New Breakthroughs for Preventing and Reversing Osteoporosis

Some 25 million Americans, 80 percent of them older women, suffer from osteoporosis, or "brittle bone" disease. Unfortunately, most women find out they have osteoporosis when it's too late — usually after a fracture of the wrist, hip or spine, loss of height, or curvature of the spine has occurred.

Like high blood pressure, osteoporosis is a silent, underlying condition, usually symptomless, with potentially devastating consequences. All of us lose some bone as we age, but people with osteoporosis lose an excessive amount. Their bones become fragile and their skeleton is weakened to the point where even a minor fall can result in a fracture.

Osteoporosis leads to some 1.5 million spine, hip, and wrist fractures in the U.S. each year, of which about 40 percent are spinal, 25 percent are hip, and 15 percent are wrist. Spinal fractures will affect one out of every three women in their lifetime, while wrist and hip fractures will happen to one out of six.

Osteoporosis is like high blood pressure in another way, too. In many cases it can be prevented and treated with a combination of lifestyle, diet, and therapeutic approaches.

Osteoporosis-related fractures can affect any bone in the body. But it is particularly critical to do everything possible to prevent hip fractures because they can lead to loss of function and independence. A woman's frequency of hip fracture — three times that of a man's — is more serious than most of us realize. One hip fracture alone can total more than $30,000 in direct medical costs. Half of those affected lose the ability to walk independently, and up to a third become totally dependent. Studies have shown that within one year, up to 20 percent of hip-fracture patients die from conditions related to the fracture or to fracture-related surgery.

Bone: It's Not What You Think

Most people think of bone as a hard permanent substance — the skeletal "infrastructure" of our bodies. But bone is living tissue that constantly undergoes remodeling — an alternating process of the removal, or resorption of old bone, and formation, the laying down of new bone. In healthy tissue, bone-removing cells carve out cavities in the bone's surface, while cells that form bone fill in these cavities. Thanks to this remodeling process, about a fifth of your skeleton is replaced each year.

During your first 30 years, more bone is formed than is lost. Sometime in your early 30s, peak bone density is reached and the balance begins to shift to the loss column.

Bone loss is a natural part of the aging process. By age 70 or 80, women will have lost about a third to a half of their bone mass. (In men, bone mass also declines as a natural part of aging — about 20 to 30 percent by comparison — but the decline is slower and begins from a point of higher density.)

In osteoporosis, however, the loss is much greater. Too little bone is formed or too much is removed — or both. As a result, bones become fragile and break easily, leaving people vulnerable to pain and injury. In addition, too much calcium and not enough magnesium can cause new bones to be formed that are brittle.

Since the 1950s, American women have been told by the medical profession that increasing the amount of calcium in our diets can greatly reduce the risk of developing osteoporosis. Advertisers and the media have emphasized the importance of this one mineral over all others — suggesting that calcium is enough to prevent bone loss. And as a result, sales of calcium supplements have skyrocketed and the consumption of dairy products has soared as well.

Still, a number of health problems that are the result of calcium-related imbalances, including premenstrual syndrome, arthritis, heart disease, and osteoporosis, continue to escalate.

Why?

We all need calcium for a variety of bodily functions, including good colon health and building strong bones. But all recent studies do not agree that a high calcium intake has a positive effect on bone health. And it's no wonder. The more calcium one ingests at any given time, the smaller the percentage of calcium that is actually absorbed. And there is research that has shown that when we adapt to a low-calcium diet, we actually excrete less of it in our urine and increase our absorption.

What's more, in 1988 the National Women's Health Network announced that women who

lived in countries where calcium intake was low had less osteoporosis than women in this country who are on a high calcium diet.

And indeed, a great number of studies support the idea that lowered calcium intake may benefit American women as well. A Dutch study published in 1960 was one of the first to caution that excessive calcium could result in soft-tissue calcification, or arthritis, and one possible beneficial nutrient to help counteract this effect would be magnesium. Recently, a study published in the *Journal of Applied Nutrition* showed an increase in bone density in postmenopausal women who took more magnesium and less calcium than has been generally recommended.

Making Bones Strong: Chalk vs. Ivory

Let's address the subject of bone flexibility, since this may be the determining factor in whether or not your bones break when you fall, as you get older. The more flexible your bones, the less likely you are to break them. Bone density is only one part of osteoporosis — the part we can now easily measure. Bone flexibility may be even more important, though. And we have no sophisticated tests to let us know whether or not our bones are brittle. This is why doctors only talk about how dense your bones are.

Calcium contains properties that makes bones brittle, while magnesium binds to protein in your bones and keeps them supple. Take a look at two substances in nature with relationship to these properties of suppleness and brittleness: chalk and ivory. Chalk is pure calcium carbonate, the stuff they put in mineral supplements to help you meet your daily requirements. Take a new piece of chalk and drop it. Watch it break. Then compare it with a piece of ivory the same size taken from an elephant's tusk. The ivory is a combination of calcium and magnesium. Now, which do you need, more calcium or more magnesium?

Guy E. Abraham, MD, a research gynecologist and endocrinologist in Torrance, California, believes we can get sufficient calcium from our foods without taking additional amounts in supplement form. His supplements, which have been shown to improve bones, are lower than most in calcium. You may need more magnesium to make your bones more like ivory and less like chalk. Find a product that will allow you to increase your magnesium intake to 600-800 mg/day while limiting calcium supplements to around 500 mg. You'll get even more calcium as well as magnesium in whole foods like whole grains (millet is especially high), beans, nuts and seeds, dark green leafy vegetables, as well as tofu and soy products. The minerals you take are not just in pills. They're in your food, as well.

So when your doctor suggests you take more calcium or consider taking hormones or other prescription drugs to increase your bone density, ask him or her what they suggest to make your bones more flexible. If they don't have an answer, tell them about magnesium.

How Magnesium Can Help Prevent Osteoporosis ... AND Arthritis, PMS, and Heart Disease

One greatly overlooked factor in calcium absorption is the importance of having enough magnesium.

When women take large amounts of calcium, either in supplements or by eating diets high in dairy products and low in whole grains and beans, calcium is elevated in the blood and stimulates the secretion of a hormone called calcitonin. At the same time, it suppresses the secretion of the parathyroid hormone (PTH). These hormones regulate the levels of calcium in the bones and soft tissues and are related directly to osteoporosis and osteoarthritis. PTH draws calcium out of the bones and deposits it in the soft tissues, while calcitonin increases calcium in the bones.

But the optimum execution of these two delicate functions is dependent upon having sufficient magnesium. Because magnesium suppresses PTH and stimulates calcitonin, it helps move calcium into our bones. This chemical action helps prevent osteoarthritis and osteoporosis.

A magnesium deficiency, however, will prevent this chemical action. And more calcium is not the solution, because while magnesium helps the body absorb and utilize calcium, excessive calcium prevents the absorption of magnesium. Taking more calcium without adequate magnesium — and what is adequate for one woman may be insufficient for another — may either create calcium malabsorption or a magnesium deficiency.

Only additional magnesium can break this cycle, as was demonstrated by a study reported in *International Clinical Nutrition Review.* Volunteers on a low magnesium diet were given both calcium and vitamin D supplements. All subjects were magnesium-deficient, and all but one became deficient in calcium, as well, in spite of the fact that calcium had also been added to their diet. When they were given intravenous calcium infusions, the level of calcium in their blood rose for the duration of the intravenous feedings. When intravenous calcium was stopped, blood levels of calcium dropped again.

However, when they were given magnesium, their magnesium levels rose rapidly and stabilized, and their calcium levels also rose within a few days even though they had not been given any additional calcium.

In addition to helping move calcium into the bones to reduce the risk for osteoporosis, magnesium is helpful in battling premenstrual syndrome. That's because magnesium helps the body utilize B vitamins, as well as inactivate excessive estrogens. And it is these conditions, low quantities of B vitamins and high estrogen to progesterone ratios, which have been found to contribute to premenstrual moodiness and irritability.

