

Joint Pain and Osteoarthritis By Joe Buishas, CCN  
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Almost everyone over the age of 40 experiences some weakness and discomfort in weight-bearing joints. However, this article focuses on a painful and debilitating condition called osteoarthritis. This agonizing condition, caused by degeneration of joint cartilage, is clearly a major health problem. The Merck Manual of Diagnosis and Therapy states that “Osteoarthritis becomes universal by age 70.” Over 22 million Americans spend over \$20 billion dollars each year to relieve the pain and suffering associated with this condition in their knees, wrists, elbows, shoulders, ankles, and hips. More than 200 bone surfaces in the back alone are subject to degenerative changes in the joints. However, there are many practical and successful therapies available for those who suffer from osteoarthritis.

### What is Cartilage?

Cartilage is a rigid connective tissue. It provides skeletal support, framework and attachment. It protects underlying bone tissues, and in infants it forms the structural models for developing bones. Cartilage matrix is composed of collagenous fibers embedded in a gel-like substance called synovial fluid. Synovial cells secrete a thick, colorless synovial fluid into the joint cavity that lubricates the ends of the bones within the joint and makes it possible for the bones to slide easily and smoothly across each other as in the knee or elbow. No man-made substance compares with the low friction and shock-absorbing properties of cartilage.

The most abundant substance in cartilage is water—65 to 80 percent. The second ingredient is collagen, a protein that is also in tendons, skin, bones and membranes of the cornea. Collagen is called the “glue” that holds the cartilage matrix together and provides the structure for the body. It may be a single, hair-like strand, or braided together like rope and it is strong and flexible. Collagen is difficult to obtain from food sources and cannot be supplied in supplemental form. However, we can supply the co-factors or precursors necessary for the body to make collagen with a sufficient supply of amino acids from protein, vitamin C, iron, copper and manganese.

Proteoglycans, another ingredient in cartilage, are woven around and through the collagen fibers, and form a dense netting inside the cartilage. When we look at cartilage through a microscope, we notice that sprinkled inside the cartilage matrix are tiny cells called chondrocytes. These cells manufacture new collagen and proteoglycans, and they make cartilage-chewing enzymes that tear down old cartilage tissue as they rebuild new tissue. Like a thirsty sponge, chondrocytes attract water and provide the cushion that acts like a shock absorber.

The most important substance in joints is chondroitin sulfate, which protects the cartilage from premature breakdown by keeping the action of these cartilage-chewing enzymes in balance.

Deficiencies in any of these key ingredients can result in poor cartilage construction, degeneration of cartilage tissue, and decreased flexibility and mobility. As a result, it is imperative to ensure that the chondrocytes have the nutrients they need to produce healthy cartilage.

#### How to Protect the Joints

Chondro-protection is a new term in used in medicine that applies to joint nutrition and repair. Chondro-protective agents preserve existing cartilage and encourage repair. One of the most important of these substances is chondroitin sulfate. Multiple studies in Europe and the United States have shown that chondro-protective agents make a difference. For example, if the chondrocytes overproduce cartilage-chewing enzymes due to injury or stress, the cartilage is destroyed faster than it is replaced. Supplemental chondroitin sulfate will balance the amount of excess enzymes. Another important reason to supplement chondroitin sulfate is that as we age, chondroitin sulfates are replaced by caroten sulfate, which does not easily absorb water like chondroitin sulfates. Therefore, the cushion and shock absorption is diminished, which results in bumps and bruises to bone and joint tissue. Fortunately, supplementation can increase the body's ability to make its own chondroitin sulfate.

Another chondro-protective agent is glucosamine, which is manufactured by the chondrocytes, and feeds the chondrocytes to make materials for healthy cartilage. By supplementing glucosamine, new research suggests that chondrocytes will shift back to cartilage repair.

## Relief of Joint Pain

The most commonly prescribed treatments for osteoarthritis are analgesics for pain and non-steroidal inflammatory drugs (NSAIDs) to reduce joint inflammation. Although NSAIDs reduce pain, many individuals experience severe gastrointestinal problems after prolonged use. Some NSAIDs, particularly aspirin, can actually destroy cartilage and block its repair. According to an article in The Archives of Internal Medicine, nearly 2,000 arthritis patients who used NSAIDs for joint pain had a tenfold increased risk of ulcers.<sup>1</sup> The article also stated that as many as 25 percent of NSAID users have ulcers, and many of them experienced no symptoms. It is even more shocking that NSAIDs slow or inhibit the chondrocytes that make collagen, proteoglycans, especially chondroitin sulfates. NSAIDs effectively reduce pain, but they may worsen the condition over a long period of time.

New studies are proving that there are less invasive and more health-promoting therapies available that will relieve the pain and suffering associated with osteoarthritis. An effective treatment strategy should include the following goals:

- 1) relief from the pain of osteoarthritis,
- 2) address the cause of the problem and reverse the degeneration,
- 3) keep the cartilage healthy to ensure physical strength and mobility, and
- 4) provide the body the nutrients it needs to build new cartilage and protect existing joint tissue.

