, what you see on the label may not reflect what is in the bottle. For example, some botanical supplements have been found to be contaminated with heavy metals or prescription drugs, and some have been found to have much more or much less of the featured ingredient than their label states. NCCAM has publications on these topics (see “For More Information”).
- The claims for many CAM therapies can be attractive, ranging from enhancing well-being, to helping with difficult chronic conditions, to achieving unbelievable results. It is important to know whether scientific research has proven that a therapy works and, if so, why.
- Women who are pregnant or nursing, or people who are thinking of using CAM to treat a child, should use extra caution and be sure to consult their health care provider.

What is known from the scientific research about whether these CAM treatments for RA are effective and safe?

1. Botanical Supplements and Other Dietary Supplements

Overall, there is not much rigorous research available on the effectiveness and safety of botanical and other supplements that people try for RA. It is also important to know that while supplements are regulated by the U.S. Food and Drug Administration (FDA) as a category of foods, supplements made from plants and used for medicinal purposes (sometimes referred to as herbal medicines) can have effects as powerful as those of drugs. In fact, many conventional drugs first came from plants, such as digitalis (from the foxglove plant), used to treat heart failure and heart rhythm, and paclitaxel (from the yew tree), a cancer chemotherapy drug.

It is important to be as informed as possible about the safety of any supplement you are considering or using. Some information already exists from a long history of botanical use outside conventional medicine. This knowledge is being strengthened as NCCAM supports rigorous studies on botanicals and other supplements that have shown promise in early studies to find out more about their molecular structure, their safety, how they may work, and for what diseases or conditions.

Thunder God Vine

Thunder god vine (TGV for short; botanical name *Tripterygium wilfordii* Hook F) is a perennial vine native to China, Japan, and Korea. Preparations made from the skinned root of TGV have been used in traditional Chinese medicine to treat inflammatory and autoimmune diseases. Interestingly, TGV also has a history of use to kill insects in farm fields.

Effectiveness and safety

- Some anti-inflammatory and immune-system-suppressing activity for TGV has been seen in laboratory and animal studies. The first clinical trial on TGV in the United States (the earlier ones were done in China) was carried out at the University of Texas Southwestern Medical Center and the National Institutes of Health (NIH). Its results were published in 2002. Twenty-one patients for whom conventional RA treatment had not worked completed the trial. Eighty percent of those who received a high-dose TGV extract and 40 percent of those who received a low-dose TGV extract experienced improvement in RA symptoms and physical functioning. No one in the placebo group improved. Longer and larger studies are needed to confirm these findings and to find out more about TGV.
- Parts of the TGV plant are dangerous. The leaves, the flowers, the main stem, and the skin covering the root are poisonous, to a point that they could cause death. People should never try to make TGV medications themselves.
- Currently, there are no consistent, high-quality TGV products being manufactured in the United States. Preparations of TGV made outside the United States (for example, in China) can sometimes be obtained, but it is not possible to verify whether they are safe and effective. An expert from the University of Texas/NIH study advises that consumers not use TGV until reliable TGV preparations become available.
- If taken for a long time (according to one study, for more than 5 years), TGV may decrease the density of the minerals in women's bones, which would be of special concern for women who have osteoporosis or are at risk for it. If taken at high doses, TGV could suppress the immune system and increase the effects of immune-suppressing drugs.
- The TGV extract made for the NIH study discussed above was well tolerated by study participants. However, side effects can occur and may include stomach upset, diarrhea, skin rash, changes in menstrual periods, and hair loss.

Gamma-Linolenic Acid (GLA)

GLA is an omega-6 fatty acid that is found in the oils of some plant seeds, including evening primrose (*Oenothera biennis* L.), borage (*Borago officinalis* L.), and black currant (*Ribes nigrum* L.). GLA can be used by the body to make substances that reduce inflammation.

Effectiveness and safety

- A 2000 Cochrane Collaboration review analyzed seven placebo-controlled studies of GLA (from evening primrose, borage, and black currant oils) for RA. The authors noted there were issues with these studies that made it difficult to draw conclusions. However, they thought the better studies indicated potential relief for RA pain, morning stiffness, and joint tenderness.
- There are potential side effects and risks to know about with GLA. First, these plant seed oils may affect certain medical conditions and interact with prescription medications. Specifically:
 - Some borage seed oil preparations contain ingredients called PAs (for pyrrolizidine alkaloids) that can harm the liver or worsen liver disease. Only preparations that are certified and labeled as “PA-free” should be used.
 - Borage oil and evening primrose oil might increase the risk of bleeding and bruising, especially in people taking blood-thinning drugs, such as aspirin, clopidogrel, NSAIDs, or warfarin.
 - Evening primrose oil may cause problems for people taking a class of psychiatric drugs called phenothiazines, such as chlorpromazine or prochlorperazine.
 - Side effects of these oils can include nausea, diarrhea, soft stool, intestinal gas, burping, and stomach bloating.

Fish Oil

Fish oil contains high amounts of two omega-3 fatty acids: EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid). As with GLA (discussed above), the body can use omega-3s to make substances that reduce inflammation.

Effectiveness and safety

- There is some encouraging evidence from a number of laboratory studies, animal studies, and clinical trials about the potential usefulness of fish oil or omega-3 supplementation for various aspects of RA—such as the number of tender joints, morning stiffness, and the need for NSAIDs. However, more research is needed to definitively answer various questions, including what the most effective dosage or length of treatment would be, which patients would benefit most, and whether a placebo effect is at work.
- In some people, the high amounts of omega-3s that are present in fish oil can increase the risk of bleeding or affect the time it takes blood to clot. If a person is taking drugs that affect bleeding or is going to have surgery, this is of special concern. Fish oil supplements interact with medicines for high blood pressure, so taking them together might lower a person’s blood pressure too much.

