

Conservative Care Of Osteoarthritis

A Literature Review

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Abstract

Osteoarthritis, or degenerative joint disease, is one of the oldest and most common types of arthritis. It is characterized by the breakdown of the joint's cartilage. Cartilage is the part of the joint that cushions the ends of bones. Cartilage breakdown causes bones to rub against each other, causing pain and loss of movement. Most commonly affecting middle-aged and older people, osteoarthritis can range from very mild to very severe. It affects hands and weight-bearing joints such as knees, hips, feet and the back. There are many factors that can cause osteoarthritis. Although age is a risk factor, research has shown that osteoarthritis is not an inevitable part of aging. Obesity may lead to osteoarthritis of the knees. In addition, people with joint injuries due to sports, work-related activity or accidents may be at increased risk of developing osteoarthritis. Genetics has a role in the development of osteoarthritis, particularly in the hands. Some people may be born with defective cartilage or with slight defects in the way that joints fit together. As a person ages, these defects may cause early cartilage breakdown in the joint. In the process of cartilage breakdown, there may be some inflammation, with enzymes released and more cartilage damage.

Introduction

Osteoarthritis affects a part of the joint called cartilage, a tough, rubbery tissue that covers the ends of the bones that meet at the joint. Cartilage serves as a shock absorber, or cushion, between the bones, providing a smooth surface that allows the bones to move against each other with less friction.

The joint is surrounded and protected by a slippery, fluid-filled membrane called the synovial membrane. The synovial membrane and its fluid also help the joint move smoothly. A tough capsule that surrounds the synovial membrane provides additional protection for the joint. Osteoarthritis, which is sometimes called degenerative joint disease, occurs when the cartilage breaks down and gradually becomes rougher and thinner. Swelling can occur if the synovial membrane becomes irritated and produces excess fluid that collects inside the joint. As the cartilage wears away, growths of bone, called osteophytes, may form around the edges of the joint, making it look knobby and swollen. As the process continues, a substantial amount of cartilage wears away, causing the bones that meet at the joint to rub against each other. Because bone is very sensitive, this can be extremely painful and can severely reduce movement in the joint¹.

Discussion

Osteoarthritis occurs most frequently in weight bearing and excessively used joints. Thus, we see it most commonly in hands, feet, knee hips and spine. The incidence in the hands, feet and knees in almost all age groups are higher for women than men. Men tend to develop more degeneration in the cervical and lumbar spine along with the hips¹.

Osteoarthritis affects several different joint structures. Some, like the vertebral bones in the spinal column are slightly moveable, while the hands, shoulders, elbows, feet, hips and knee joints are built for wider ranges of motion. The structures are complex.

They involve variations of cartilage, supporting bone beneath the cartilage, joint capsules, and the surrounding soft-tissue support of muscles, tendons and ligaments².

The capsule is the sac that encases the bone ends of the joint and holds the synovial fluid. The inner lining of the sac is called the synovial membrane².

The cartilage is the soft, cushioning tissue covering facing bones is the composed of 65 to 80 percent water, which gives the joint lubrication and wear-resistance qualities. The rest of the cartilage is collagen and proteoglycans, substances necessary for resilience, elasticity, and shock absorption. These three elements form the cartilage matrix. Cartilage contains no blood vessels or nerves and receives nutrients from the joint fluid².

The collagen is structural protein accounting for 25 to 30 percent of body's proteins and helps form tendon, skin, membranes and bone tissues. It gives elasticity and shock-absorbing ability to cartilage. It also functions as a framework to hold proteoglycans in place².

The chondrocytes are primary cartilage cells that produce collagen and proteoglycan molecules. They also release enzymes that break down and remove old, unfit collagen and proteoglycan molecules².

The ligaments are tough tissues that attach bone to bone and provide stability for the joints. Injury or degeneration involving ligaments, muscles and tendons can cause changes in joint mechanisms and independently generate pain².