In most studies of women and heart disease, the magnesium factor is also being overlooked. In fact, magnesium may even be more important than calcium in reducing our incidence of heart disease. Consider this: Calcium causes muscles to contract. Magnesium, on the other hand, causes muscles to relax — and your heart is a muscle.

A recent randomized, controlled trial using magnesium in about 4,000 patients with acute myocardial infarction (heart attacks) showed that there were fewer deaths in people who were given magnesium than in those who did not take this mineral. The study recommends giving magnesium to all patients during acute heart attacks, and suggests this long-overlooked mineral may be beneficial when it is added to traditional medical treatments.

Postmenopausal women, those at highest risk of heart disease, would be wise to consider a diet higher in magnesium (whole grains and beans) and lower in calcium (dairy products). Nutritional supplements that contain equal amounts of calcium and magnesium are available. Some, formulated specifically for postmenopausal women, already contain more magnesium than calcium.

Finally, high calcium diets may actually increase the risk of stroke, another leading cause of death in women as well as men. A UCLA study recently reported in the *Journal of Clinical Investigation* suggests that artery wall cells are able to form bone tissue and high-calcium diets may contribute to such growth. In turn, this bone growth may contribute to the development of hardening of the arteries and blockages, which can cause strokes.

How Did This Trend in Magnesium Deficiency Begin?

Women's obsession with weight control may be at least partially responsible for much of our current magnesium deficiency. We have been assured that high quantities of non-fat dairy products, like milk and yogurt, were both safe and beneficial. But when you increase dairy products, even those without fat, you are upsetting your body's balance of calcium and magnesium.

The high protein content of dairy, especially when combined with other animal products, can pull calcium from the bones where it's needed. One study, reported in the *American Journal of Clinical Nutrition* of 1,600 women, found that those who followed a vegetarian diet for at least 20 years had only an 18 percent loss of bone mineral by age 80, while meat eaters had a 35 percent bone mineral loss!

Also, dairy products contain nine times as much calcium as magnesium. If you have been eating a lot of dairy products, along with few or no grains and beans (which are rich in magnesium), you have probably upset your calcium/magnesium ratio even further.

In addition, most nutritional supplements contain twice as much calcium as magnesium. But again, because we've eaten so much dairy and so few grains and beans, our bodies have come to need as much magnesium as calcium, or even more. To bring yourself back into a chemical balance, you would have to eat three cups of brown rice every day to compensate for one small serving of dairy. Because white rice has most of its magnesium removed, along with fiber and many other nutrients, you would need 10 cups to balance one portion of calcium-rich foods.

Restoring Your Calcium and Magnesium Balance

What can you do to help protect yourself against osteoporosis, heart disease, stroke, eliminate PMS symptoms, and reduce your risk of arthritis?

Begin with a magnesium-rich diet. Many of the foods we eat have been refined, and magnesium is one nutrient removed in the refining process and not added in "enriched" products. Increase your consumption of whole grains like brown rice, millet, buckwheat (kasha), whole wheat, triticale, quinoa, and rye, as well as legumes, including lentils, split peas, and all varieties of beans. A whole grain cereal or bread in the morning, a cup of bean soup at lunch, a snack of whole grain crackers or popcorn, and a serving of brown rice, millet, or other grain with dinner should go a long way to help increase your magnesium intake.

Eat plenty of fresh vegetables, too. Fresh produce and whole grains will, in addition to calcium and magnesium, provide your body with

many other essential minerals. And it's especially important for you to not overlook one vitamin or mineral for another, since all work together to supply you with the nutrients you need.

Reduce your consumption of refined sugar and alcohol as well, to prevent excessive magnesium from being excreted in the urine. You may think your chocolate cravings are due to a sweet tooth, but they may be an indication that you have a calcium/magnesium imbalance. **Cocoa powder contains more magnesium than any other food, so you may be a chocoholic if your body needs more magnesium, less calcium, or both.**

But don't rush out and stock up on candy bars and other chocolate-rich foods. If you do, you're creating even more of an imbalance. You already know that chocolate contains an excessive amount of sugar. Not only does sugar cause magnesium excretion, but it also causes calcium to be leached out of your bones. Diets that are excessive in sugar contribute to premenstrual bloating and weight gain. When you increase your magnesium and decrease calcium, eventually the chocolate cravings will leave and chocolate will be more a flavor you enjoy than a craving that drives you.

Another extremely important step is to evaluate the amount of dairy in your diet. If it has been high — more than one serving a day — reduce it at the same time as you increase magnesium-rich foods. Oriental and Indian diets contain little or no dairy, and arthritis and osteoporosis are not major health problems in these cultures. By featuring greater amounts of green vegetables, grains, tofu (soy bean curd), and seafood, these diets contain twice as much magnesium as the average American diet.

In addition, keep your animal protein (fish, chicken, meats) low, since a diet high in phosphorous, a mineral found in animal protein, can cause lowered calcium levels. Vegetable protein (grains with any beans) in any amount is safer, since a diet high in soy protein maintains calcium levels.

And if you've been taking vitamin/mineral supplements that are higher in calcium than magnesium, you may want to reverse the proportions to take more magnesium than calcium.

How Much Magnesium?

How much magnesium does your body need? According to Dr. Mildred Seelig, past executive president of the American College of Nutrition, we need about 200 milligrams more than we get in an average diet. She suggests that geriatric patients on a good diet take between 700 and 800 milligrams of magnesium supplements each day. This is considerably more than the Recommended Daily Allowances (RDA) of 350 milligrams per day for women of all ages.

Can you take too much magnesium? "It's unlikely," says Melvyn R. Werbach, MD, author of *Healing Through Nutrition* (HarperCollins, May 1993) and *Nutritional Influences on Illness*, a health practitioner's reference book. His research into medical studies has not found any cases of magnesium toxicity from taking it in the form of oral supplementation.

Guy E. Abraham, MD, a research gynecologist and endocrinologist in Torrance, California, gave postmenopausal women 200 to 1,000 mg of magnesium a day to strengthen their bones. He based the amount he gave each woman on bowel tolerance — enough magnesium to cause soft stools, but not diarrhea. These women showed an average bone density increase of 11 percent in one year, by adjusting their diets to increase magnesium (600-1,000 mg/day) and lower calcium (500 mg/day).

Another study touting the benefits of magnesium for postmenopausal women, this one from Israel, also suggests it is magnesium, not calcium, that protects our bones from the thinning characteristic of osteoporosis as we age.

In the Israeli study, 31 postmenopausal women were given from 250 to 750 mg of magnesium each day for two years. In almost 75 percent of the women, their bone density actually increased — in some, as much as eight percent. Women who refused additional magnesium had a loss of bone density from one to three percent — an expected decrease according to most medical doctors.

Most studies on the effect of increasing the amount of calcium in the diet show that calcium merely slows the rate of bone loss by an average of around 50 percent, but does not prevent or reverse osteoporosis.

For many women, getting sufficient magnesium is the missing link to reducing the risks of osteoporosis, heart disease, and arthritis, as well as eliminating PMS symptoms.

Find a well-absorbed form of magnesium. Dr. Abraham's Mag 200 contains 200 mg of magnesium oxide and has been designed specifically to be well tolerated because it is so well absorbed (Optimox, Inc., 800-223-1601). Most magnesium oxide is not. If you get loose stools from taking even 100-200 mg of magnesium, try switching to another brand. According to Dr. Abraham, a well-absorbed form of magnesium should be tolerated at levels of around 600 to 800 mg/day.

When you want to increase the bone-strengthening effect of magnesium, take it alone, not with calcium. You may have a supplement that contains both minerals, but which has insufficient magnesium to meet your requirements. In this case, take additional magnesium alone.

