

Advice for Broken Bones

Alcohol Weakens Bones And Decreases Bone Mass:

Studies in recent years have demonstrated that binge drinking can decrease bone mass and bone strength, increasing the risk of osteoporosis.

Now a Loyola University Stritch School of Medicine study has found a possible mechanism: Alcohol disturbs genes necessary for maintaining healthy bones.

The findings could help in the development of new drugs to minimize bone loss in alcohol abusers. Such drugs also might help people who don't abuse alcohol but are at risk for osteoporosis.

"Of course, the best way to prevent alcohol-induced bone loss is to not drink or to drink moderately," said bone biologist John Callaci, PhD. "But when prevention doesn't work, we need other strategies to limit the damage."

Callaci is co-author of the study, published recently in the journal *Alcoholism: Clinical and Experimental Research*. He is an assistant professor in Stritch's Department of Orthopaedic Surgery and Rehabilitation.

Callaci's co-authors are Frederick Wezeman, PhD, professor in the Department of Orthopaedic Surgery and Rehabilitation and Ryan Himes, a research assistant in the Burn and Shock Trauma Institute.

The National Osteoporosis Foundation says that many people who abuse alcohol do not get enough calcium. Alcohol also can affect the body's calcium supply. And drinking too much can increase the risk of falls and broken bones. The foundation advises drinking no more than two drinks per day.

Loyola's Alcohol Research Program was among the first centers to demonstrate that rats given an amount of alcohol equivalent to binge drinking show significant decreases in bone mineral density and bone strength. (In humans, binge drinking is defined as a woman having at least four drinks or a man having at least five drinks in two hours.) But surprisingly little was known about the mechanisms responsible for these effects. In the new study, researchers injected rats with an amount of alcohol equivalent to binge drinking for three days or to chronic alcohol abuse for four weeks. Control groups received injections of saline.

Researchers focused on genes responsible for bone health. They found that alcohol affected the amounts of RNA associated with these genes. (RNA serves as the template for making proteins, the building blocks of bones and other tissue.) With some genes, alcohol increased the amount of RNA. With other genes, alcohol decreased the RNA. Changing the amounts of RNA disrupted two molecular pathways responsible for normal bone metabolism and maintenance of bone mass. These pathways are called the Wnt signaling pathway and the Integrin signaling pathway.

"We found that the expressions of certain genes important for maintaining bone integrity are disturbed by alcohol exposure," Callaci said.

Decrease Coke:

Unfortunate health effect of drinking soda is the weakening of bones. Some animal studies have shown that [phosphorus](#) in soda leaches [calcium](#) from bones. Similar studies on humans have suggested that drinking soda may lead to a tendency toward broken bones.

Many individuals choose to drink diet soda in order to avoid the sugar and calories in regular soda. Drinking diet soda, however, is not a perfect solution. Diet soda drinkers are still vulnerable to the acidic effects of soda. Furthermore, some artificial sweeteners, commonly used in diet soda, may contribute to serious health issues as well.

Dietary:

Sardines

Sardines are naturally rich in calcium and vitamin D. They are also high in bone-building protein. Learn to cook with fresh sardines--if you can find them--or choose from the wide variety of canned sardines available at grocery stores and natural markets. Canned sardine sauces include olive oil, lemon, marinara, mustard with dill and soy sauce with plum.

Green Vegetables

One serving of green vegetables per day is enough to meet your vitamin K needs, according to the Harvard School for Public Health. Green leafy vegetables and broccoli also provide significant amounts of calcium and antioxidants, which means they can help you meet your needs for three key bone-healing nutrients. Try sautéing greens with garlic and your favorite spices. Add to pasta, rice or scrambled eggs. For an additional calcium boost, sprinkle with grated cheese.

Dairy

Dairy foods are rich in calcium and protein. Milk is often fortified with vitamin D. Many cereals are fortified with calcium and vitamin D, providing an easy way to start your day with plenty of these important nutrients. Keep in mind, however, that many dairy products are high in saturated fat and cholesterol, which may contribute to heart disease and weight problems.

Protein

You want to consume enough protein, but not too much. High protein diets may lead to loss of calcium from the bones, according to the Harvard School for Public Health. This is because your body releases acids into the bloodstream when it digests protein. It then needs to neutralize those acids, which it does by pulling calcium from your bones. The recommended dietary allowance for protein is 0.8 grams per kilogram of body weight for adults. That's about 54 grams per day for a 150-pound person. Sources of protein include meat, fish, eggs, dairy, nuts, beans and tofu.