Muscles are the tissues that contract to provide the force for movement of joints as well as shock-absorbing benefits. Some muscles are attached to joint capsules. Spasm, atrophy, and weakness of the muscles contribute to joint abnormalities and pain associated with osteoarthritis².

Osteophytes, also known as bone spurs, are hard growths frequently form at various locations in the joint as a result of degenerative process. They may cause pain and constrict movement².

Proteoglycans are large molecules, produced in abundance by chondrocytes, interlace with collagen fibers to build thick, resilient layers inside the cartilage tissue. They are made up of a core protein attached chains of sugars called glycosaminoglycans that attract and hold water. This water-retention capacity is crucial because the water acts as a lubricant and shock absorber².

The tendons are tough tissues that attach muscles to bones, permit movement and acts as secondary joint stabilizers².

The synovium is the inner lining of the joint capsule, which secretes the thick, slippery synovial fluid. The membrane is rich in capillaries, nerves and lymphatic. The fluid fills the space inside the capsule, providing lubrication for the joint and facilitating movement².

Approximately 30 percent of the adults have X-ray evidence of osteoarthritis. After the age of sixty-five, the incidence is 70 percent. The most frequent site is the first metacarpal/trapezium joint of the thumb, just above the wrist.

Gripping is a common task involving intense muscle forces on the hand joints. Men and women with the highest grip strength may be at the increased risk of osteoarthritis of the hand. About 21 percent of adults, especially seniors are estimated to have arthritis of the feet. The knees affect about 10 percent of the adults over the age of sixty-two. Because knees are involved in so many basic activities, such as walking and standing, arthritis here is a major cause of disability and weight gain. Knee arthritis may be accompanied by back pain in more than 50 percent of the cases. This creates more night pain and anxiety³. According to a study of random sampling of 6,585 X-rays of Dutch villagers, mild to severe arthritis in the neck and lower back are far and away the most common sites of joint degeneration in the elderly population. The researchers from Erasmus University in Rotterdam commented that their data was comparable to ten other population surveys^{3,4}.

Osteoarthritis does not develop overnight. It takes time. Doing the same repeated motions many times a day for years, such as at work or in recreational pursuits, can create contact stress inside joints. This may result in micro trauma, subtle changes in joint biomechanics, and damage to cartilage. Certain occupational activities, for instance those that involve repetitive knee use and heavy lifting, raise the risk of arthritis in the knee and the hips⁴.

Symptoms vary from person to person. Each person suffering from osteoarthritis has joint deterioration. It is usually thought of as a progressive disease, one that gets worse over time.

Some people find the condition incapacitating while others have very few symptoms¹. Pain, the primary symptom of the disease, is commonly brought on through activity; however, it could be present even when the body is at rest.

Examples of other symptoms include: loss of movement, stiffness and swelling in the joints, snapping of the joints, bony growths at the joints and abnormal angulations.

In cases of osteoarthritis of the knee, the actual appearance of the knee may change over time. Some people may become knock-kneed or bow-legged. If you don't move the affected joint, muscles surrounding the joint will become weaker and sometimes shrink^{3,5}.

In osteoarthritis of the hip, the pain may cause you to limp. Also, you may feel pain around the groin or inner thigh. The affected leg may appear shorter in cases of osteoarthritis of the hip. Putting on your shoes and tying the laces become difficult⁵.

In the fingers, the breakdown of cartilage causes bone spurs in these joints. Spurs in the end joints of fingers are called Heberden's nodes, which occur most often in women and sometimes as early as 40. Spurs in the middle joints of the fingers are called Bouchard's nodes⁵.

The diagnosis of osteoarthritis can usually be made on the basis of the initial history and examination. Radiographs are very helpful in the diagnosis and may be the only special test required in the majority of cases.

In some cases of early osteoarthritis, the radiographs may not show changes typical of osteoarthritis. It is not always clear where the pain is coming from.

