GLUCOSAMINE FOR OSTEOARTHRITIS

Patients are reporting that the natural supplement glucosamine eases the grinding pain of bone-on-bone osteoarthritis.

An interview with Dale Guyer, M.D.

by Patrick Perry

"This whole town is full of skiers, joggers, hikers, tennis and golf players," says 69-year-old Glen Nielsen of his hometown of Snowmass Village, Colorado. "Retirees like myself who are out here because of the potential for all these great sports."

When the lifelong sports enthusiast began to notice increased pain in his knees after negotiating the bumpy terrain of downhill skiing, he visited his son-in-law, an orthopedic surgeon, who took x-rays and delivered some jarring news to the active senior.

"You need new knees," his son-in-law said, pointing to the images that confirmed osteoarthritis.

"No way," Nielsen replied. "Not interested—yet!"

Around this time, Nielsen began hearing about a supplement called glucosamine, first from a local ski instructor and then from many other very active senior sportsmen in the resort community.

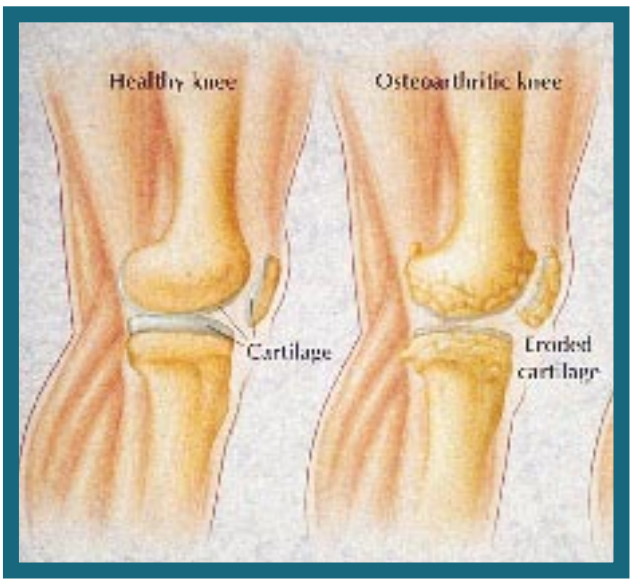
"I have talked to all kinds of quite active people who are my contemporaries," Nielsen says. "A good number of them use it. Many who don't are starting to because they have the same knee problems.

Nielsen began taking glucosamine about 1½ years ago and believes that it has definitely helped.

"I play tennis four, five, six days a week now in the summertime," he confirms. "I didn't play that much before, believe me."

Although he doesn't credit the supplement as a "miracle cure," he intends to keep taking it and staying active as long as possible.

Glen Nielsen, like an estimated 16 million other Americans, suffers from osteoarthritis. In European and Asian studies, glucosamine has been shown to be effective in helping to rebuild the cartilage, thus relieving the debilitating pain and allowing many individuals to return to their active lifestyles. The National Institutes of Health are launching a study to research the role glucosamine plays in the treatment and possible prevention of osteoarthritis. We interviewed Dr. Dale Guyer, a clinician and authority on complementary medicine, about glucosamine and other treatments for osteoarthritis.



Between joints, cartilage serves as a tough, durable cushion that keeps the bones from rubbing together. When cartilage erodes and breaks down from wear and tear, injury, and aging, the bones rub together, resulting in the inflammation, stiffness, and pain of osteoarthritis.

Q: *Could you tell us about your clinical experience with glucosamine as a treatment for osteoarthritis?*

A: I use glucosamine quite a bit in my own practice. It certainly does work well. The important thing for people to recognize is that glucosamine is not a pain medication. For example, if you have osteoarthritis of the knee and your knees hurt a lot, taking an anti-inflammatory, such as Advil or Motrin, to make the pain go away would be helpful. But anti-inflammatory medicines do not have an effect on the healing of the joint; they have an effect on the inflammation. Glucosamine sulfate is not an anti-inflammatory, but instead provides your body the raw materials to help improve the integrity of the joint space. Its effect is cumulative over time rather than just taking it as needed for pain medicine. The advantage really is that you are treating an underlying problem. With anti-inflammatory drugs, there is some evidence that taking them over long periods of time actually accelerates the damage being done by chronic inflammation in the joints and connective tissue. Glucosamine in itself is certainly a better choice. I have had any number of patients who have been able to get off pain medicines entirely by taking glucosamine. It is fairly specific for osteoarthritis. I haven't really seen it as useful for rheumatoid arthritis or arthritis from gout.