Fresh Produce

Fresh fruit and vegetables are high in antioxidants, which will help your body fight off the free radicals that will slow down bone healing. With a few exceptions--celery and carrots, for example--cooking or canning fresh produce reduces their antioxidant levels. How you cook vegetables matters, too. Griddling, microwaving or baking vegetables are the best choices for retaining antioxidants; boiling is the worst, according to research reported by the National Institutes of Health. Consuming fresh, raw produce soon after harvest is one way to ensure high antioxidant consumption.

Calcium:

Calcium is crucial for healthy bones and teeth, and to heal broken bones. Cigarettes, alcohol and caffeine can all deplete calcium levels and hinder recovery from broken bones. Diets that are high in fat, salt and sugar also increase the loss of calcium. Phosphorus, found in sodas, is another common calcium enemy.

Nutrients for Calcium Absorption

Lysine is an amino acid that provides calcium absorption and tissue regeneration. This makes it a natural choice for nutritional therapy for treating bone breaks. Lysine is also important in forming muscle protein. Foods that contain significant amounts of lysine are yeast, soy products, milk and fish.

Silica is a mineral that helps repair damaged tissue. It also helps the body absorb calcium, and can speed bone fracture recovery. The same is true for magnesium.

Vitamin C:

Vitamin C strengthens bones and connective tissue, and plays a role in healing bone fractures and other wounds.

Vitamin D:

Vitamin D is important because it helps us absorb calcium. Adults who chronically get too little calcium are at risk for developing osteomalacia, a softening of bones. This deficiency greatly increases their risk for many types of fractures.

A University of Zurich study reported in the Archives of Internal Medicine found that vitamin D supplementation can cut the risk of [Error! Hyperlink reference not valid.](#) by as much as 20 percent. Dr. Bischoff-Ferrari evaluated 12 clinical trials involving vitamin D supplementation in adults 65 and older. In total, the research team pooled findings from double-blind trials involving more than 42,000 participants. They found that vitamin D supplementation was associated with a 14 percent decrease in the risk for non-vertebral fractures and a 9 percent decrease in risk for hip fractures.

They also found that higher doses resulted in less likelihood of fractures than lower doses. A dose of 400 international units a day may cut hip fractures by 18 percent and

non-vertebral fractures by 20 percent.

Vitamin K:

Also known as menadione, vitamin K helps the body produce healthy blood clots. Vitamin K also is important in bone formation and osteoporosis prevention.

Homeopathic:

Arnica: This remedy is useful for reducing the pain and swelling that accompany any new injury, and should be taken as soon as possible after a break occurs. It may also be helpful in calming the person, since breaking a bone is traumatic as well as painful. Doses may be taken frequently, according to how the person feels. *Arnica* may be used for several days while pain and soreness are prominent. Another remedy may be indicated later, to encourage proper healing of the bones and surrounding tissues.

Bryonia: This remedy may help to bring relief if excruciating pain results from even the slightest motion. The person usually wants to remain completely still and not be touched or interfered with.

Calcarea phosphorica: This is a useful remedy for aching and soreness in bones and joints, especially when the area feels cold and numb. It can help relieve the pain of fractures and bone bruises, and encourages repair and strengthening if a fracture is slow to heal.

Eupatorium perfoliatum: This remedy is well-known for its use in flu and fever when the bones are extremely painful (“as if broken”) and is useful to relieve the deep or aching pain of actual broken bones.

Hypericum: This remedy is very useful for crushing injuries to body areas that are well-supplied with nerves. If smashed fingertips or toes are severe enough to traumatize the bones, *Hypericum* can be a welcome form of pain relief.

Ruta graveolens: This remedy is known for its effect on bone-bruises and on injuries to the periosteum (the covering of the bones); both of these types of trauma are involved when a fracture of a bone occurs. *Ruta* is also indicated when the pain around a fracture is extreme, and the person feels lame or weak. This remedy is also helpful in many cases when pain persists after treatment with *Arnica*.

Symphytum: This remedy is best known for helping broken bones rejoin and heal. It should be taken after a bone is set to ensure proper joining of the bone. (A common recommendation is to take it several times in the first few days, then once a week while the bone is healing.) It is also useful in many cases when pain persists in old, healed fractures.

Treatments:

Apply Heat:

Applying heat or warmth to the area of fracture is a great way to help bone repairing. Warmth or heat helps increase blood circulation to the fracture. All you need to do is apply heat to the fracture area for 30 minutes, three times a day. You can apply heat by soaking your fracture in a hot bath, use a hot water or wheat bag or even covering your broken limb with warm clothes!