Knee pain from osteoarthritis may be confused with other common causes of knee pain. Sometimes, a MRI scan may be ordered to look at the knee more closely. A MRI scan is a special radiological test where magnetic waves are used to create pictures that look like slices of the knee. The MRI scan shows more than the bones of the knee. It can show the ligaments, articular cartilage, and menisci as well. The MRI scan is painless, and requires no needles or dye to be injected⁴.

If the diagnosis is still unclear, arthroscopy may be necessary to actually look inside the knee and see if the joint surfaces are beginning to develop changes from wear and tear. Arthroscopy is a surgical procedure where a small fiber optic television camera is inserted into the knee joint through a very small incision, about a quarter inch. The surgeon can then move the camera around inside the joint while watching the pictures on a TV screen. The structures inside the joint can be poked and pulled with small surgical instruments to see if there is any damage⁵.

A cure for osteoarthritis doesn't exist. Arthritis prevention and knowing how to take care of your own joints are the best ways to either avoid or control osteoarthritis. Arthritis prevention techniques are not unfamiliar to most people. They are the same advice we hear whenever healthy lifestyles are discussed, such as adequate exercise, weight control, and small common-sense alterations to life⁶.

Doctors recognize obesity as a leading risk factor for osteoarthritis. Extra weight puts unnecessary stress on the body's weight-bearing joints. Even moderate weight loss can relieve joint stress⁶. Eating a balanced diet combined with a sensible exercise program helps control unwanted pounds. Strong muscles help support joints, preventing cartilage damage.

If you're concerned about your joints, consider low-impact exercise^{6,7}. Stretching programs, yoga, Tai Chi and water exercises are all excellent ways to improve flexibility and strength. Clearly, riding a bicycle will do less harm to your knees than jogging on concrete surfaces^{6,7}.

Warm water exercise is popular with people suffering from osteoarthritis. Gentle exercise is performed in hot tubs, spas or heated swimming pools. The warm water soothes the joints, relieves stiffness, and promotes better blood circulation. The water allows for gentle and low-impact exercise, but also offers the resistance needed to keep muscles and joints in shape. As with any exercise program, consult with a doctor before you begin warm water exercise. Start slowly and avoid exercising in water that's too hot⁷.

The goals of osteoarthritis treatment are to relieve symptoms, maintain mobility, and minimize disability. A combination of conventional treatment and complementary and alternative medicine (CAM) may be most effective. It is possible, if not preferable, to treat osteoarthritis without the use of medications.

Painkillers and anti-inflammatory medications should not be used as the primary treatment for osteoarthritis; they should be used only in addition to other forms of treatment. Lifestyle approaches, including exercise, and many alternatives medical therapies are becoming more popular and are considered safe and effective for the treatment of osteoarthritis⁶. Several natural remedies are at least as effective as conventional medication for symptom relief, and may diminish the progression of the disease.

Various surveys conducted in 1997 found that anywhere from 26% to 100% of patients with rheumatologic disorders; such as painful conditions of the muscles, tendons, joints, and bones; had tried some form of complementary and alternative medicine⁷.

Exercise to strengthen, stretch, and relax muscles around affected joints is almost always included in a treatment plan for osteoarthritis. Several studies support the value of exercise for people with osteoarthritis. One recent study, for example, found that people with osteoarthritis of the knee who participated in a home exercise program experienced a 23% reduction in pain compared with only 6% reduction in people who did not exercise. Other studies also suggest that in addition to reduction of pain and disability, exercise improves strength, range of motion, balance and coordination, endurance, and posture⁷.

There are several nutritional supplementations that show benefit to people with osteoarthritis⁶. Vitamin C plays a big role in joint health, where it serves as a bio-chemical partner in the production of collagen, the connective tissue in cartilage that holds the proteoglycans in place. Specifically, collagen contains sizable quantities of an amino acid called 4-hydroxyproline.