The Missing Nutrient That Cuts Your Risk of Spinal Fracture in Half

If you want to build strong, flexible bones, calcium isn't the only nutrient you need to take. Contrary to what you hear in the mainstream press, too much calcium makes your bones brittle. In fact, I've stressed the importance of increasing magnesium and not taking too much calcium for 20 years.

I've also talked about the importance of getting enough vitamin D, the sunshine vitamin, and doing regular bone-stressing exercises. There's no doubt about it. You can't make healthy bones without all of these. But they're not enough.

For maximum support, there's a little-known trace element that can double or even triple your bone density!

Increase your bone density by 14%

This mineral appears to be one of the most effective substances found yet for preventing and treating osteoporosis. Because of its chemical similarity to calcium, it can replace lost calcium in your bones and teeth, increasing bone density. Plus, it appears to draw extra calcium into your bones, making them thicker and stronger.

Multiple studies show this mineral is critical to helping you build "bones of steel" that make you resistant to life-threatening fractures. One three-year study published in the *New England Journal of Medicine* involved 1,649 postmenopausal women diagnosed with osteoporosis.

Women who took this mineral, along with calcium and vitamin D, cut their risk of fracture by 49% in the first year of treatment — that's nearly in *half!* Plus, they increased the bone density in their backs by 14.4% and in their necks by 8.3% on average. By contrast, those who took *only* calcium and vitamin D saw no increase in bone density.

So what is this remarkable bone builder? It's strontium, a naturally occurring element found in soil and water. The amount of strontium found in our diets is probably between two to four mg a day, depending on how much gets into fruits and vegetables from the soil and water, and how much is in our drinking water. Strontium makes bones stronger and denser when taken in larger doses.

Calcium and strontium are almost identical in their ability to accumulate to bone. Together, they increase bone density more than calcium alone. The amount of strontium that will protect you is unclear. Studies suggest it takes 300-600 mg a day, while others say a minimum of one gram. We need additional studies to know just how much strontium it takes to protect the bones of older women who already have osteoporosis. But since it appears to be non-toxic, you may want to give it a one-year trial.

Most studies on strontium have used a synthetic form called strontium ranelate. The reason for this is simple: Strontium ranelate is a drug patented by Servier Pharmaceuticals. Pharmaceutical companies can afford to pay for expensive trials, and the research on strontium ranelate is compelling.

But strontium ranelate isn't the only form of strontium that builds bone. It may only be the most expensive form. An older study used strontium lactate to treat osteoporosis at the Mayo Clinic. In this study, scientists gave 1.7 grams of strontium lactate three times a day, one hour before meals. They found that 84% of the patients in this study had marked improvement. Strontium gluconate and strontium carbonate also have been used to successfully remineralize bone.

There are enough studies on strontium's safety and effectiveness in bone health for me to suggest you consider it. Strontium is completely nontoxic, even when administered in large doses for prolonged periods. In fact, it's been safely used as a medicinal substance on humans for more than 100 years.

The Only Dairy I Recommend

Yogurt is cultured milk. Yes, it is dairy, which means it contains a lot of calcium without magnesium, but it contains an ingredient that makes it a healthy food: acidophilus. Acidophilus is a type of friendly bacteria that lives in your intestines, helping to build a strong defense against pathogenic (bad) bacteria. It also helps digest food particles. A healthy digestive system, and colon, has a lot of acidophilus.

There isn't as much acidophilus in yogurt as in powder or capsules, but it's a food source of an important type of friendly bacteria. Used in moderation (1/2 to 1 cup every few days), it will do more good than harm. There's nothing wrong with having a little dairy in your diet. Just choose which kind and make it as healthy as possible. Like yogurt. Just make sure it doesn't contain sugar. Sugar feeds bad bacteria.

What's more, a two-year, double-blind study found strontium to *be safer than a placebo!* Not only did the women taking strontium significantly increase their bone mineral density, they experienced fewer side effects than those taking the placebo.

How much should you take?

In the study showing a significant increase in bone density for healthy, younger postmenopausal women, there was only a 2.4% increased benefit after taking one gram of strontium ranelate for two years. On the other hand, another study found that just 680 MILLIGRAMS (roughly two-thirds of a gram) of strontium reduced the risk of a vertebral fracture by 41%. This is impressive.

If you're at high risk for osteoporosis, strontium may be just the ticket. With no toxicity reported, it's at least worth talking over with your doctor. I would certainly take 450-650 mg of strontium daily before considering Fosamax or other pharmaceuticals, which have unwanted side effects. I also recommend you focus your osteoporosis treatment on magnesium and strontium rather than overdo calcium or take supplemental vitamin K. The latter is important for your bones, but you don't want to take too much of them.

Strontium citrate, strontium lactate, and strontium gluconate can be found in some supplements in health food stores. Citrates are notoriously well-absorbed carriers. This is the form I would use.

In fact, I put strontium citrate in a bone formula several years ago, since other similar formulas contained NONE of this important nutrient. It's called Ultimate Bone Support (from Advanced Bionutritionals, 800-791-3395).

Be sure to take it away from calcium and magnesium, since strontium competes with them. I take my Bone Support morning and night on an empty stomach.

Beware of Bone-Density Testing!

Doctors' offices across the country are being filled by a new breed of diagnostic machines. These new machines measure your bone density and they sound like a good idea — especially if you're interested in preventing osteoporosis.

But watch out! The information they give is limited. Bones break when they're thin and fragile. Your bones may have thinned, and still be strong. If you're old enough, you're virtually guaranteed that one of these machines will convince your doctor that you have, or are at dangerous risk of developing osteoporosis. Then, before a meaningful discussion can take place, your doctor will likely write you out a prescription for one or more osteoporosis drugs — such as Fosamax or Premarin. But is this the best course of action?

It used to be that osteoporosis was diagnosed when an older person with brittle bones actually suffered a fracture.

In recent years, however, the definition of osteoporosis has changed. In 1991, a panel of medical experts, in a report that appeared in the *American Journal of Medicine*, redefined osteoporosis as: "A disease characterized by low bone mass and microarchitectural deterioration of bone tissue, which lead to increased bone fragility and a consequent increase in fracture risk." In plain English, this new definition of osteoporosis simply means you have an increased risk of fracture, not that you had a fracture or will definitely get a fracture.

But doctors are now diagnosing osteoporosis by completely disregarding your bone's flexibility, fragility, and micro-architecture (in the above definition), and instead are heavily relying on bone density, which can be easily measured using various machines. Some of these machines are more accurate than others, though there are accuracy problems with all of them.

In addition, many are inadequate for precisely monitoring your progress, including the results of any therapy you are using to prevent osteoporosis. Yet doctors persist in using these machines for this purpose as well. Urine tests, which measure the rate of bone breakdown as reflected in various markers, are also problematic. They can produce day-to-day variations of up to 40 and even 50 percent. Unfortunately, there are no tests to measure bone flexibility vs. fragility.

In addition, bone density is not always the same throughout your body. A high or low density reading in one area, such as the heel or lower spine, doesn't necessarily mean you have similar density elsewhere in more critical locations such as your wrist, hip, or upper spine, where fractures are most likely to occur.

Finally, to complicate matters even more, deposits of unabsorbed calcium — perhaps from arthritis — can result in overreads, in which machines report higher density than what actually exists.

The bottom line on test results is this: Don't make assumptions. Instead, get straightforward answers from your doctor about the accuracy and real meaning of any bone-density and bone-loss testing.

The New Osteoporosis Drugs: Bisphosphonates

This new family of drugs acts to decrease bone loss by preventing bone resorption. These drugs, called bisphosphonates, are mineral compounds whose structures have been altered to act selectively on bone. Two popular bisphosphonate drugs go by the trade names Etidronate and Fosamax.