- Certain species of fish can contain high levels of contaminants, such as mercury, from the environment. Thus, their oils could pose a health risk, especially for pregnant or nursing women and for children. The fish that the Federal Government has found to have the highest levels of mercury are shark, swordfish, king mackerel, and tilefish. People who decide to use fish oil should look for products made from fish with lower mercury levels. Government information on this topic is available.[#] You may have to contact the manufacturer to find out the type(s) of fish used in a product. Also, it is desirable to find out whether the manufacturer tests the product for contaminating substances and if the results of those tests are available.
- Another point to note about safety is that a product called fish liver oil can contain more vitamin A than the recommended daily dosage, which could cause problems.
- Generally, for low doses of fish oil supplements, the side effects are mild and can include a fishy aftertaste, belching, stomach disturbances, and nausea.

Valerian

The herb valerian has a history of use for sleep problems and anxiety disorders. Disrupted sleep has been called a common and often neglected symptom of arthritis. A large, nationally representative survey of people over 65 with arthritis in 2000 found that disruption of sleep, among all the disruptions of arthritis, was the main reason that people sought a variety of CAM, self-care, and conventional medical treatments. Valerian has also been taken for other reasons, such as the intent to relieve muscle and joint pain. The species of valerian most used in American supplements is *Valeriana officinalis*.

Effectiveness and safety

- The evidence suggests that valerian has at least mild benefits for sleep problems in the general population, including insomnia. It has been theorized that valerian may have benefit for people with sleep problems from RA. However, research on valerian for RA specifically has not been done to answer this question.
- There is not much evidence on how long it is safe to take valerian and which dose to use.
- There is not enough reliable evidence to declare whether valerian is effective for muscle and joint pain, including pain from RA. There may be some biological basis for the theory that valerian could be beneficial for musculoskeletal pain.
- Valerian is considered generally safe. However, it should not be taken with sedative drugs (for example, alcohol, benzodiazepines, or narcotics) or other sedative herbs (such as melatonin, SAMe, or St. John's wort). Valerian will increase sedative effects. People who are taking

[#] Two Federal publications are "Mercury Levels in Commercial Fish and Shellfish," available on the Web at www.cfsan.fda.gov/~frf/sea-mehg.html, and "What You Need to Know About Mercury in Fish and Shellfish: Advice For Women Who Might Become Pregnant, Women Who Are Pregnant, Nursing Mothers, and Young Children," at www.cfsan.fda.gov/~dms/admehg3.html. They are copublished by the U.S. Department of Health and Human Services and the U.S. Environmental Protection Agency.

antifungal drugs, statins, or certain anti-arrhythmia drugs should not take valerian. Valerian may not be safe for people who have a liver disorder or are at risk for one. After taking valerian, caution should be used in driving or using dangerous machinery. Side effects of valerian can include drowsiness in the morning, headache, stomach problems, excitability or anxiety, and sleeplessness.

Four Other Botanicals

Three of the other botanicals marketed with claims to benefit arthritis pain are:

- Ginger
- Curcumin (a component of the spice turmeric)
- Boswellia (also called Indian frankincense, made from the resin of a tree that grows in India)

These three botanicals have a history of use in Ayurveda to treat inflammatory conditions. Based on some early findings that may indicate promise, NCCAM is supporting studies at the University of Arizona on these three botanicals, to increase scientific knowledge about them and determine whether they are helpful for chronic inflammatory conditions such as arthritis and asthma.

A fourth botanical, feverfew, has been used in folk medicine with an intent to treat arthritis, migraine, and other conditions. One small published clinical trial was located for this report. It found no more benefit from feverfew than from the placebo. Overall, feverfew has not been proven to help RA symptoms.

Safety

- Ginger's possible side effects include stomach upset, diarrhea, and irritation to the mouth and throat. Ginger is not recommended for people who have a bleeding disorder, a heart condition, or diabetes. Ginger may further slow blood clotting when combined with other herbs and drugs that slow blood clotting; add to the blood-pressure-lowering effects of drugs for high blood pressure and heart disease; and add to the blood-sugar-lowering effects of diabetes drugs.
- Curcumin can have side effects of stomach problems, including nausea and diarrhea. Curcumin could add to the effects of other herbs and drugs that slow blood clotting. Curcumin can cause gallbladder contractions and should not be used by people with gallbladder disease or gallstones.
- Boswellia can have side effects of stomach pain, stomach upset, nausea, and diarrhea. It is not known whether boswellia interacts with any drugs, supplements, or diseases and conditions.
- Feverfew appears to be safe for short-term use, but the safety of long-term use is not known. Feverfew can cause an allergic reaction, especially in people who are allergic to the daisy family. Side effects can include diarrhea and other stomach upsets. Chewing fresh leaves of feverfew may cause mouth irritation and sores. Feverfew might interact with medications broken down by the liver and increase the actions of drugs that slow blood clotting. Pregnant women should not take feverfew.

Glucosamine and Chondroitin

Glucosamine sulfate (glucosamine for short) and chondroitin sulfate (chondroitin) are popular dietary supplements for arthritis. They are sold separately, in combination with each other, and in other combinations.

Glucosamine is a substance found in the fluid around the joints. It can also be obtained from the shells of shrimp, lobster, and crabs, or made in the laboratory. The body uses glucosamine to make and repair cartilage, a firm but flexible tissue that covers the ends of bones, keeps them from rubbing against each other, and absorbs the force of impact.

Chondroitin is a substance found in the cartilage around joints. As a supplement, it is obtained from sources such as sharks and cattle.