Vitamin C is needed to facilitate the enzymatic processing of a precursor amino acid, proline, into 4-hydroxyproline for the production of collagen. Researchers have repeatedly demonstrated how important vitamin C is to healthy cartilage. Laboratory experiments have shown that chondrocyte cells isolated from bovine cartilage and cultured with vitamin C produce a more extensive matrix rich in collagen and proteoglycans.

Human skin cells cultured with vitamin C also produce more collagen. Vitamin C has other qualities that make it a very joint friendly nutrient. It is a potent free-radical scavenger. At Boston University's Arthritis Center, Timothy E. McAlindon and colleagues published a statistical study in 1996 reporting significantly less disease progression among people with osteoarthritis of the knees that had a higher dietary intake of vitamin C. In the study, individuals averaging 150 to 500 milligrams daily had a third of the progression of those whose intake was below 100 milligrams. A higher level of vitamin C appeared to be protective against cartilage loss, slowing down progression and reducing the risk of developing knee pain, the researchers reported.

Many arthritis patients also use it as a significant adjunct to pain relief treatment. The minimum dietary intake on average is of 500 milligrams per day⁹. Degenerative change in the bone tissue just beneath the cartilage is very harmful for the joint. Such a change can cause a loss of shock absorption, stability and repair capacity. Metabolism in the tissue and throughout the bones requires vitamin D.

When this vitamin is in low supply, researchers think that the support from bone tissue to counteract arthritic processes is compromised. Researcher at Boston University's Arthritis Center found that individuals with a higher dietary intake of vitamin D had a third less progression of arthritis than those with low intake. Low vitamin D was associated with loss of cartilage and the development of osteophytes. High doses of vitamin D were found to be protective against both the incidence and progression of osteoarthritis. Lower intake of vitamin D may be linked to greater risk of osteoarthritis of the hip in older women and osteoarthritis related joint changes, visible on radiographs, in both men and women⁹.

Supplementation of glucosamine is a major constituent of connective tissue including cartilage. Made in the body from glucose and the amino acid glutamine, it is used by chondrocytes to make proteoglycans, the molecules in cartilage that hold water. Chondroitin is the most abundant glucosaminoglycan in the body. It is the sugar units attached to proteins that form proteoglycans. Glucosamine supplements are derived from the shells of crabs, lobster, and shrimp. Chondroitin sulfate is prepared from bovine cartilage^{10,11}.

In Europe, glucosamine and chondroitin have been used therapeutically and researched for thirty years. In one major European study, researchers found that glucosamine not only significantly reduced pain and improved movement for patients with arthritis of the knee but also prevented joint-space narrowing. Glucosamine supplements are available in two forms-sulfate or hydrochloride. Both are beneficial¹².

Some supplement companies have claimed that glucosamine sulfate form is more effective, but such claims are not true. In fact, when you take a glucosamine sulfate supplement, it is converted to the hydrochloride form by stomach acid. A daily-recommended dosage of 1500 milligrams of glucosamine and 1200 milligrams of chondroitin sulfate are shown to be most effective.

Another supplement helpful for osteoarthritis patients is methylsulfonylmethane (MSM). It is biologically active form of sulfur and offers powerful benefits that make it a favorite among arthritic patients and individuals with chronic pain conditions. MSM reduces pain by inhibiting pain impulses that run along nerve fibers, it acts as an anti-inflammatory, it decreases muscle spasm around arthritic joints, which also helps relieve pain, it lessens the formation of scar tissue, it improves blood flow throughout the body and it may slow down the degeneration of cartilage. MSM often provides significant improvement providing less pain, less stiffness, and greater mobility for people with osteoarthritis. Within two to four weeks, and sometimes sooner, patients commonly start feeling better.

Patients have often been able to reduce the dosage and sometimes even eliminate the use of strong painkillers. Laboratory and clinical experience suggest that MSM slows down joint deterioration associated with arthritis. An Oregon Health Sciences University, studies were conducted during 1980s with rodents known to spontaneously develop a joint disease similar to rheumatoid arthritis. Preliminary research that had been conducted suggests a chondroprotective effect of continuous supplementation with 3000 milligrams of MSM daily^{13,14}.