Q: *Is osteoarthritis nicknamed the "wear and tear" arthritis?*

A: Basically, yes.

Q: *Is glucosamine produced in the body and used by cartilage to rejuvenate itself?*

A: Glucosamine is actually made in several places in the body, including your liver and areas of the connective tissue. There is a skeletal or structural framework, if you will, that the body uses to

make components of the joint space.

Q: *Does the dosage vary from person to person?*

A: It varies. People with fairly severe arthritis often do not take an effective enough dose to get the levels up high enough. If you look at studies in which people took between 500 mg and two grams of glucosamine sulfate a day, sometimes there would be a contingent in that population who didn't respond clinically. I have seen a lot of patients who have tried lower doses of glucosamine (and didn't respond) often responding to higher doses of, for example, four to six grams a day.

Q: *Are there side effects?*

A: I have not actually seen any, but obviously anything could cause an allergic response. Rashes or dermatological manifestations are things to watch out for. I have never seen that happen. Also, stomach upset, diarrhea, loose stools, and headaches.

Q: *Would these symptoms be signs of overdose or just an allergic reaction?*

A: That is just general sensitivity. I have never really seen a higher propensity toward side effects with a higher dose, even compared to a lower dose. The side effects are low and I have rarely seen them. Many people can take a higher dose for a period of time, say four to six weeks, to get a better response; then they can go back down to a lower dose of possibly 500 mg per day to maintain symptom relief.

Q: *If the spongy cartilage that cushions the area between bones has eroded to the point that the cartilage is no longer there, will glucosamine help?*

A: I have seen some patients who were diagnostically advised by their orthopedic physicians that they really didn't have any cartilage left and that surgery was probably the only option. In those situations, one would think that a supplement wouldn't help. Generally, that is true. But I have seen some individuals respond—probably less than 20 percent—even with damage that significant. I also say it is worth a try, as opposed to more invasive surgery. When there is that much degeneration and destruction of joint space, often a surgical approach is the only option. There are some new injectable pharmaceuticals being used with some success. These are very new to the market, and I don't have enough familiarity to even have an opinion on them.

Q: *What about shark cartilage?*

A: You will notice in the supplement industry that there are things that come and go. Shark cartilage has certainly had its heyday. A lot of the information about shark cartilage is put out by the company that makes it. Its original claim to fame was as an anti-cancer agent, primarily based upon the fact that it has the capacity to block the formation of new blood vessels—an anti-angiogenesis factor. The theory is that if you are ingesting shark cartilage, it will allow your body to create an environment that would actually shut off the developing blood supply to a growing tumor, so the cancer would die off. I have seen a couple of people use shark cartilage for lung cancer. Although it did seem to cause a regression of the size of the mass on x-ray, it didn't change the overall

Staying active and participating in sports are important to today's active seniors. Sportsman Glen Nielsen (shown here with his wife, Mary Kay) of Snowmass Village, Colorado, enjoys downhill skiing, but osteoarthritis was limiting his activities. Following a lead from contemporaries at the resort community, Nielsen began taking glucosamine and believes it "definitely" has made a difference.

mortality. The downside of the shark cartilage is that there is very little evidence at this point to support the claims. In addition, you generally have to take very high doses of the preparation to have a therapeutic effect, even though it does have a definite therapeutic effect. The cost also tends to be very high, and the taste tends to be very bad. It has a common tendency to upset the stomach and cause a lot of gastrointestinal distress.

As it relates to arthritis, I have anecdotally seen some people who have been helped with shark cartilage. But if you weigh the advantages and disadvantages over trying something like glucosamine, which is significantly cheaper and much better tolerated, it makes sense to me to use the glucosamine.