In a double blind placebo-controlled study of Etidronate therapy in 135 postmenopausal women without osteoporosis, at the end of seven to 10 years, women taking the drug showed a 3.42 percent increase in lumbar spine bone mineral density, compared to a .38 percent decrease among the placebo group.

What about Fosamax? It works, but at too high a cost. In fact, I consider Fosamax and other bisphosphonates to be among the most dangerous drugs you can take.

The Dangers of Fosamax

Current advice from the manufacturer, Merck, is that patients with low levels of calcium in their blood, severe kidney disease, or who are pregnant or nursing should not take Fosamax. The manufacturer also urges that caution be used when Fosamax is given to patients with active upper gastrointestinal problems. Apparently Fosamax can irritate such problems. The most commonly reported drug-related side effects in patients taking this drug are musculoskeletal and abdominal pain, and other digestive disturbances such as nausea, heartburn, and irritation or pain of the esophagus.

The severity of the digestive disturbances should not be underestimated. Fosamax users frequently complain of horrible burning that wasn't helped by either Tums or Maalox. The manufacturer is very aware of this

But the news is much worse. In the largest study of its kind, Canadian researchers at the University of British Columbia found that some of the most widely used osteoporosis drugs, bisphosphonates, nearly triple your risk of getting a painful, debilitating disease called bone necrosis.

Bone necrosis is a condition that leads to a permanent loss of blood supply to bone tissues. Without enough blood, the bones die and collapse. And once bone tissue dies, there's nothing you can do to restore it.

You've no doubt heard of this danger before when Fosamax was found to cause osteonecrosis of the jaw. Because of this, dentists across the country are refusing to treat patients who have been taking bisphosphonates.

Now we're finding it's not just the jawbone that can die. Fosamax, Actonel, Boniva, and all other bisphosphonates can cause death of bone tissues in the jaw, shoulders, knees, and hips. Originally, we were told that jawbone necrosis affected only 1 in 20,000 people a year. Now these researchers are saying bisphosphonates may be triple that amount in bones throughout the body. For the 190 million prescriptions that have already been written this translates to 5.7 million people at risk every year for pain from bone death!

And Yet More Dangers

Now there's a new study that was presented at a recent medical conference of the American College of Chest Physicians. It concluded that bisphosphonates increase a woman's risk for atrial fibrillation. So, not only are these drugs bad for your bones, they're bad for your heart.

This study followed more than 16,000 older women on bisphosphonates, as well as a control group. Women who took the drugs were more likely to have atrial fibrillation, a condition that includes lightheadedness, heart palpitations, and chest pain. These women were also twice as likely to have serious irregular heartbeats leading to hospitalization and death.

You should also be aware of how these drugs work — by inhibiting bone resorption. This process, in which calcium moves into and out of the bones to other parts of the body, helps maintain healthy levels of calcium elsewhere throughout the body for important functions, including nerve cell communication, contraction of muscle cells, blood-clotting efficiency, enzyme function, and production of certain proteins. If calcium is not allowed to move around freely in its normal manner, will any of these functions be adversely affected? Currently lacking long-term studies may provide an answer. The fact that patients with low levels of calcium in their blood are presently advised not to take Fosamax might be an early clue to a yes answer.

In view of these concerns, taking bisphosphonates to prevent osteoporosis is a much riskier proposition than doctors and drug companies are letting on. In my professional opinion, no one should take any bisphosphonates — ever. Many dentists who are seeing more jawbone necrosis would agree.

Attention to Prevention

More and more of us are finding out how much we benefit from exercise. Young women

reap the greatest benefit, since they can build bone mass up until their 30s. After that, exercise is critical to maintaining bone mass or slowing the rate of loss.

Exercise that forces the body to work against gravity (weight-bearing exercise) like jogging, walking, aerobics, dancing, and team sports, strengthens the skeletal system. Non-weight-bearing activities like cycling and swimming do not strengthen bone, but are important for cardiovascular health.

You don't have to train like an athlete — in fact, it's better if you don't. A good guideline is 30 to 60 minutes of exercise three or four times a week. Impossible? Even three 10-minute walks over the course of a day help.

As we age, we lose muscle mass as well as bone. Weight training can improve muscle strength and tone, which contributes to bone health, as well. There have been studies in the past that suggested heavier women have greater bone density than thinner women. A more recent study, however, now suggests it's not a person's weight, but the amount of muscle, that is the determining factor.

A group of nearly 250 healthy premenopausal women had their bone density examined. Those who had the highest amount of both fat and muscle had the densest bones. Those with flabby muscles had low bone density — whether they were heavy or thin.

While it's possible to say that bones that are dense before menopause will continue to remain strong and healthy after menopause, this study strongly suggests that weight alone will not protect you against osteoporosis. All women, whether heavy or light, should increase their muscle mass through regular weight-resistance exercise.

You're never too old to benefit from exercise, either. One study that appeared in the New *England Journal of Medicine* compared mobility and strength of 100 nursing home residents between the ages of 72 and 98. Half the seniors participated in a 10-week weight resistance training program. At the end of this short time, their muscle strength had increased by an average of 113 percent, compared to the non-exercisers. Significant improvement in mobility was also seen, which made these seniors less prone to bone-breaking falls — a very significant achievement in view of the fact that 80 is the average age of persons suffering hip fractures.

Exercise is essential to good bone health, but it is far more effective when coupled with absorbed calcium. For women entering menopause, it is important to note that reduced estrogen, not calcium, is the primary cause of bone loss in the first five years beyond menopause. Women who do not get enough calcium (less than 400 mg/day), however, may lose even more bone mass.

When coupled with vitamin D and magnesium, calcium has shown tangible benefits. One study showed a reduction in hip fractures in a nursing home population whose average age was 85.

Another study published in the *Journal of Applied Nutrition* showed a reversal of osteoporosis in postmenopausal women who adjusted their diets to increase magnesium (600-1,000 mg/day) and lower calcium (500 mg/day). These women showed an average bone density increase of 11 percent in one year.

Although this and other similar information has appeared in medical publications, most doctors still ignore it and attempt to frighten their patients into taking 1,500 milligrams of calcium a day. The majority of nutritional supplements contain twice as much calcium as magnesium, perpetuating the myth that calcium prevents osteoporosis. Numerous studies, however, show that most of this calcium does not get into the bones.

Boron and vitamin D are also necessary for calcium absorption. Many older people need vitamin D since it is harder for them to absorb calcium. Many housebound older adults get less sunlight — the major source of this essential vitamin — and consume fewer vitamin D-rich foods, such as fatty fish, liver, and egg yolk.

Recommended daily amounts of vitamin D are 200 to 400 IUs (international units) but no more than 800. A good quality multivitamin/mineral may have both, and offers good insurance toward having adequate quantities of many other important nutrients your body needs to maintain optimal bone health.

In the future, health-care providers may have a test to determine who is genetically at risk for developing osteoporosis. Recently, Australian researchers discovered that women with two copies of the variant of the gene for the body's vitamin D receptors reached a "fracture threshold" eight years earlier than women with two copies of the normal gene.

Are You at Risk?

Why do some of us develop osteoporosis? We need much more research to understand the causes, but some factors have been identified.

• **Loss of estrogen.** Women are most vulnerable to osteoporosis when they go through menopause, whether it occurs naturally or is surgically induced. During these years, the body is

changing the way it makes estrogens and as the amount of estrogen produced declines, bone loss increases significantly. This is particularly true in the first five to seven years after menopause when we can lose from two to five percent of bone mass each year. After that the annual rate of loss slows to about one percent.

• **Cessation of menstrual periods.** Hormone imbalance, often characterized by lack of menstrual periods, may also contribute to bone loss. High-performance athletes are at risk. One study found that 40 percent of competitive women skaters do not have a menstrual period. Many young women who diet excessively or suffer from anorexia are at similar risk.