Laboratory and animal studies suggest that SAME may reduce pain and inflammation, but researchers are not clear how this works. Clinical trials with humans have also shown favorable results for SAME when used to relieve OA symptoms. In several short-term studies; ranging from 4 to 12 weeks; SAME supplements (1200 mg/day) compared favorably to NSAIDs in adults with knee, hip, or spine osteoarthritis by reducing morning stiffness, decreased pain, reduced swelling, improved range of motion and increased walking pace. In an extensive review of studies conducted with SAME (collectively representing over 20,000 people), including trials of longer duration (namely, 2 years), the supplement was associated with improving symptoms, few side effects, no negative influences on cartilage production, reduced risk for relapse^{8,13}.

In one-study researchers compared 400 mg of SAM dosed three times a day against 400 mg of ibuprofen dosed three times a day in 150 patients who suffered from hip and/or knee osteoarthritis.

The researchers found that SAME was more effective at increasing range of motion as well as decreasing pain and spasm than ibuprofen. The gastric side effects of ibuprofen were not exhibited. SAM was also studied against other anti-inflammatory medications such as naproxen, indomethacin, and piroxicam. SAME was just as effective as non-steroidal anti-inflammatory in all of these studies, but did not display the gastric side effects that were seen in patients who took NSAIDs⁸. In this same journal, Koenig authored a two-year study on SAM. It was a multicenter trial involving ninety-seven patients with osteoarthritis.

The areas of pathology included the cervical spine, lumbar spine, hip, and knee. These patients were under the care of ten general practitioners and took SAME at a dose of 600 mg a day for two weeks and then 400 mg a day for the next 24 months. The results showed that SAME reduced pain on movement, pain at rest, and morning stiffness throughout the length of the trial. The positive effects of SAME administration were noticed after the first week of therapy⁸.

Omega-3 fatty acids have been found to be helpful with osteoarthritis. Omega-3 fatty acids are found in coldwater fatty fish; such as salmon, mackerel and herring; flaxseed, rapeseed, and walnuts. Research regarding the use of omega-3 fatty acid supplements for inflammatory joint conditions has focused almost entirely on rheumatoid arthritis. Based on laboratory studies, however, many researchers suggest that diets rich in omega-3 fatty acids and low in omega-6 fatty acids, may benefit people with other inflammatory disorders, such as osteoarthritis.

In fact, several laboratory studies of cartilage-containing cells have found that omega-3 fatty acids decrease inflammation and reduce the activity of enzymes that break down cartilage¹³. Another potential source of omega-3 fatty acids is the New Zealand green lipped mussel (*Perna canaliculus*), used for centuries by the Maori people for good health. In a trial involving 38 people with OA, nearly 40% of those who received *P. canaliculus* extracts experienced decreased joint stiffness and pain along with increased grip strength.

It is also important to note, however, that 10% of participants experienced a temporary worsening of symptoms when first taking the supplement. In addition, it is better to use lipid extracts of *P. canaliculus* rather than powder as there is less chance of an allergic reaction. *P. canaliculus* should be avoided by people who are allergic to seafood¹³.

Manganese is among the substances that the body needs to build cartilage, thus making it an effective supplement for people with osteoarthritis. In a clinical trial studying glucosamine, chondroitin, and manganese, 72 people with mild to moderate osteoarthritis of the knee showed significant improvement in symptoms after taking these supplements in combination compared to those taking placebo. No serious side effects were reported. People with more severe forms of the disease did not show improvement as a result of taking the combination, however.

Although earlier studies have indicated that low levels of manganese may contribute to degenerative joint conditions and bone loss, it is not clear from this trial what role manganese, as opposed to chondroitin and glucosamine, may have played in the results. Interestingly, however, an estimated 37% of Americans have low levels of manganese in their diets^{9,13}.