Taking anti-angiogenesis factors for the treatment of arthritis might not be the best choice. Aside from the diagnosis of cancer, it is important that our bodies have the ability to synthesize and produce new blood vessels. If you block that ability, you could run into problems. It certainly would not be indicated for somebody who is pregnant, nursing, going through a surgery, or healing from trauma. As I said, shark cartilage probably does clearly work as an anti-angiogenesis factor, but if you compare it with other things like bovine tracheal cartilage extract, which has been researched for many years, there is a lot more consistency in the data for a product like that one, and even soy extracts, for that matter. Looking at cancer treatments in general and the potential role of anti-angiogenesis factors, soy can help a lot, because it has components that perform this role well. There is a lot of recent research into drugs that have biological activity.

Q: *Do you think that glucosamine can help prevent arthritis from developing in the first place?*

A: As far as I know, there are no studies with real human trials as far as prevention. Animal model studies would suggest that to be the case, even though prevention specifically was not being studied.

Q: *Veterinarians in this country have been using glucosamine to treat racehorses and older dogs. In Europe and Asia, there have been many studies on the effectiveness of glucosamine in treating osteoarthritis. Is there research in the United States on the effectiveness of glucosamine in treating arthritis? We read that the NIH is just beginning a study.*

A: It would depend upon who is defining what is adequate research. In this country the bias we unfortunately have is that if it is not published in one of our medical journals with prognostic studies or design protocols, we tend not to give the research credence.

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>
> —Hans Selye, M.D.

Glucosamine has been used in many trials, mostly in Germany, and there are numerous articles about it in European medical journals. These are good studies that have adequate population samples—somewhere between 20 and 70 participants. Glucosamine has actually been compared to standard anti-inflammatory drugs as far as symptom relief and shown over the long course to work much better without any side effects. Even though there is a lot of data accumulated and a wealth of clinical experience, we still need the permission granted to us by a double-blind, placebo-controlled trial. But if a prestigious institution like the NIH does a study on glucosamine or St. John's Wort (they are also doing that one, too), from my perspective I don't care too much because I already know what the outcome of the studies will be, because they have already been done. This is basically replication, but it will be done in our country, subsidized by our industry, and published in our journals.

I always go back to a famous quote by Hans Selye, M.D., that if you throw a rock out of a window and it goes up instead of down, you don't need a double-blind trial to see that was significant.

For family doctors like me on the front line who see dramatic results with glucosamine, I don't care too much about waiting for the NIH trial to give me permission to use it.

Q: *If you had to pick a supplemental tool in the treatment of osteoarthritis, would glucosamine top the list?*

A: Usually, it would be a combination of things. I take glucosamine myself for that reason and also because I do a lot of weight training and sports which put a lot of stress on my joints. I am hopeful that taking it will help prevent problems over time. Based on what we know about its function, we would anticipate that glucosamine probably does play a preventive role. That is the best answer I can give.

Q: *What about diet? Is glucosamine naturally available in the diet?*

A: Yes, it is, but you would get more precursors in the diet to make glucosamine, which is made in large amounts primarily by the liver.

When you asked about the big guns for arthritis, I have had much better luck with combination therapy, using glucosamine sulfate at an appropriate dose combined with MSM (methylsulfonyl-methane). You can get MSM at health-food stores. In powder form, MSM is kind of sour tasting.

Q: *What does MSM do?*

A: MSM actually uses other components that help with inflammation. It also improves circulation and provides the raw materials for the body to maintain a healthier joint architecture.

Q: *What should a consumer look for in buying glucosamine?*

A: I have had really good luck with the general high-quality glucosamine that is purchased over the counter from a reliable company.

Q: *What about topical anti-inflammatories as opposed to an oral anti-inflammatory medication?*

A: There is a special type of drug delivery gel called a PLO gel—pleuronic lecithin organomatrix gel. It has a unique quality in that it is absorbed very quickly after it is rubbed on the skin. The advantage of that, as far as a drug-delivery mechanism, is you can mix any kind of pharmaceutical with the gel, using it as a transdermal delivery system for various types of hormone creams or with

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