• **Smoking and alcohol.** Researchers have found strong links between smoking and reductions in bone mass, resulting in a deficit of five to 10 percent in some cases. Because it decreases levels of calcium and vitamin D in the body, moderate to heavy alcohol use — more than two glasses a day — can also reduce bone mass.

• **Diet.** Women may also be more vulnerable to osteoporosis in midlife if their calcium absorption has been low since childhood. The recommended amounts for children and young adults range from 800 to 1,500 mg/day. Vulnerability increases even more in later years as our bodies become less able to absorb this essential mineral.

Although as we age we have more difficulty absorbing calcium, doctors and the media still insist we increase our intake, both in our diet and supplements. This increase in unabsorbed calcium often leads to heart disease (the biggest killer of women past menopause) and arthritis.

Diets high in sugar, protein, phosphorous (found in colas), and caffeine cause calcium to be excreted from the bones, contributing to osteoporosis. Some nutrients, such as magnesium, help the body absorb calcium into the bones, helping to prevent osteoporosis.

In general, the better all nutrients in your diet are balanced, the more your bones will benefit.

• **Immobility.** Use it or lose it. People who are bedridden or in a cast for any length of time show evidence of bone loss from lack of use. An example of this is the astronauts who spend time in a weightless environment and get osteoporosis from their time in space. Women who exercise too little lose bone strength as well, placing them at greater risk for osteoporosis-related fractures.

• **Ethnicity and body type.** Caucasian women are more likely to develop osteoporosis than members of other ethnic groups. Although studies show that fewer African-American and Hispanic women experience bone loss, they are still at risk and should take the same preventive measures. Thin, petite women are also more vulnerable. Although heavier women produce more estrogen and are thus better protected against osteoporosis than thin women, they also need to take their risk for the disorder seriously.

• **Medications.** Some medications given for other disorders may cause osteoporosis. The most common are glucocorticoids (steroid medicines), generally prescribed for diseases such as arthritis, asthma, and ulcerative colitis. As research progresses, we are learning that other medications, such as high doses of thyroid hormone, may also increase bone loss. Ask your pharmacist or health-care provider if any of your medications fall in this category and what, if anything, else you can take.

Bone Density and Heredity

One important, and often overlooked, risk factor for osteoporosis is genetics. If you listened to the general media talk around the subject, you'd believe that just taking more calcium and walking daily will prevent this condition. Not so. While calcium metabolism and exercise are important, the major risk for osteoporosis appears to be genetic. Different genes are necessary for bone mineral density, including some that regulate the activity of bone cells, and others that regulate your body's balance of calcium, vitamin D, and other minerals.

If you have a family history of osteoporosis, you may have to work harder to prevent or slow down your own loss of bone minerals. In this case, having a health professional evaluate you for good digestion (you need enough hydrochloric acid in your stomach to break down and use calcium), dietary mineral balance, stress reduction, and exercise. If your family has a low incidence of osteoporosis, this doesn't give you license to eat poorly, ignore your mineral balance, and not exercise. Certain people may have a greater or lesser tendency for osteoporosis than others, but this is only a tendency.

Frailty is a huge factor of aging. By age 70, most people have at least 20 percent less muscle than they did at age 30. *About 70 percent of elderly women are too frail to lift just 10 pounds, and 60 percent cannot perform such household work as vacuuming.* About 35 percent of men are equally frail.

The good news, though, is that you're not destined to become frail. And if you're already so frail you can't do the things you really enjoy, there's even more good news — frailty doesn't have to be part of your life. In fact, studies have found that even 90-year-olds can rebuild lost muscle and bone structure with some careful exercise.

What Determines Frailty?

The three main factors related to frailty are muscle, bone deterioration, and balance. (Other factors, such as ligament and cartilage damage, also contribute, but not to the same degree.) While most people are aware that muscles are strengthened by exercise, few people realize that bones are also strengthened by exercise.

Bones are tissues that can grow or shrink, depending on how well you take care of them. If you've ever broken a bone, you've seen firsthand how bone tissue grows to heal the fracture.

In order for your muscles to grow in strength and help you keep your balance, you have to subject them to a certain degree of stress. Your bones are no different. The difference comes in the type of stress each responds to. While your muscles respond to contractile stress, your bones must undergo bending, compression, and twisting to experience stress. As with muscles, you can overdo the stress on your bones, which is when you suffer breaks and stress fractures.

On the other extreme, if your bones and muscles don't undergo at least a minimal amount of stress on a regular basis, they begin to atrophy. The adage "use it or lose it" definitely applies here.

The degree of stress your bones and muscles must experience in order to grow is called the minimal essential strain. This is the point that if surpassed often enough will cause the bone or muscle to call in help to deal with the stress. This help comes in the form of osteoblasts, which migrate to the area being stressed and help build more muscle and bone tissue.

As we age, our muscles and joints tighten, arthritis often sets in, and years of neglecting our body begins to take its toll. The exercise we know we need gets harder and harder to do, so a sedentary lifestyle sets in (or continues). Let's face it, very few of us enjoy getting out of our comfort zones, especially when it hurts.

But that inactivity is a prime cause of frailty.

Setting Some Standards

I've discussed many times how necessary it is for women to have a regular exercise program, regardless of how old you are or how strenuous the exercise program. And I'm not the only one spreading the news. Hundreds of magazines and TV and radio programs have confirmed what I've been reporting for years. So by now, you're probably as convinced as I am of the necessity to exercise.

But before you begin an exercise routine, you need to find out what kind of condition you're in right now. This helps you determine what type of exercise you can begin with and it sets a standard you can use to see how you're improving.

To help you in this process, researchers have come up with a way to check your "frailness factor."

Roberta Rikli, PhD, a professor at California State University, Fullerton, led a study of 7,000 Americans ages 60 to 94 that established a set of tests to help you determine your fitness standards. That's an impressive number of subjects and lends credence to the project.

If the tests signal you're at risk of becoming too frail, "we can do something to try to prevent that," Dr. Rikli said. The exercise tests are simple enough that many people could try them at home, but it's best to do the exercises with a doctor, so you won't be tempted to overdo it.

Rikli and her colleague C. Jessie Jones devised the following simple tests:

- How many times in 30 seconds can you rise from a straight-backed chair without using your arms to push yourself up? This measures lower body strength.
- How many times in 30 seconds can you lift a weight — five pounds for women, eight pounds for men — in a "biceps curl"? This measures upper body strength.
- How many yards can you walk in six minutes, to measure aerobic fitness?
- How long does it take you to rise from a chair, walk eight feet, and return to a seated position to measure mobility?

Rikli found that fitness declined with age, on average, one percent a year. Regardless of age, people who got moderate physical activity at least three times a week were the most fit. "Our main interest is in keeping people mobile and staying physically independent as long as possible," said Rikli.

Some doctors already use similar but experimental tests to assess elderly patients' limitations. "They're very powerful predictors" of who will wind up disabled, said Dr. Jack Guralnik of the National Institute on Aging.

Getting Started With Resistance Exercises

Once you've done the simple tests above, it's time to start "stressing" your muscles and bones and re-test yourself. This will help strengthen your muscles, improve your balance, and help build bone density. It's extremely important that you start out slowly and not hurt yourself while you're trying to improve your condition. Most exercise regimes I've seen are lengthy and diffi-

OsteoBall Exercises and Reversing Osteoporosis

Starting Positions

1. Chin In

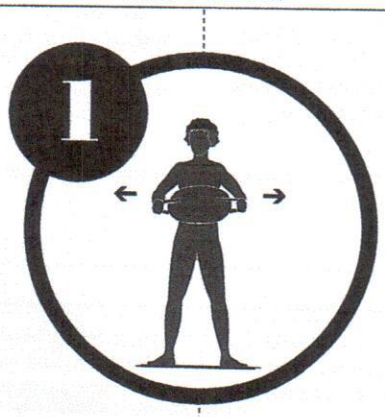
Keeping your eyes level, glide your chin back until you feel a gentle stretch at the back of your neck.