Effectiveness and safety

- Both glucosamine and chondroitin have shown anti-inflammatory effects in animal studies. In humans, they have been studied only for osteoarthritis so far, not for RA. Osteoarthritis is a different form of arthritis than RA, with different causes, although the symptoms are similar (such as joint pain and problems with function). One cannot assume that if a treatment is helpful for one type of arthritis, it will also be helpful for another type. The studies of glucosamine and chondroitin for osteoarthritis mostly found a modest benefit. However, some design flaws have been noted in those studies. In sum, there is no evidence that glucosamine and chondroitin are helpful for RA.
- Glucosamine appears to be safe for most people. However, it might worsen asthma through an allergic reaction. Also, glucosamine might cause higher blood sugar and insulin levels in people with diabetes, and those who decide to use it need to carefully monitor their blood sugar. Glucosamine could possibly decrease the effectiveness of certain medications—acetaminophen, some anticancer drugs, and antidiabetes drugs. Generally, side effects of glucosamine can include mild stomach problems and nausea; less commonly, there can be sleepiness, a skin reaction, or a headache. Some people who are allergic to shellfish are concerned about an allergic reaction to glucosamine. However, most shellfish allergies are to proteins in the meat, not to the shell material from which glucosamine supplements are made.
- Chondroitin appears to be safe for most people. However, chondroitin may possibly worsen asthma (through an allergic response), blood clotting disorders, and prostate cancer. The side effects of chondroitin can include stomach pain and nausea; less commonly, diarrhea, constipation, swelling, and problems with heart rate.
- Both supplements could affect the action of the drug warfarin, but this is not definite.

2. Special Diets

Many people with RA are interested in whether certain foods can affect their symptoms. Examples of foods that are believed to possibly worsen the symptoms of arthritis (including RA) are the nightshade family of plants (white potatoes, tomatoes, eggplant, and peppers), dairy, citrus fruits, acidic foods, sweets, coffee, and animal protein. There are various theories about how foods may affect RA, including:

- The foods one eats and how the digestive system handles them are known to affect the immune system. Because RA is a disease of the immune system, a connection between diet and the disease has been proposed.
- Certain fats (mostly from animal sources, but also from corn and sunflower oils) break down in the body into substances that can cause inflammation.
- RA and/or medications to treat it may affect the way a person's digestive system handles foods.
- RA can affect a person's ability to prepare and eat food, leading to nutritional problems.

Effectiveness and Safety

- There is no strong, reproducible evidence that any foods or diets have a specific role in causing or treating RA.
- It is important for people who have RA to eat a healthy, balanced diet.
- If one or more foods are eliminated from the diet, it is possible to miss key nutrients and not get enough calories. It is important to discuss any major dietary changes with your health care provider or a registered dietitian.
- A true food allergy may exist in a small percentage of patients with RA. Many people think they have food allergies when they do not have them or when they have a different condition called food intolerance. To find out more, see the National Institute of Allergy and Infectious Diseases in "For More Information."

3. Acupuncture

Acupuncture is a practice that developed as a part of traditional Chinese medicine. Some people try acupuncture to treat RA pain or to treat the RA itself. For more about acupuncture, see NCCAM's fact sheet "Acupuncture."

Effectiveness and Safety

- Good research studies have shown that acupuncture can help relieve pain associated with osteoarthritis. However, not much is known about its effectiveness for symptoms of RA. A handful of small studies have been conducted, and the findings do not clearly answer this

question. Issues with the studies have included design problems, a small number of participants, variations in where acupuncture was given on the body, and how many treatments were given and for how long. More and better research is needed.

- Acupuncture tends to have minimal side effects, if any. Relatively few complications from acupuncture have been reported to the FDA. If a person decides to use acupuncture, it is important to find a licensed and certified practitioner, as any complications have usually occurred from inadequate practitioner training and experience.

4. Magnets

Magnets are objects that produce a type of energy called magnetic fields. The term “magnets” is also used to refer to consumer products that contain magnets. Examples include shoe insoles, clothing, wraps for parts of the body, and mattress pads. These are of a type called static magnets, because their magnetic fields are unchanging.

Effectiveness and Safety: Static Magnets

- The research so far does not firmly support claims that static magnets are effective for treating pain, including pain from RA. In those cases where some benefit was seen, it has not been proven why; many scientists think it may be due to a placebo effect. If someone does experience a benefit from a magnet, it will tend to occur quickly.
- Static magnets should not be used by pregnant women; people who have a condition—such as an acute sprain, inflammation, infection, or wound—that could be affected by dilation of the blood vessels; and people who use a device such as a pacemaker, defibrillator, or insulin pump, or who use a medication patch.

The second type of magnets used for health purposes are called electromagnets (EMs), because they produce magnetic fields only when electric current flows through them. EMs are used in conventional medicine to treat bone fractures that have not healed well, and they are being studied in research settings for a number of other conditions (including cancer, epilepsy, RA, and mental disorders). Some consumer products using EMs are available.

Effectiveness and Safety: Electromagnets

- EMs are being studied because there have been some encouraging early findings indicating the possibility of benefits for pain, physical function, and stiffness. However, it is too early to know for sure whether EMs are of benefit for patients with RA.
- EMs should not be used by pregnant women; people who have a condition—such as an acute sprain, inflammation, infection, or wound—that could be affected by dilation of the blood vessels; and people who use a device such as a pacemaker, defibrillator, or insulin pump, or who use a medication patch. It may be advisable for people who have a history of cancer or seizure disorder to avoid using EMs until more is known about their effects on these medical conditions.

For more about magnets, see the NCCAM fact sheet “Questions and Answers About Using Magnets To Treat Pain.”

5. Hydrotherapy

Hydrotherapy is the use of water for therapeutic purposes. A few examples of hydrotherapy include bathing in heated water, as from hot springs or the sea; mineral baths; and water-jet massages. Another term used for hydrotherapy baths is balneotherapy.