Massage the soft tissue around your broken bone:

If you massage the soft tissue and even your bone around your broken bone, you can heal up your fracture very fast. This is because when you massage, you increase the blood flow and circulation to the point of injury. When you increase the blood flow and circulation to the fracture point, you increase the flow of nutrients and healing factors to the fracture site. This will significantly improve repairing and recovery of the broken bone.

Ultrasound:

Pulses of high-frequency sound can significantly speed up the healing of broken bones, a study has found. Researchers tested the therapy on patients with fractured shin bones, or tibias, which had not properly healed after more than four months.

Half the 100 participants were treated with an ultrasound probe and half with a "sham" device. Over a period of 16 weeks, faster healing in patients receiving the "real" treatment resulted in 34 per cent greater bone density at the injury site.

The treatment, called LIPUS, (low-intensity pulsed ultrasound) is delivered by a small emitter linked to a handheld controller. Therapy sessions lasting 20 minutes were conducted every day throughout the study period.

The research was conducted by a team of German scientists backed by global medical devices manufacturer Smith and Nephew.

Dr John Block, a US consultant for the company based in San Francisco, said: "These findings demonstrate significantly greater progress toward bone healing after LIPUS treatment compared to no LIPUS treatment in subjects with established delayed unions of the tibia. This should assist in establishing this non-invasive modality as a viable, effective treatment option for patients suffering these injuries."

The age of patients taking part in the study ranged from 14 to 70.

Delayed "union" - the knitting together of broken bones - occurs in around 4.4 per cent of tibial fractures. Sometimes the bones do not mend at all, resulting in functional

impairment and loss of quality of life.

Currently "non-unions" are tackled with costly procedures which involve grafting on extra pieces of bone and the use of growth-promoting chemicals. Ultrasound has been shown to accelerate healing by boosting the activity of osteoblasts, the cells that synthesise bone.

Magnetic Therapy & Broken Bones

By Linda L Donahue , eHow Contributor,

An increasingly popular alternative medicine practice, magnetic therapy has actually been around for many years. According to Natural [Health](#) Techniques, the people of Asia and Europe have used magnets for thousands of years to deal with pain. So while the technique is old, it is still somewhat new in the United States, especially when it comes to mending broken bones.

Magnetic Therapy

Magnetic therapy is used to help the body heal by way of the belief that the human body was designed to function within the Earth's magnetic fields. Living as we do in the modern world, we surround ourselves with all sorts of electromagnetic devices which disrupt the natural magnetic fields. These disruptions are to blame for many diseases and illnesses, according to magnet therapy proponents (such as Natural Health Techniques). Magnets are supposed to realign the body with the proper magnetic forces. Using magnets is non-invasive, unlike many procedures which cannot be undone once tried.

Magnetic therapy is used to aid in healing soft tissue and broken bones. They are used to treat other bone conditions, as well, such as osteoporosis and arthritis. Magnets may also help patients with asthma and nullify the toxic effects of chemotherapy. People have used magnets to reduce the pain associated with tendinitis, such as carpal tunnel syndrome, tennis elbow or wrist pain. Many use magnets to relieve back injury pain. And some employ magnets to get a more restful night's [sleep](#).

Magnets come in varying strengths, measured in gauss units. As such, the strength required to alleviate pain in one person may vary from what is required by another. This means that someone trying magnetic therapy may have to experiment to determine the right magnet. Magnets can be worn on various parts of the body to focus the healing, or they can be worn as insoles to circulate up through the feet. Some get their magnetic therapy while sleeping on magnetic mattresses.

Healing Bones

Patients are put inside a large machine (an electromagnetic device) which generates a magnetic field over the body, facilitating the healing process. The focus of the electromagnetic energy is on the area of the break. In other instances, magnetic blankets may also be used.

Beyond using magnetic therapy to help heal broken bones, a good diet and regular

[exercise](#) can expedite bone healing. Between the right [foods](#) and exercise, the blood supply is increased, which leads to faster healing. Staying active, especially with weight-bearing exercises, is important. Vitamins A and K both promote bone healing. Likewise, the diet should be rich in calcium and lysine (which helps with the uptake of calcium).

Precautions

Because magnets have very real effects on machinery, people with cochlear implants, pacemakers, implanted pain modulators and insulin pumps should not use magnets. Neither should pregnant women. And bipolar people should not sleep on magnetic mattresses. Magnets should also not be used on open wounds--because magnets decrease platelet stickiness, their use can interfere with the blood's clotting ability. Magnet therapy proponents also recommend withholding magnetic therapy on sprains or hematomas during the first day or two after the injury.

As additional concerns when dealing with magnets, remember that magnets can damage credit cards and VCR tapes. They can also demagnetize room keys in a hotel. Never store strong magnets near computers or homeopathic remedies.