## Ingredients for Healthy Joints

### Water

Drink plenty of water each day (one quart daily per each 50 pounds of body weight). It is extremely important that the body be adequately hydrated. Chondroitin sulfates and associated cofactors will be ineffective in their ability to regenerate healthy cartilage if the body is not properly hydrated.

### Essential Fatty Acids

Essential fatty acids (EFAs) are the healthy oils and fats necessary for the body to produce enzymes, antibodies and hormones. They include the omega-3s,

omega-6s, and the omega-9s. Sources of these wonderful oils are cold-water fish oil, and flax, pumpkin and sesame seeds. Olive oil is also a particularly good source of dietary oil. EFAs are extremely important to reduce the swelling and pain associated with osteoarthritis.

### Antioxidants

Certain white blood cells secrete free radicals and enzymes that degrade the synovial fluid, which causes inflammation and joint pain. The body manufactures and stores many compounds called antioxidants to combat this type of free radical damage. Antioxidants can be a powerful adjunct to the development and maintenance of healthy cartilage.

Antioxidants are abundant in nature. They are found in foods with color—tomatoes, carrots and all the red and purple berries, oranges, purples and yellows from squash and dark green leafy vegetables of all types. Examples of specific antioxidants are vitamins E, A, C and beta carotene. Selenium and zinc are mineral antioxidants. Examples of amino antioxidants are taurine, methionine, and homocysteine. Also available are enzymes with antioxidants properties, such as glutathione, superoxide dysmutase, and co-enzyme Q10.

### Enzymes

By supplementing proteolytic enzymes, we can cut recovery time from joint pain by as much as 50 percent. A Biotics Research product, Intenzyme Forte, is a combination of bromelain and papain and is valuable for injury repair and reduces short-term inflammation.

Bioflavonoids are also potent antioxidants and have been shown to have a very powerful effect with long-term inflammation. Another Biotics product called CTS helps decrease inflammation.

### Co-Factors

A co-factor is a substance that is relatively insignificant in terms of its volume, yet without its presence essential reactions or synthesis cannot take place. Co-factors can be compared to spices in meal preparation. In terms of the volume of the meal the spices are almost insignificant, but without them the food is boring and unappetizing.

One important co-factor is Vitamin C. Another essential co-factor for the synthesis of collagen and chondroitin sulfates is manganese. This mineral is critical for healthy cartilage production, but the average American is marginally deficient. Studies show that as we grow older, the amount of manganese in our cartilage decreases. The essential daily requirement for manganese is 2.5 to 5 mg.

Silicon is also important to healthy cartilage. Silicon binds to chondroitin sulfates and connective tissue to form oxygen-silicon-oxygen bridges. These bridges contribute to the architecture and strength of connective tissue and membranes. However, like manganese, the silicon content in many tissues declines with age.

MSM is a sulfur compound shown to bind or chelate heavy metals or unwanted minerals. Clinical feedback from physicians across the country has shown that when chondroitin sulfate or glucosamine is not effective, the addition of MSM has made a difference in mobility and pain reduction.

Another significant co-factor is pantothenic acid, or B5. In a group of 77 people with osteoarthritis, the daily intake of pantothenic acid was shown to be 80 percent of the recommended daily allowance.

## Diet

What we eat is a critical component of joint health. According to the United States Department of Agriculture, the average American eats over 170 pounds of sugar yearly. These empty calories cause vitamin and mineral depletion, and place stress on the blood sugar mechanisms, especially the adrenal glands.

Dietary changes to enhance joint health:

- Increase sulfur-containing foods (onions, garlic, slow cooked beans, eggs, broccoli, brussel sprouts).
- Decrease sugar intake.
- Eat whole foods versus processed foods

- Eat foods before they rot and spoil to avoid bacteria, molds and other pests.
- Eat simply and eat fresh for the EFA's.

### Exercise

We can't close a discussion of joint health without addressing the value of exercise. There is no direct blood supply to the cartilage, so the basic nutrients of life—oxygen and water—must enter through passive circulation. Passive circulation to the joints depends on movement and exercise. For instance, the body makes chondroitin sulfates slowly due to poor circulation in the joints, which is why exercise is so important. Remember, however, not to over-exercise. Joints do not work well if they are either under-used or over-used.

### Educate Yourself

There are many books on the market that provide excellent information about osteoarthritis and joint health. One of the best books that teaches the reader how to go to the next level of wellness is *Arthritis Relief* by Deborah Wilcox.

Other factors may come into play as you begin the process of feeding the joints what they need to heal and repair. Each person is biochemically individual, with unique strengths and weaknesses.

Finally, each of us makes daily choices that strengthen our bodies or weaken them. It is important to recognize what we consciously or unconsciously do to our bodies that may weaken them. If we desire good health, we must take the necessary steps to build and repair our bodies. There is a wise old proverb: "If you don't take care of yourself, nobody else will." Good health is not an accident. It is a result of the food we eat, the thoughts we think and the choices we make.

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