Hydrotherapy dates back to ancient Greece and Rome. In recent centuries, it has been a popular treatment in Europe and Israel. Some forms of hydrotherapy are used in conventional medicine in the United States, such as whirlpool baths for athletic injuries and ice for sprains. As CAM, hydrotherapy is often combined with other treatments, such as exercises, massage, diets, herbs, and/or mud packs. It is used with the intent to benefit arthritis, circulation, and various other health issues, and to enhance feelings of relaxation and well-being. Some also claim that hydrotherapy “detoxifies” the body. In this report, the term hydrotherapy refers to external water treatments and not to internal treatments using water, such as colon irrigation or drinking specially treated water.

Effectiveness and Safety

- A small number of controlled studies have been done on hydrotherapy for RA, most based on sea-bath treatments given in Israel’s Dead Sea area. Most of these studies reported benefit. However, there have been quality issues noted with these studies, and it is not considered proven that the hydrotherapy itself provided the benefits for RA claimed in these studies. Larger and better studies are needed to answer this question. Study authors have noted that there could be other reasons for any benefit, such as traveling to a spa, being removed from one’s daily routine, relaxation, socializing, etc.
- The safety of hydrotherapy has not been well studied. Overall, it appears to be a low-risk practice for most people if common-sense precautions are taken, such as not exposing the body to too much heat or cold or for too long a time, and being sure to drink enough fluid. However, hydrotherapy is riskier and could even be dangerous for certain people:
 - o Those who have a condition that could be worsened by exposure to extremes of heat or cold (for example, heart disease, lung disease, circulation disorder, Raynaud’s phenomenon, or chilblains) or by strong motions from water jets
 - o Those who have difficulty perceiving temperature (for example, from neuropathy, or damage to the nerves)
 - o Women who are pregnant
 - o People who have implanted medical devices such as pacemakers or pumps
- Some people may get a skin irritation or infection from hydrotherapy water, either as a reaction to something in the water or if the water is not in sanitary condition.

6. Homeopathy

Homeopathy is a whole medical system that was developed in Germany and brought to the United States in the 19th century. Homeopathy involves giving very small doses of substances called remedies that would produce the same or similar symptoms of illness in healthy people when given in larger doses. This approach is called “like cures like.” The remedies are diluted very highly, often to a point where not one molecule of the original substance remains. For more about homeopathy, see NCCAM’s fact sheet “Questions and Answers About Homeopathy.”

Effectiveness and Safety

- Little rigorous research has been done on homeopathy for RA. The results have been mixed. It appears from some studies that homeopathy might be more effective than a placebo for rheumatic diseases and syndromes (including RA), but this evidence is not strong. Larger, better-designed studies are needed to resolve this question.
- Homeopathic remedies are considered safe and unlikely to cause severe side effects. The FDA has learned of a few reports of illness associated with the use of these remedies, but determined that the remedies were not likely to be the cause. Homeopathic remedies are not known to interfere with conventional drugs.

7. Selected Mind-Body Techniques

Mind-body techniques draw upon the interactions that exist in health and disease between the mind, the emotions, the body as a whole, and various body systems (such as the immune, nervous, and endocrine systems). Some mind-body techniques are part of ancient healing traditions, others have emerged in recent times. Examples of mind-body techniques include meditation, tai chi, relaxation techniques, and spirituality for health purposes.

Effectiveness and Safety

- Mind-body therapies have been applied to and studied for various types of pain. Results from clinical trials indicate that mind-body therapies may be effective additions to the treatment and management of arthritis, including RA and its pain.
- One analysis of clinical trials on mind-body therapies for RA has been published. These authors, who evaluated 25 trials and published their findings in 2002 also concluded that mind-body approaches may be effective additions to RA treatment. They noted that mind-body practices led to significant improvements in RA pain, disability, overall psychological state (psychological status), coping, and belief in one’s own ability to handle situations (self-efficacy). Mind-body therapies appeared to be more helpful for people who had RA for a shorter period of time, not a longer period.
- There are still questions about mind-body therapies and RA that need to be answered by research, such as which among these therapies are most effective and, if they work, how they work.

- Spirituality may help people with RA in their quality of life, coping, and how they feel about their health, although the research so far has been limited, and often it has not looked at RA only. A 2003 study at Johns Hopkins University of people with moderate RA found that those who had “spiritual transcendence”^{##} had more happiness, joy, and positive perceptions of their own health. This was regardless of how severe their RA was or how well they could function.
- There have been some small studies on tai chi for RA. Tai chi is a practice from traditional Chinese medicine that uses specific postures along with gentle, slow movements; meditation; and coordinated breathing. These studies on RA have had conflicting results; some found improvement in daily functioning and certain symptoms, others did not. NCCAM is co-sponsoring a clinical trial that compares tai chi chih (a type of tai chi) to relaxation therapy for symptoms of RA. An earlier clinical trial by this team found tai chi chih improved physical functioning and immunity in healthy older adults. Other research as well has supported benefit from tai chi to older people on such outcomes as balance, postural stability, frailty, and prevention of falls. Tai chi is a relatively safe practice. It is done slowly and at low impact to the body.
- In mind-body therapies, there are relatively few physical and emotional risks, if any. A helpful aspect of most mind-body therapies is that they can be taught to users and practiced by them at times and places of their choice.

Is NCCAM funding research on CAM therapies for RA?

Yes. Examples of recent studies include:

- Fish oil, borage seed oil, or a combination of both, to determine if they affect RA symptoms
- Mindfulness-based stress reduction (a type of meditation), to determine if it affects RA symptoms
- Low-strength electromagnetic fields, to see whether they have an effect on pain, fatigue, sleep quality, mood, and inflammation in postmenopausal women with RA

Recently published NCCAM-supported research on RA has included:

- A 2004 review of valerian for sleep disturbances from RA
- A 2003 review of studies on selected CAM therapies for arthritis-related pain, including RA pain
- A 2002 review of studies on mind-body therapies for RA

These and many other reports on NCCAM-supported research may be located in the CAM on PubMed database (see below).