Now relax slightly. This places your head in a balanced alignment. (Hint: look in the mirror — and check if your ear lobes are aligned with the edge of your shoulders.)

2. Pelvic Pinch

Gently tighten your lower abdominal muscles and at the same time squeeze your buttocks muscles together. This is a very subtle movement which causes a "stabilization" of your lower back.

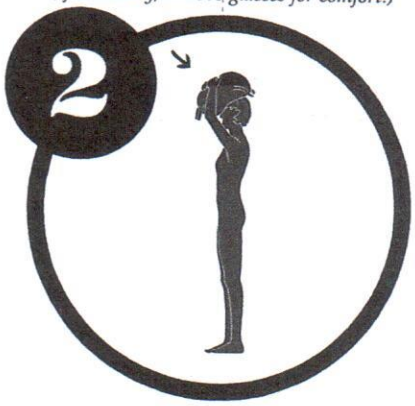
ARM PULLER



1. Stand with the OsteoBall in your hand.
2. Place your feet about 12 inches apart.
3. Bend your knees slightly.
4. With each hand grasp a handle of the OsteoBall.
5. Place the Ball at waist level and bend your elbows at right angles.
6. Assume the Starting Position (Chin In and Pelvic Pinch).
7. Keep your head erect and take a deep breath.
8. Steadily and with increasing effort, pull the handles away from the OsteoBall, exhaling as you slowly count out loud "Push-1 to Push-5." Feel a tightening of the muscles of your shoulders and upper arms.
9. Relax your arms and count out loud "1001 to 1005."
10. Repeat one more time.

NECK TONER

(If necessary, remove glasses for comfort.)



1. Stand with your feet about 12 inches apart and bend your knees slightly with OsteoBall in hand.
2. Place the Ball on the front of your forehead and hold in place with both hands. Do not hold onto the handles.
3. Leave breathing space below the Ball.
4. Assume the Starting Position (Chin In and Pelvic Pinch).
5. Keep your head erect and take in a deep breath.
6. Push the OsteoBall with your hands with increasing force into your forehead while resisting with your head.
7. Exhale as you slowly count out loud "Push-1 to Push-5." Feel the muscles in the front of your neck tighten.
8. Relax and lower the ball. Count out loud "1001 to 1005."
9. Repeat one more time.

ALTERNATIVE NECK TONER #2

(If necessary, remove glasses for comfort.)

1. Place the OsteoBall at your forehead height against the wall.
2. Face the wall.
3. Assume the Starting Position (Chin In and Pelvic Pinch).
4. Keep your head erect and take in a deep breath.
5. PUSH the OsteoBall with your forehead with increasing force.
6. Feel the muscles in the front and side of your neck tighten.
7. Exhale as you slowly count out loud "Push-1 to Push-5."
8. Relax and lower the ball. Count out loud "1001 to 1005."
9. Repeat one more time.

POSTURE TONER

1. Stand with your feet about 12 inches apart and bend your knees slightly with OsteoBall in hand.
2. Place the OsteoBall behind your neck and hold it in place with both hands. Do not hold onto the handles.
3. Assume the Starting Position (Chin In and Pelvic Pinch).
4. Keep your head erect and take a deep breath.
5. Push the OsteoBall firmly against the back of your head. As you exhale, feel your neck muscles tighten and slowly count out loud "Push-1 to Push-5."
6. Relax and lower the ball in front of you and count out loud "1001 to 1005."
7. Repeat one more time.

ALTERNATIVE POSTURE TONER #3

1. Place the OsteoBall against the wall about "head hight."
2. Face away from the wall.
3. Assume the Starting Position (Chin In and Pelvic Pinch).
4. Keep your head erect and take in a deep breath.
5. Push the OsteoBall firmly with the back of your head with increasing force. Do not arch your back.
6. As you exhale, continue pushing as you slowly count out loud "Push-1 to Push-5."
7. Feel the muscles in your neck tighten.
8. Relax and lower the ball. Count out loud "1001 to 1005."
9. Repeat one more time.

UPPER BACK STRENGTHENER

1. Stand with your feet about 12 inches apart and knees slightly bent with OsteoBall in hand.
2. Place the OsteoBall against the wall behind you at hip level.
3. Place your hands behind you with the palms of your hands flat on the ball.
4. While keeping the pressure on the ball with your hands, step approximately one to two inches forward.
5. Assume the Starting Position (Chin In and Pelvic Pinch).
6. Keep your head erect and take in a deep breath.
7. PUSH the ball with your hands and arms with increasing force. (Do not lean your body into the ball.) Your buttocks should not touch the ball.
8. As you push the Ball with increasing force, exhale and slowly count out loud "Push-1 to Push-5." Feel your upper back and arms tighten.
9. While keeping your hands in place, now lean against the ball to relax and count out loud "1001 to 1005."
10. Repeat one more time.

ANKLE STRENGTHENER

1. Use a chair without arms and with good back support. Place the OsteoBall about 2 or 3 feet from chair.
2. Sit upright against the back of the chair with your feet flat on the floor next to the OsteoBall. Bring your chin in slightly.
3. Do a pelvic pinch (gently squeeze your buttocks) to stabilize your back.
4. Slide your right foot under the ball until the ball gently presses against your right lower leg.
5. Place your left foot on top of the ball with your left knee slightly bent.
6. Keep your head erect and take in a deep breath.
7. While keeping your right heel on the floor, push your right foot UP and push your left toes DOWN into the ball. As you push the ball with increasing force, feel the muscles tightening on the front of your right thigh and lower leg and on the back of your left calf.
8. Exhale and slowly count out loud "Push-1 to Push-5."
9. Relax both feet and count out loud "1001 to 1005."
10. Repeat one more time.
11. Repeat two times with your left foot under the ball.

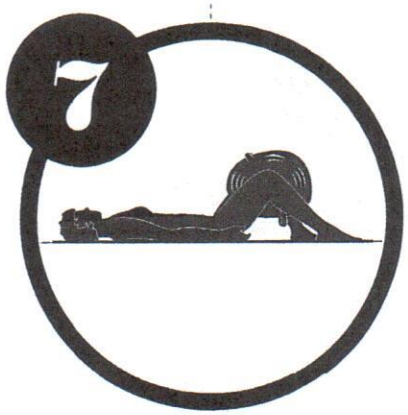
Stop here if you're doing your exercises daily and tomorrow start with #6 through #10.

ABDOMINAL TONER

1. With the OsteoBall in hand, lie on the floor (or on a firm bed) on your back with your knees bent and your feet flat on the floor or bed. Place a small pillow behind your neck and head for comfort.*
2. Place the OsteoBall on your lap.
3. Bring your chin in slightly.
4. Cross your arms and place your elbows and fists firmly against the ball.
5. Do a pelvic pinch (gently squeeze your buttocks) to stabilize your back.
6. Bring both of your knees up against the ball.
7. Take in a deep breath.
8. Slowly and steadily squeeze the ball between your forearms and your thighs with increasing force as you slowly count out loud "Push-1 to Push-5." Feel a tightening in your upper thigh, upper arm, and abdominals.
9. Relax your thighs by lowering one leg at a time to the floor and count out loud "1001 to 1005."
10. Repeat one more time.