Several controlled trials suggest that the ancient Chinese practice of acupuncture is an effective treatment for pain associated with osteoarthritis, as well as for other aspects of the condition, including diminished joint function and reduced walking ability.

In fact, a few studies have shown that people with osteoarthritis experience better pain relief and improvement in function from acupuncture than from NSAIDs such as aspiroxicam¹³. For example, a group of 29 people awaiting surgery for osteoarthritis of the knee demonstrated significant improvement in their ability to climb stairs and in their walking pace after receiving acupuncture compared to those who were not treated with acupuncture. The National Institutes of Health is funding a large multicenter clinical trial due to be completed in 2001 to fully evaluate efficacy and safety of acupuncture for osteoarthritis¹³.

This ancient Indian practice of Yoga is well known for its physical, psychological, emotional, and spiritual benefits and is often recommended in the west to relieve musculoskeletal symptoms.

In one clinical trial studying osteoarthritis of the hand, the group practicing yoga showed significant decrease in pain and improved range of motion compared to those participating in non-yoga stretching and strengthening sessions. Certain yoga "asanas" (postures) strengthen the quadriceps and emphasize stretching, both of which benefit people with osteoarthritis of the knee. People with arthritis should begin asanas slowly and they should be performed only after a warm up. Yoga is best performed under the careful guidance of a reputable instructor^{13,14}.

Patients who suffer from the osteoarthritis get significant results from chiropractic treatments. Depending on the patient, results may vary. However, by keeping the spinal joints moving freely, the stiffness and pain associated with arthritis can be minimized. Chiropractic care is focused on optimizing spinal biomechanics, which reduces spinal stress and, as a result, decreases spinal degeneration and other arthritic changes¹³.

Chiropractic is a natural, preventative, and non-invasive form of health care that is based on the principle that the body has the inherent ability to heal without the use of drugs or surgery. This fundamental approach to wellness mirrors a new and changing attitude toward health care in the United States and around the world. Since an individual's health is either directly or indirectly controlled by the nervous system, interference within this system impairs normal function and lowers resistance to disease. Chiropractors help millions of maturing individuals regain control of their lives every year.

Chiropractic treatments are designed to eliminate acute and chronic pain, increase flexibility, improve mobility and function, increase strength, enhance balance, and increase the overall quality of one's life¹³.

The Arthritis Foundation's alternative therapies data cites that historically, chiropractic manipulation therapy was thought to work by correcting misalignment (subluxation) of vertebrae in the spine. The vertebral subluxation theory behind chiropractic is that the nervous system, which runs through the spinal column, can have far-reaching effects if it is blocked or injured. By adjusting the spinal joints to address subluxation, chiropractors believe normal nerve function and health can be restored¹⁶.

Chiropractic care involves spinal and extremity adjustive techniques, physical therapies, soft tissue therapies, dietary and nutritional counseling, exercise and fitness counseling and many other safe and natural methods to improve health and prolong a vibrant and productive life. Chiropractic can show you how to get the most out of your body so that you can get the most out of life¹³.

Chiropractic procedures take into consideration the nature of the spine and the many abnormalities present to provide a strategically effective, safe and noninvasive treatment plan. Through the use of adjustive and mobilization techniques, physical therapies, and incorporation of stretching and exercise programs spinal pain is reduced, spinal stresses are decreased, flexibility and mobility are improved, and degeneration is minimized¹³.

Treatment techniques focus on the underlying problem and involve participation of the patient in order to be truly effective and long lasting. Treatments that solely focus on pain and other "symptoms" only, are far less effective, and are often dangerous since the conditions causing the symptoms remain untreated and uncorrected. The treatments utilized by chiropractors have been consistently shown to be one of the most effective and safest forms of care to treat the majority of back, neck and head pain complaints that may be related to osteoarthritis. This is because most causes of back, neck and head disorders are related to abnormalities of the soft tissue components within the spine, something doctors of chiropractic are specifically trained to identify and treat.