^{##} In this study, spirituality was described as something “often viewed as an intrinsic quality of the individual, a desire for personal connectedness with a transcendence reality.” This was different from religiousness, “an outward practice of a particular spiritual understanding and/or the framework of beliefs, values, and rituals,” although the authors noted that this distinction is difficult. Spirituality was measured using a scale designed to evaluate “the capacity of an individual to stand outside of his/her immediate sense of time and place and to view life from a larger, more detached perspective.”

Definitions

Acupuncture: A family of procedures that originated in traditional Chinese medicine. Acupuncture is the stimulation of anatomical points on the body by a variety of methods, including the insertion and manipulation of thin steel needles or the use of pressure from the practitioner's hands. It is intended to remove blockages in the flow of qi. American practice of acupuncture incorporates medical traditions from China, Japan, Korea, and other countries.

Botanical: A plant or plant part that is used for its flavor, scent, and/or therapeutic properties. Examples include flowers, leaves, bark, fruits, seeds, stems, and roots; substances produced by plants; and algae.

Chiropractic: A whole medical system based on the concept that the body has a powerful self-healing ability, and its structure (primarily the spine), function, and health are closely related. The goal of therapy is to correct structural alignment problems and allow the body to heal itself.

Chronic disease: A disease that lasts a long period of time or comes back frequently.

Clinical trial: A research study in which a treatment or therapy is tested in people to see whether it is safe and effective. Clinical trials are a key part of the process in finding out which treatments work, which do not, and why. Clinical trial results also contribute new knowledge about diseases and medical conditions.

Herb: A plant or plant part used for its scent, flavor, and/or therapeutic properties. Also called a botanical. Herbal supplements are a type of dietary supplement that contains herbs, either singly or in mixtures.

Inflammation: The body's response to injury or infection. Chemicals are released from white blood cells to increase the blood flow to the area, which results in swelling, redness, and warmth.

Insomnia: A condition in which a person cannot fall asleep, cannot remain asleep, or wakes up not feeling restored or refreshed after sleeping.

Joint: The place where two bones meet.

Mind-body therapies: Practices that focus on the relationships of brain, mind, body, and behavior and how they affect health. Examples include meditation and yoga.

Omega-3 fatty acids: A group of polyunsaturated fatty acids that come from food sources, such as fish, fish oil, some vegetable oils (primarily canola and soybean), walnuts, wheat germ, and certain dietary supplements. Polyunsaturated fatty acids are one of the three types of fatty acids. They contain a chain of carbon atoms and hydrogen and oxygen molecules, with two or more double bonds between the carbon atoms.

Omega-6 fatty acids: A group of essential fatty acids found in cereals, vegetable and seed oils, eggs, and poultry. Essential fatty acids are needed for human health and cannot be made by the body.

Osteoporosis: A condition in which bones become thin and brittle and more likely to break.

Placebo: A placebo is designed to resemble as much as possible the treatment being studied in a clinical trial, except that the placebo is inactive. An example of a placebo is a pill containing sugar instead of the drug or other substance being studied. By giving one group of participants a placebo and the other group the active treatment, the researchers can compare how the two groups respond and get a truer picture of the active treatment's effects. In recent years, the definition of placebo has been expanded to include other things that could have an effect on the results of health care, such as how a patient and a health care provider interact and what the patient expects to happen from the care.

Placebo effect: The physical or psychological benefits that can occur with the use of an inert or sham treatment (a placebo), such as a sugar pill.

Relaxation techniques: Use of methods such as guided imagery to help calm the mind and release the muscles. It is used to reduce physical tension and promote emotional well-being.

Rheumatic disease: A type of disease in which inflammation and loss of function are present in one or more connecting or supporting structures of the body. These diseases especially affect the joints, tendons, ligaments, bones, and muscles. Common symptoms are pain, swelling, and stiffness, and some rheumatic diseases can also involve internal organs.

Rheumatologist: A medical doctor who specializes in treating conditions that affect the joints and muscles, such as rheumatoid arthritis.

Sedative: A substance used for medicinal purposes (such as a drug or herb) that depresses the central nervous system, producing feelings of calmness, relaxation, and drowsiness.

Tai chi: An exercise program that is part of traditional Chinese medicine. The exercises consist of a series of slow, gentle movements coordinated with breathing and meditation.

Traditional Chinese medicine: A whole medical system that was documented in China by the 3rd century B.C. Traditional Chinese medicine is based on a concept of vital energy, or qi that is believed to flow throughout the body. It is proposed to regulate a person's spiritual, emotional, mental, and physical balance and to be influenced by the opposing forces of yin (negative energy) and yang (positive energy). Disease is proposed to result from the flow of qi being disrupted and yin and yang becoming unbalanced. Among the components of traditional Chinese medicine are herbal and nutritional therapy, restorative physical exercises, meditation, acupuncture, and remedial massage.

Whole medical systems: A general term for medical and health care systems that employ practices from among the following four domains: mind-body medicine, biologically based practices, manipulative and body-based practices, and energy medicine. To find out more, see the NCCAM Web site.

References

Agency for Healthcare Research and Quality. *Effects of Omega-3 Fatty Acids on Lipids and Glycemic Control in Type II Diabetes and the Metabolic Syndrome and on Inflammatory Bowel Disease, Rheumatoid Arthritis, Renal Disease, Systemic Lupus Erythematosus, and Osteoporosis*. Evidence Report/Technology Assessment no. 89. Rockville, MD: Agency for Healthcare Research and Quality; 2004. 04-E012-1. Also available at: <http://www.ahrq.gov/clinic/evrptfiles.htm#o3lipid>.