**Some people prefer to use a chair to rest their feet on and keep their back flat.*

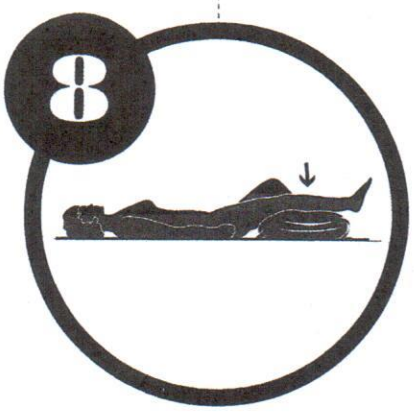
INNER THIGH TONER



Suggestion: *Continue from exercise #6 while still lying on your back.*

1. With OsteoBall in hand lie on the floor (or on a firm bed) on your back with your knees bent and your feet flat on the floor or bed. Place a small pillow behind your head and neck for added comfort.
2. Place the OsteoBall between your knees.
3. Assume the starting position. (Chin In and Pelvic Pinch).
4. Take a deep breath.
5. Slowly and steadily squeeze the ball firmly between your knees as you exhale counting out loud "Push-1 to Push-5." Feel a tightening of the muscles of your inner thighs.
6. Relax your knees and count out loud "1001 to 1005."
7. Repeat one more time.

QUADRICEPS STRENGTHENER



Suggestion: *Continue from exercise #7 while still lying down.*

1. With OsteoBall in hand, lie on the floor (or on a firm bed) on your back with both knees bent and feet flat on the floor or bed. Place a small pillow behind your head and neck for added comfort.
2. Place the OsteoBall beneath your right knee. Straighten your right leg — with your foot relaxed.
3. Assume starting position (Chin In and Pelvic Pinch).
4. Take a deep breath.
5. Push the back of your right knee firmly down against the OsteoBall, with increasing force as you slowly exhale count out loud "Push-1 to Push-5." Feel a tightening of your quadriceps muscles.*
6. Relax your right knee and count out loud "1001 to 1005."
7. Repeat one more time.
8. Repeat 2 times on the left side.

**Keep your hip as close to the floor or bed as possible as you push down with your knee. Some people place their hand on their hip to remind them to keep the hip down.*

HAMSTRING STRENGTHENER

***Suggestion:** Continue from exercise #8 while still lying down.*

1. With OsteoBall at your side, lie on the floor (or on a firm bed) on your back with both knees bent and feet flat on the floor or bed. Place a small pillow behind your head and neck.
2. Grab the right handle of the OsteoBall with your right hand. Place the OsteoBall under your right leg and grasp the other handle of the OsteoBall with your left hand. Straighten your left leg.
3. Assume the starting position. (Chin In and Pelvic Pinch).
4. Take a deep breath.
5. Hold the ball firmly as you squeeze the OsteoBall with your right heel.
6. Exhale as you slowly count out loud "Push-1 to Push-5." Feel a tightening of the muscles in your right thigh and lower leg.
7. Relax your knee and count out loud "1001 to 1005."
8. Repeat one more time.
9. Repeat 2 times on the left side.

OUTER THIGH TONER

1. Sit on the floor or firm bed with both knees bent and with the OsteoBall nearby. Place the OsteoBall between your feet.
2. Place the right handle of the OsteoBall under the arch of your right foot and the left handle just above your left ankle.
3. Bring your chin in slightly.
4. Do a pelvic pinch (gently squeeze your buttocks) to stabilize your back.
5. Lie back with your head on the pillow. Keep both knees bent.
6. As you straighten your right leg, raise your right heel slightly off the floor. Steadily pull your right leg away from your body* and slowly exhale counting out loud "Push-1 to Push-5." Feel a tightening on the outer side of your right thigh.
7. Relax — and place your feet back on the floor or bed as you slowly count out loud "1001 to 1005."
8. Repeat one more time.
9. Repeat 2 times on the left side.

**Keep your hip as close to the floor or bed as possible. Remember to keep your foot in the handle turned slightly inward.*

cult to do if you have any chronic pain — and most of us do, at least at times. We need an exercise program we can keep doing even when we have a sore shoulder, pains in our knees, and an achy back. That's why I personally like the idea of specific resistance training.

The OsteoBall

Some time ago, I talked with rheumatologist Robert Swezey, MD. Dr. Swezey had been looking for a way to increase range of motion as well as build bone density in his arthritis patients. What he discovered has great implications not only for people with arthritis, but folks who have had heart attacks or who have hypertension.

Dr. Swezey found that when you stress your muscles at the place where they attach to the bone, your body builds denser bones as well as strengthens your muscles. Let me give you an example. If you want to build strong biceps, you can do a "biceps curl" and strengthen your upper arm. What you're doing is stressing your biceps in the middle of your upper arm. But Dr. Swezey found that if you stress the biceps at its attachments — to your elbow and shoulder — then you encourage your bone to grow at those sites. So, which would you prefer? Do you want a big bulging muscle in the middle of your upper arm, or would you rather have nice muscle tone and stronger bones?

Dr. Swezey went through the body and came up with exercises that build bone not only in the legs and arms, but the hips and spine as well. He found that the easiest way to do these exercises was with a partially inflated ball with handles. The ball could be used with very specific exercises to increase a person's range of motion as well as strengthen muscles. And the end result was denser bones.

So Dr. Swezey tested his theory and pub-

lished his findings in the *Journal of Rheumatology 2000*. Then he wrote out the exercises he found worked and had a ball with handles manufactured that he called the OsteoBall. By the way, Dr. Swezey also found that resistance exercises may be even better than weight-bearing exercises such as walking to prevent osteoporosis.

But I think what I like most about the specific resistance exercises Dr. Swezey has come up with is that they can not only reverse osteoporosis, but reverse frailty. You can improve your bone density. And you can strengthen your muscles throughout your body even if you have physical limitations that prevent you from walking, running, or using heavy exercise equipment.

Oh, yes, and the rest of the good news is that Dr. Swezey's program takes only 10 minutes a day (or 20 minutes every other day). For more information on how to purchase an OsteoBall, please call 800-791-3395.

Get Hip to Prevent Fractures

Let's face it. Broken bones just aren't hip. In fact, hip fractures, which affect 17.5 percent of white North American women over 50, and six percent of similarly aged white North American men, are not only inconvenient; they also kill, disable, and substantially increase medical costs. Studies have found that up to 20 percent of those who suffer a hip fracture die, and at least half of those who survive are less able to perform activities of daily living for at least a year. In other words, these fractures — usually the result of osteoporosis — carry a high price. To avoid paying that price, consumers need to take action to prevent hip fractures. But how?

A study reported in the *New England Journal of Medicine* sheds some light on the subject. The study examined potential risk factors for hip fracture in 9,516 white women 65 or older, confirming previously discovered factors, identifying several new ones, and disproving others. This information can be used to identify people at risk for hip fracture, inform them of that risk and help them reduce it. It can also be used to help people in general reduce their risk of fracturing a hip.

According to the study, the risk factors for hip fracture include:

Maternal history: Women whose mothers had a hip fracture had twice the risk of having a hip fracture than women whose mothers did not. The risk increased to 2.7 percent if the mother fractured her hip before age 80.

Lack of weight-bearing exercise: Women who spent four hours per day or less on their feet had twice the risk of women who spent more than four hours per day on their feet. And women who walked regularly for exercise had a 30 percent lower risk of hip fracture than those who did not walk regularly. And their risk decreased as the distance they walked increased.

Caffeine intake: As caffeine intake increased, so did the risk of hip fracture.

Other factors found to increase risk are:

- A history of hyperthyroidism.
- Use of long-acting benzodiazepines (tranquilizers) or anticonvulsant drugs.
- Poor depth perception.
- Poor contrast sensitivity (ability to distinguish visual contrast).
- A fast resting pulse.
- The inability to rise from a chair without using one's arms.
- A history of fractures after age 50.

On the positive side, several factors previously suspected of increasing the risk were found not to increase risk. They include: hair color, ethnic ancestry, a maternal history of fractures other than hip fractures, the timing of menopause, past smoking status, cataracts, the use of short-acting benzodiazepines, and a low dietary intake of calcium.

The study found that women with multiple risk factors, which may reduce bone density or increase the risk of falls and those with low bone density itself, are at high risk of fracturing a hip and should focus on preventive efforts. An accompanying editorial said these findings may also be helpful in designing strategies to prevent hip fractures in general.