Spinal discs and spinal facet joints, similar to other joints, receive their nutrition and eliminate their wastes through joint movement. Without sufficient movement, adhesions and scar tissue will soon develop in the joints. Chiropractic care involves restoring and optimizing spinal and extra-spinal joint motion, which brings vital nutrients into the joint and flushes toxic waste products out. This helps keep the joints healthy and minimizes the degenerative joint changes that lead to arthritis¹³.

A study recently published in the *Annals of Internal Medicine* has found that 63% of people who visited a rheumatologist for osteoarthritis, rheumatoid arthritis and fibromyalgia conditions also sought some form of "complementary and alternative medicine (CAM)".

Chiropractic was not only the most sought after form of CAM for those patients, but it was also among those found to be most helpful for these conditions. The research investigators decided to look at alternative forms of care for rheumatological conditions, because they "provide an optimal disease framework in which to examine patients' reasons for using CAM and for discussing this use with their physicians. These conditions are prevalent, have no known cause or cure, are characterized by chronic pain and a variable disease course, and often adversely affect the functional status".¹⁴

The authors recruited patients from six locations: three university practices and three private rheumatology practices. The three university practices included a municipal hospital; a Veterans Affairs Medical Center and a fee-for-service specialty care practice.

Existing patients who kept a scheduled appointment over a two-week period were eligible; patients who were new to the practice, under the age of 18, had dementia, or resided in a nursing home were excluded. Of 428 eligible patients, 232 (54%) patients responded to the survey. Of those, 146 reported using at least one type of CAM for their rheumatologic condition. Chiropractic was at the top of the list of alternative forms of care ever used; with nearly 31% (45 of 146) trying chiropractic care at least once. It was followed by copper bracelets or magnets, herbal therapies, electrical stimulators, diet supplements, and other treatments¹⁵.

Among forms of CAM that were regularly used by those who had tried it, chiropractic came in second behind herbal therapies, followed by: copper bracelets and magnets; electric stimulators; diet supplements; and other treatments. But perhaps the most telling factor in the study was which forms of CAM patients found "helpful." Seventy-three percent of patients who had tried chiropractic care (33 of 45) found it to be helpful, placing chiropractic second percentage-wise behind spiritual healing. The rest of the CAM treatments were found to be "helpful" by fewer than 50% of the people who tried them¹⁵.

Conclusion

Osteoarthritis is a common and disabling condition of the articular cartilage of joints. It is a major source of disability in the elderly. Although the pathogenesis of osteoarthritis is not precisely known, it may be related to either abnormal mechanics or biologic failure; i.e., insufficient cellular capacity to respond to stress; or both. Age is strongly correlated with osteoarthritis, with increased incidence occurring exponentially after age 50. The weight-bearing joints such as the knees, hips, and spine, as well as the hands, are the joints most often affected with the degenerative changes of osteoarthritis. These joints are under greater stress because of weight and use. Women are affected more frequently than men, and their disease is more severe and more often involves multiple joints. The diagnosis is frequently based on x-ray studies, which may be very nonspecific.

The criteria for osteoarthritis are based on a combination of clinical and laboratory criteria, clinical, laboratory, and radiological criteria, or clinical features alone. Management of osteoarthritis requires a multifaceted approach. The keystone of overall therapy is conservative approaches, particularly those that promote patient self-management. The increasing disability of osteoarthritis can lead to loss of self-esteem, depression and social isolation, all potentially devastating morbidities. Exercise programs and weight-loss strategies for the obese are two important conservative methods for promoting patient self-management. Treatment is directed at the control of pain and improvement of function. Many patients are controlled with analgesics, non-steroidal anti-inflammatory drugs, several herbal remedies, chiropractic adjustments, vitamins and physiotherapy.

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