Ariza-Ariza R, Mestanza-Peralta M, Cardiel MH. Omega-3 fatty acids in rheumatoid arthritis: an overview. *Seminars in Arthritis and Rheumatism*. 1998;27(6):366-370.

Astin JA. Mind-body therapies for the management of pain. *Clinical Journal of Pain*. 2004;20(1):27-32.

Astin JA, Beckner W, Soeken K, et al. Psychological interventions for rheumatoid arthritis: a meta-analysis of randomized controlled trials. *Arthritis and Rheumatism*. 2002;47(3):291-302.

Balick MJ, Lee R. Digging in the herb garden: responding to a patient's query about thunder god vine. *Alternative Therapies in Health and Medicine*. 2001;7(6):100-103.

Berbert AA, Kondon CR, Almendra AL, et al. Supplementation of fish oil and olive oil in patients with rheumatoid arthritis. *Nutrition*. 2005;2:131-136.

Berman BM, Lao L, Langenberg P, et al. Effectiveness of acupuncture as adjunctive therapy in osteoarthritis of the knee: a randomized, controlled trial. *Annals of Internal Medicine*. 2004;141(12):901-910.

Berman JD, Straus SE. Implementing a research agenda in complementary and alternative medicine. *Annual Review of Medicine*. 2004;55:239-254.

Brinker AM, Raskin I. Determination of triptolide in root extracts of *Tripterygium wilfordii* by solid-phase extraction and reverse-phase high-performance liquid chromatography. *Journal of Chromatography*. 2005;1070: 65-70

Capriotti T. Any science behind the hype of "natural" dietary supplements? *Medsurg Nursing*. 2004;13(5):339-350.

Casimiro L, Brosseau L, Milne S, et al. Acupuncture and electroacupuncture for the treatment of RA. *Cochrane Database of Systematic Reviews*. 2004;(3):CD003788. Accessed at <http://www.cochrane.org> on January 26, 2004.

Cleland LG, James MJ, Proudman SM. The role of fish oils in the treatment of rheumatoid arthritis. *Drugs*. 2003;63(9):845-853.

Conn DL, Arnold WH, Hollister JR. Alternative treatments and rheumatic diseases. *Bulletin on the Rheumatic Diseases*. 1999;48(7):1-4.

Covington MB. Omega-3 fatty acids. *American Family Physician*. 2004;70(1):133-140.

Curtis CL, Harwood JL, Dent CM, et al. Biological basis for the benefit of nutraceutical supplementation in arthritis. *Drug Discovery Today*. 2004;9(4):165-172.

- Danao-Camara TC, Shintani TT. The dietary treatment of inflammatory arthritis: case reports and review of the literature. *Hawaii Medical Journal*. 1999;58(5):126-131.
- Ernst E. Usage of complementary therapies in rheumatology: a systematic review. *Clinical Rheumatology*. 1998;17(4):301-305.
- Fisher P, Scott DL. A randomized controlled trial of homeopathy in rheumatoid arthritis. *Rheumatology (Oxford)*. 2001;40(9):1052-1055.
- Fortin PR, Lew RA, Liang MH, et al. Validation of a meta-analysis: the effects of fish oil in rheumatoid arthritis. *Journal of Clinical Epidemiology*. 1995;48(11):1379-1390.
- Hafstrom I, Ringertz B, Spangberg A, et al. A vegan diet free of gluten improves the signs and symptoms of rheumatoid arthritis: the effects on arthritis correlate with a reduction in antibodies to food antigens. *Rheumatology (Oxford)*. 2001;40(10):1175-1179.
- Han A, Robinson V, Judd M, et al. Tai chi for treating rheumatoid arthritis. *Cochrane Database of Systematic Reviews*. 2004;(3):CD004849. Accessed at <http://www.cochrane.org> on July 21, 2004.
- Henderson CJ, Panush RS. Diets, dietary supplements, and nutritional therapies in rheumatic diseases. *Rheumatic Disease Clinics of North America*. 1999;25(4):937-968.
- Herman CJ, Allen P, Hunt WC, et al. Use of complementary therapies among primary care clinic patients with arthritis. *Preventing Chronic Disease: Public Health Research, Practice, and Policy*. 2004; 1(4). Also available at http://www.cdc.gov/pcd/issues/2004/oct/03_0036.htm.
- James MF, Proudman SM, Cleland LG. Dietary n-3 fats as adjunctive therapy in a prototypic inflammatory disease: issues and obstacles for use in rheumatoid arthritis. *Prostaglandins, Leukotrienes and Essential Fatty Acids*. 2003;68(6):399-405.
- Johnson, MT, Waite, LR, Nindl G. Noninvasive treatment of inflammation using electromagnetic fields: current and emerging therapeutic potential. *Biomedical Sciences Instrumentation*. 2004;40:469-474.
- Jonas WB, Linde K, Ramirez G. Homeopathy and rheumatic diseases. *Rheumatic Disease Clinics of North America*. 2000;26(1):117-123.
- Jordan JM, Benard SL, Callahan LF, et al. Self-reported arthritis-related disruptions in sleep and daily life and the use of medical, complementary, and self-care strategies for arthritis: the National Survey of Self-care and Aging. *Archives of Family Medicine*. 2000;9(2):143-149.
- Knoops KT, de Groot LC, Kromhout D, et al. Mediterranean diet, lifestyle factors, and 10-year mortality in elderly European men and women: the HALE project. *Journal of the American Medical Association*. 2004;292(12):1433-1439.
- Lewis C. Arthritis: timely treatments for an ageless disease. *FDA Consumer*. 2000;34(3):27-29, 31-33. Also available at http://www.fda.gov/fdac/features/2000/300_arth.html.
- Little C, Parsons T. Herbal therapy for treating rheumatoid arthritis. *Cochrane Database of Systematic Reviews*. 2004;(1):CD002948. Accessed at <http://www.cochrane.org> on January 26, 2004.
- Martin RH. The role of nutrition and diet in rheumatoid arthritis. *Proceedings of the Nutrition Society*. 1998;57(2):231-234.
- National Center for Complementary and Alternative Medicine. *Acupuncture*. National Center for Complementary and Alternative Medicine Web site. Accessed at <http://www.nccam.nih.gov/health/acupuncture> on November 23, 2004.