For example, the study adds to the evidence that customary physical inactivity among elderly women increases the risk for hip fractures. The editorial said, "Women who are able should be advised to walk for exercise or spend four hours

The 5 Most Important Nutrients for Bone Support

- Calcium — 500 mg daily
- Magnesium — 500-1,000 mg or more daily (bowel tolerance)
- Vitamin D — 500 mg or more daily
- Vitamin K — 150 mcg daily (boosts calcium's effectiveness) Plentiful in dark green vegetables
- Strontium (250 mg or more daily)

a day on their feet, and that if this practice is followed, the incidence of hip fracture in the general population should be reduced. In addition, there will be additional cardiovascular and psychological benefits, and the intervention is culturally acceptable as well as relatively inexpensive and safe."

The study also supports the finding that modifying the risk factors for falls may reduce the risk of hip fracture. Medications that increase the risk of falling should be curtailed; exercise programs, which may improve neuromuscular coordination, should be undertaken; and improvements to the home should be made, including the elimination of hazards such as loose rugs and the installation of structures such as grab bars and stair rails, which help prevent falls.

Other methods for reducing hip fractures include: Increasing physical activity, avoiding long-acting sedative-hypnotic drugs; reducing caffeine intake; quitting smoking; maintaining bone density; treating and preventing impaired vision, particularly conditions like cataracts, diabetic retinopathy, and glaucoma, which impair depth perception and contrast sensitivity.

Hip Fracture Risk-Reduction Checklist

- Increase your level of physical activity.
- Walk for exercise.
- Spend at least four hours a day on your feet.
- Engage in exercise that may improve your coordination and balance, like yoga and the OsteoBall.
- Decrease your caffeine intake.
- Avoid long-acting sedative or hypnotic drugs.
- Quit smoking.
- Get regular eye exams and treat visual problems.
- Secure loose rugs, electrical wires, and other falling hazards.
- Use light-colored carpet, paint, or other finish on stairs to increase depth perception visibility.
- At night, use a small, plug-in night-light to light up path from bed to bathroom.
- Install grab bars, stair rails, and other structures that can help prevent falls.

To Prevent Fractures, Prevent Falls

For persons with reasonably good health, a good diet (emphasizing magnesium over calcium), a moderate amount of exercise, and a healthy lifestyle are the best ways to keep bones healthy.

But what if your general and/or bone health is declining, putting you at a greater risk of bone fracture?

Fortunately, there are additional steps you can take to help prevent fractures. Even those of

Why Women With Asthma Lose More Bone Density

Is there a connection between osteoporosis and asthma? There may be if you use inhalers with steroids, says a study published in *The Lancet*. Investigators studied 200 women from the ages of 20 to 40 who used steroid-based inhalers for an average of six years. The participants had mild asthma. Researchers estimated that the most rapid bone loss occurred in the first one to two years of using steroid inhalers. In fact, bone loss was five times greater than someone smoking a pack of cigarettes daily for 10 years!

While the amount of bone lost was small, this preliminary study is saying that someone using 200 mcg of steroids in their inhaler for one year will have minimal bone loss. Someone using 2,000 mcg of steroids a day for seven years would have measurable bone loss (1 ST, or standard deviation). Over a period of decades, the use of high doses of steroids could impact on bone density. If you're using inhalers, you may want to check with your doctor to see how much you're taking and how much you really need.

Be aware that at times asthma may originate from emotional disturbances or from food sensitivities. Foods containing histamines (wine, beer, cheeses, fish, and pickled cabbage) can cause asthmatic incidents. Try locating the food or foods that trigger your symptoms. One study, reported by Melvyn R. Werbach, MD, in his database, *Nutritional Influences on Illness,* found that nearly 60 percent of the patients with food intolerances and asthma had considerable improvement after just one month of eliminating these foods. Explore every possible cause of your asthma that you can. Finding the cause could help get away from steroids all together some time in the future. Don't, however, stop using any medication without consulting your physician.

Werbach, Melvyn R., MD. *Nutritional Influences on Illness,* Third Line Press, Tarzana, CA, 1998.

Wong, Conroy A., et al. "Inhaled corticosteroid use and bone-mineral density in patients with asthma," The Lancet, Vol 355, April 22, 2000.

us with excellent bone health can benefit from reading this report — because most women eventually become caretakers of someone who is at increased risk of fracture.

Make Balance a Top Priority

One of the most critical considerations for such persons is balance. After all, the better your balance, the less likely you are to fall and, in turn, suffer a fracture. Other key factors that affect balance and the risk of falling are strength, mental alertness, and vision.

A general fitness and exercise program can work wonders for balance and strength, which are closely related. Increased strength can improve balance. And practically everyone can increase his or her strength and overall fitness. Even assisted-care settings often offer physical fitness programs. Limited-ability fitness classes and video exercise tapes can also be helpful. The bottom line here is that fitness improvements can help a person avoid a fall, and even speed recovery if a fracture does occur (the better your health, the faster you heal).

An exercise program can also improve mental alertness, by improving circulation, metabolism, oxygen to the brain, etc. Many medications, on the other hand, have side effects that dull alertness. Work with your doctor to possibly eliminate or reduce dosages of any medication that has this effect. Also look into doing the same with other medications that might make you feel dizzy, weak, cause blurred vision, or any other side effect that might impair your ability to walk.

To maximize vision, get your eyes checked regularly and update glasses prescriptions as needed. When you get a new pair of glasses, take it extra easy until you get used to the new lenses. If glasses are interfering with your depth perception as you walk, work with your ophthalmologist or optician to get the problem resolved. And if your depth perception is better without your glasses, remember to remove them when walking on uneven surfaces or going up or down steps.

Fall-Proof Yourself and Your Home

There are also a number of ways, beyond fitness improvements, to fall-proof yourself. For starters, wear shoes with soles that have a good, gripping tread.

If you're already frail and unstable, use a cane or walker at all times. A surprising number of seniors are reluctant to do so. Yes, walking aids can be bothersome, but a severe hip fracture can be life threatening, and the worse your health, the more so.

Last, don't leave home without reminding yourself to be extra careful every step of the way in unfamiliar places — especially on steps and stairs, and when getting into and out of cars, busses, trains, and planes. A patient of mine recently fell and broke her hip while getting off an airplane. According to the airlines, such a scenario isn't all that uncommon. If you're on a long trip, take periodic brief walks if possible or do some in-seat exercises to make sure your legs are warmed up and ready to walk when it's time. Then proceed slowly with extra care and caution. Finally, don't hesitate to ask for wheelchair or other assistance. After all, everyone wants you to have a safe trip.

Just as important as fall-proofing yourself is fall-proofing your home, by making changes that would decrease your risk of falling. Make sure walking surfaces (inside and out) are level, and carpets and rugs are secured in their place. All steps and stairwells should be well lit, plus have side rails to hold onto when ascending and descending. Outside steps and smooth walkways that get wet may need abrasive strips to provide more secure footing. The path from your bed to the bathroom should be well lit and free of clutter and other objects on which you might trip.

In addition, consider using handicap aids in your bathroom. These can include raised toilet seats, sturdy grab-bars beside the toilet, and in all bath and shower stalls. Stall and bathtub bottoms should also have adhesive stripping or a large, top quality bath mat. Also consider using a chair or stool in the bath and shower and at the sink.

It's Never Too Late!

A six-month study of two dozen women over the age of 75 (the average age was 79), reports that exercising an hour a day twice a week can improve balance, other muscle coordination, and muscle strength. The exercise included warm-up, light aerobics, and calisthenics.

Loss of balance as we age is one of the most predictive risks for falls and broken bones. While more frequent exercise could improve your heart, preventing falls and broken hips ranks high on our "to do" list. Consider starting before you're 75! Join a gym if you're not disciplined, or buy a videotape or two for bi-weekly workouts.