

GLUCOSAMINE AND CHONDROITIN

Osteoarthritis is the bane of mankind, a malady of age equity. Contrary to some beliefs, running does not cause arthritis. In healthy runners, the supporting tissues of the knee joints are strengthened in response to use, just like muscles. Joint deterioration of the knees is generally the result of a previous injury, dysfunction in biomechanics, excess body weight, or a genetic predisposition.

The surface of the bones of flexible joints such as the knee is protected from friction and impact by a smooth, white substance called cartilage. It's made of collagen and huge macromolecular matrixes that contain, among other substances, water, and acts as a durable shock absorber with each footstrike. In arthritis, the cartilage becomes eroded, sometimes down to the bone, and it can no longer repair itself.

The GAIT Study

Palliative treatments are available (bee stings, anyone?), but current evidence supports the restorative action of the dietary supplements glucosamine and chondroitin. These substances occur naturally in the body and are precursors and substrates for cartilage synthesis. When taken daily over a period of several weeks, they have been shown to reduce the symptoms of pain, improve range of motion and increase cartilage in affected knee joints.

A major scientific investigation, the Glucosamine/chondroitin Arthritis Intervention Trial (GAIT), a 24-week, elegantly designed, double-blind, multi-center study sponsored by the National Institute of Health, found the dosage of 1,500 mg glucosamine sulfate and 1,200 mg chondroitin sulfate per day to be effective in relieving moderate to severe knee pain. The study did not rule out relief from mild pain, noting, "The relatively mild degree of pain from osteoarthritis among the participants may have limited our ability to detect benefits of the treatments." Unexpected, and quite remarkable, is the finding that 60.1 percent of the placebo group also reported improvements in range of motion and pain.

How It Works

Glucosamine, made from the chitin of shellfish, seems to work by prompting the synthesis of the shock-absorbing matrix. About 90 percent of the pill form is absorbed, but the bioavailability is less than 20 percent after the first pass through the catabolic action of the liver. It is not known how much is taken up in the joints in humans. It also has an antioxidant, analgesic effect.

Chondroitin sulfate, made from the cartilage of cows, pigs, fish and birds, is a structural component of cartilage and may inhibit the production of cartilage-destroying enzymes. It is poorly absorbed, only about 15 percent. Tested and sold in combination with glucosamine, there are no data that suggest the effects are additive or how they compare. Of the forms of glucosamine available, the hydrochloride variety contains the most glucosamine base, about 83 percent. The sulfate and N-acetyl compounds provide 65 and 75 percent, respectively.

Words Of Caution

The first step in seeking care for knee pain is to get an accurate diagnosis in order to eliminate other causes. Diabetics or individuals on blood thinners should consult with a physician before taking these supplements. Also, there is insufficient data to advocate their use by children and pregnant or nursing women. Glucosamine and chondroitin have been shown to be consistently safe. Adverse reactions have been limited to indigestion and headache, with no reported allergic reactions, including fish and sulfa-allergic reactions to the sulfated forms.

Dietary supplements are not regulated for potency or purity. In response to consumer concerns, the U.S. Pharmacopeia and ConsumerLab.com have established testing programs that take the guesswork out of purchases. Look for the USP Verified Mark or the ConsumerLab logo on the supplement label.