National Center for Complementary and Alternative Medicine. *Mind-Body Medicine: An Overview*. National Center for Complementary and Alternative Medicine Web site. Accessed at <http://www.nccam.nih.gov/health/backgrounds/mindbody> on July 28, 2005.

National Center for Complementary and Alternative Medicine. *Questions and Answers About Homeopathy*. National Center for Complementary and Alternative Medicine Web site. Accessed at <http://www.nccam.nih.gov/health/homeopathy> on November 23, 2004.

National Center for Complementary and Alternative Medicine. *Questions and Answers About Using Magnets to Treat Pain*. National Center for Complementary and Alternative Medicine Web site. Accessed at <http://www.nccam.nih.gov/health/magnet/magnet> on July 28, 2005.

National Center for Complementary and Alternative Medicine. *Questions and Answers: NIH Glucosamine/Chondroitin Arthritis Intervention Trial (GAIT)*. National Center for Complementary and Alternative Medicine Web site. Accessed at <http://www.nccam.nih.gov/news/19972000/121100/qa> on July 28, 2005.

National Institute of Allergy and Infectious Diseases. *Food Allergy: An Overview*. Accessed at <http://www.niaid.nih.gov/publications/pdf/foodallergy.pdf> on May 5, 2005.

National Institute of Arthritis and Musculoskeletal and Skin Diseases. *Handout on Health: Rheumatoid Arthritis*. National Institute of Arthritis and Musculoskeletal and Skin Diseases Web site. Accessed at <http://www.niams.nih.gov/hi/topics/arthritis/rahandout.htm> on December 17, 2004.

National Institute of Arthritis and Musculoskeletal and Skin Diseases. *Arthritis Treatment and Research: Rheumatoid Arthritis*. National Institute of Arthritis and Musculoskeletal and Skin Diseases, NIH SeniorHealth Web site. Accessed at <http://nihseniorhealth.gov/arthritis/rheumatoidarthritis/11.html> on January 7, 2005.

Natural Medicines Comprehensive Database. *Black Currant*. Natural Medicines Comprehensive Database Web site. Accessed at <http://www.naturaldatabase.com> on September 29, 2004.

Natural Medicines Comprehensive Database. *Borage Seed Oil*. Natural Medicines Comprehensive Database Web site. Accessed at <http://www.naturaldatabase.com> on September 29, 2004.

Natural Medicines Comprehensive Database. *Chondroitin Sulfate*. Natural Medicines Comprehensive Database Web site. Accessed at <http://www.naturaldatabase.com> on July 7, 2005.

Natural Medicines Comprehensive Database. *Evening Primrose Oil*. Natural Medicines Comprehensive Database Web site. Accessed at <http://www.naturaldatabase.com> on September 29, 2004.

Natural Medicines Comprehensive Database. *Feverfew*. Natural Medicines Comprehensive Database Web site. Accessed at <http://www.naturaldatabase.com> on July 7, 2005.

Natural Medicines Comprehensive Database. *Fish Oil*. Natural Medicines Comprehensive Database Web site. Accessed at <http://www.naturaldatabase.com> on May 17, 2004.

Natural Medicines Comprehensive Database. *Gamma-Linolenic Acid*. Natural Medicines Comprehensive Database Web site. Accessed at <http://www.naturaldatabase.com> on August 18, 2004.

Natural Medicines Comprehensive Database. *Ginger*. Natural Medicines Comprehensive Database Web site. Accessed at <http://www.naturaldatabase.com> on July 7, 2005.

Natural Medicines Comprehensive Database. *Glucosamine Sulfate*. Natural Medicines Comprehensive Database Web site. Accessed at <http://www.naturaldatabase.com> on July 7, 2005.

Natural Medicines Comprehensive Database. *Indian Frankincense*. Natural Medicines Comprehensive Database Web site. Accessed at <http://www.naturaldatabase.com> on July 7, 2005.

Natural Medicines Comprehensive Database. *Thunder God Vine*. Natural Medicines Comprehensive Database Web site. Accessed at <http://www.naturaldatabase.com> on August 18, 2004.

Natural Medicines Comprehensive Database. *Turmeric*. Natural Medicines Comprehensive Database Web site. Accessed at <http://www.naturaldatabase.com> on July 7, 2005.

Natural Medicines Comprehensive Database. *Valerian*. Natural Medicines Comprehensive Database Web site. Accessed at <http://www.naturaldatabase.com> on July 6, 2005.

Natural Standard Database. *Valerian (Valeriana officinalis L.)*. Natural Standard Database Web site. Accessed at <http://www.naturaldatabase.com> on August 19, 2005.

Natural Standard Research Collaboration. *Hydrotherapy*. Accessed at <http://www.naturalstandard.com> on May 5, 2005.

Office of Dietary Supplements. *Questions and Answers About Valerian For Insomnia and Other Sleep Disorders*. Office of Dietary Supplements Web site. Accessed at <http://www.ods.od.nih.gov/factsheets/valerian.asp> on May 16, 2005.

Office of Dietary Supplements. *Vitamin A and Carotenoids*. Office of Dietary Supplements Web site. Accessed at <http://www.ods.od.nih.gov/factsheets/cc/vita.html> on August 11, 2004.

Oh R. Practical applications of fish oil (omega-3 fatty acids) in primary care. *Journal of the American Board of Family Practice*. 2005;18(1): 28-36.

Panush RS. American College of Rheumatology position statement: diet and arthritis. *Rheumatic Disease Clinics of North America*. 1991;17(2):443-444.

Panush RS. Does food cause or cure arthritis? *Rheumatic Disease Clinics of North America*. 1991;17(2):259-272.

Patrick M, Heptinstall S, Doherty M. Feverfew in rheumatoid arthritis: a double blind, placebo controlled study. *Annals of the Rheumatic Diseases*. 1989. 48(7):547-549.

Rao JK, Mihaliak K, Kroenke K, et al. Use of complementary therapies for arthritis among patients of rheumatologists. *Annals of Internal Medicine*. 1999;131(6):409-416.

Rennie KL, Hughes J, Lang R, et al. Nutritional management of rheumatoid arthritis: a review of the evidence. *Journal of Human Nutrition and Dietetics*. 2003;16(2):97-109.

Schlaepfer TE, Kosel M, Nemeroff CB. Efficacy of transcranial magnetic stimulation (rTMS) in the treatment of affective disorders. *Neuropsychopharmacology*. 2003;28(2):201-205.

Setty AR, Sigal LH. Herbal medications commonly used in the practice of rheumatology: mechanisms of action, efficacy, and side effects. *Seminars in Arthritis and Rheumatology*. 2005;34(6):773-784.

Skoldstam L, Hagfors L, Johansson G. An experimental study of a Mediterranean diet intervention for patients with rheumatoid arthritis. *Annals of the Rheumatic Diseases*. 2003;62(3):208-214.

Soeken KL. Selected CAM therapies for arthritis-related pain: the evidence from systematic reviews. 2004. *Clinical Journal of Pain*. 2004;20(1):13-18.

Soeken KL, Miller SA, Ernst E. Herbal medicines for the treatment of rheumatoid arthritis: a systematic review. *Rheumatology* (Oxford). 2003;42(5):652-659.

Strange CJ. Coping with arthritis in its many forms. *FDA Consumer*. 1996;30(2). Also available at http://www.fda.gov/fdac/features/296_art.html.

Taibi DM, Bourguignon C. The role of complementary and alternative therapies in managing rheumatoid arthritis. *Family and Community Health*. 2003;26(1):41-52.

Taibi, DM, Bourguignon C, Taylor AG. Valerian use for sleep disturbances related to rheumatoid arthritis. *Holistic Nursing Practice*. 2004;18(3):120-126.

Tao X, Younger J, Fan FZ, et al. Benefit of an extract of *Tripterygium wilfordii* Hook F in patients with rheumatoid arthritis: a double-blind, placebo-controlled study. *Arthritis and Rheumatism*. 2002;46(7):1735-1743.

Uhlig, T, Larsson C, Hjorth AG, et al. No improvement in a pilot study of tai chi exercise in rheumatoid arthritis. *Annals of the Rheumatic Diseases*. 2005;(64):507-509.

Van Tubergen A, van der Linden S. A brief history of spa therapy. *Annals of the Rheumatic Diseases*. 2002;61(3):273-275.

Verhagen AP, Bierma-Zeinstra SM, Cardoso JR, et al. Balneotherapy for rheumatoid arthritis. *Cochrane Database of Systematic Reviews*. 2005;(2):CD00518. Accessed at <http://www.cochrane.org> on September 2, 2005.

Wang C, Roubenoff R, Lau J, et al. Effect of tai chi in adults with rheumatoid arthritis. *Rheumatology* (Oxford). 2005;44(5):685-687.

Yocum DE, Castro WL, Cornett M. Exercise, education, and behavioral modification as alternative therapy for pain and stress in rheumatic disease. *Rheumatic Disease Clinics of North America*. 2000;26(1):146-159.

For More Information

NCCAM Clearinghouse

The NCCAM Clearinghouse provides information on CAM and on NCCAM, 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. Examples of publications available include “What’s in the Bottle? An Introduction to Dietary Supplements,” “Herbal Supplements: Consider Safety, Too,” “Questions and Answers About Homeopathy,” and “Acupuncture.”

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

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

Web site: nccam.nih.gov

E-mail: info@nccam.nih.gov

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

NIAMS supports research on these diseases, training of scientists, and information (including publications on RA) based on scientific evidence.

Toll-free in the U.S.: 1-877-22-NIAMS

Web site: www.niams.nih.gov

PubMed

A service of the National Library of Medicine (NLM), PubMed contains publication information and (in most cases) abstracts of articles from biomedical journals. CAM on PubMed, developed jointly by NCCAM and NLM, is a subset of NLM's PubMed system and focuses on the topic of CAM.

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

CAM on PubMed: www.nlm.nih.gov/nccam/camonpubmed.html

National Institute of Allergy and Infectious Diseases

A brochure, "Food Allergies: An Overview," is available.

In the U.S.: 301-496-5717

Web site: <http://www3.niaid.nih.gov>

Acknowledgments

NCCAM thanks the following people for their technical expertise and review of this publication: Carol Pontzer, Ph.D., and Richard L. Nahin, Ph.D., M.P.H., NCCAM; Barbara Mittleman, M.D., and Peter E. Lipsky, M.D., National Institute of Arthritis and Musculoskeletal and Skin Diseases; Diana M. Taibi, M.S.N, R.N., and Cheryl Bourguignon, Ph.D., R.N., University of Virginia School of Nursing; Donald M. Marcus, M.D., Baylor College of Medicine; Barbara N. Timmermann, Ph.D., University of Arizona College of Pharmacy; and Robert Zurier, M.D., University of Massachusetts Medical School.

*This publication is not copyrighted and is in the public domain.
Duplication is encouraged.*

NCCAM 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 in this information is not an endorsement by NCCAM.

National Institutes of Health



U.S. Department of Health and Human Services

