

Thinning bones. Brittle bones. Fragile bones. Osteoporosis is a silent disease. There are no outward signs or pain- until you break a bone. Anyone can get osteoporosis but some people are more likely than others to get it.

You are at risk for osteoporosis if you:

- are a woman**
 - While 80% of the people with osteoporosis are women, 20% are men. That means 8 million American women and 2 million American men have osteoporosis.
- are post-menopausal**
 - Women who are past menopause have lower estrogen levels. Estrogen helps protect bones. You lose bone strength when your estrogen levels drop.
- are older**
 - For both men and women, getting older means weaker bones.
 - Most of us reach our highest bone strength by the age of 30. After we get into our late 40's, our bones start to lose their strength. How fast you lose bone strength is different from person to person. The faster you lose bone density, the more likely you are to get osteoporosis.
- have a close family member with osteoporosis**
- have a small body size**
 - Osteoporosis is one of the few diseases where being thin actually makes you more likely to have the disease!
- are taking certain medications**
 - Prednisone and other "corticosteroids", some anti-seizure medicines, some diabetes medicines, and excessive thyroid medication can weaken your bones.
- don't get enough calcium & vitamin D in your diet & in your supplements**
 - Calcium & vitamin D will help younger people build bone strength. Once you get past your 30's, the right amounts of calcium and vitamin D will slow down the bone loss that comes with aging. They are usually not enough by themselves to stop bone loss.
- don't get enough exercise**
 - Exercises that put some stress on the bones – like walking – help to keep bones healthy. Just like calcium and vitamin D, exercise helps build bones when we are younger. But as we get past our 30's, exercise slows down bone loss.
- drink too much alcohol**
 - If you drink alcohol in moderation, there is no need to quit for your bone health. In fact, some research shows that drinking small amounts of alcohol (one drink on average a day for women, two for men) may actually be good for the bones. But, if you do not drink at all, don't start! The dangers of drinking too much are too great!
- are or were a smoker**

For more information on osteoporosis and the UAB Osteoporosis Clinic go to:
[UAB Tone Your Bones website at www.ToneYourBones.org](http://www.ToneYourBones.org)

Your Bone Density Test

The DXA (pronounced “Deksa”) scan measures how much bone you have in certain areas of the body – usually the hip and the spine. Then it compares your bone density to healthy bone density.

Total Bone Strength = Bone Density + Bone Quality

The DXA measures bone density.

If your diagnosis is:

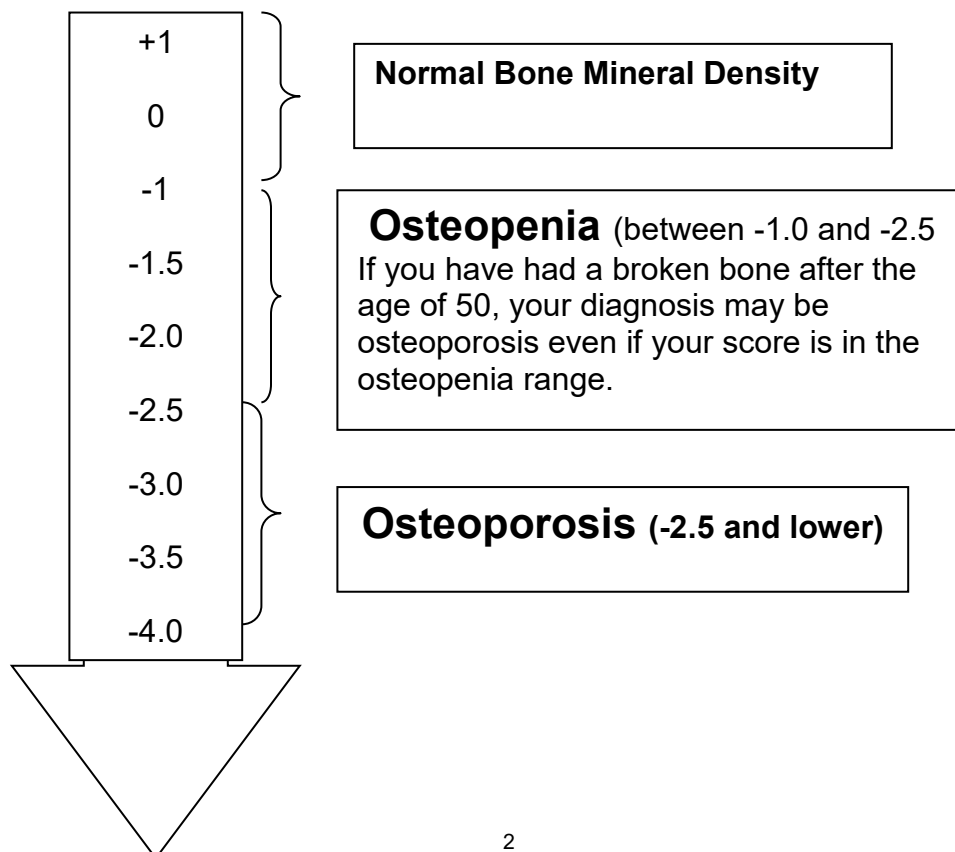
Normal bone density: your bones are within the healthy range and you have a low chance of breaking a bone under normal stress.

Osteopenia: your bone density is below the healthy, normal range and you have a slightly higher chance of breaking a bone than people with normal bone density. Think of osteopenia as pre-osteoporosis.

Osteoporosis: your bone density is below normal and you have a significantly higher chance of breaking a bone than people with normal bone density or people with osteopenia.

Severe Osteoporosis: you have already broken a because of low bone density.

What your T-score means:



Bone Building Meds

If you have osteoporosis, there are many medications you can take to make your bones stronger and lower your chances of breaking a bone. Not all medicines work the same in all people. You need to talk with your doctor about whether you need a bone medicine right now and which ones may be good options for you.

Bone building medications that are for post-menopausal women only:

- Estrogen or Hormone Replacement Therapy
 - Types and doses vary
- Evista (Raloxifene)
 - Daily 60 mg tablet
- Fosteum (a “medical food” that comes from soybeans)
 - Twice daily 27 mg tablet

Bone Building Medications that both men & women can take:

- **Bisphosphonates (Fosamax, Actonel, Boniva, Reclast):**
 - These build bone up to 2-9% over a 2-year period
 - Reduce spine and hip fractures by about 50%
 - The most common side effect with the tablets is stomach upset (10% of patients).
 - ◆ Alendronate (Fosamax, Binosto, generic alendronate)
 - Weekly 70 mg tablet for treatment
 - Weekly 35 mg tablet for prevention
 - ◆ Risedronate (Actonel, Atelvia, generic risedronate)
 - Weekly 35 mg tablet
 - Monthly 150 mg tablet
 - ◆ Ibandronate (Boniva, generic ibandronate)
 - Monthly 150 mg tablet
 - I.V. once every three months
 - ◆ Zoledronic Acid (Reclast)
 - Infusion once a year (no risk of stomach upset)
- **Teriparatide (Forteo, 20 micrograms)**
 - Increases bone density up to 13-14%.
 - Lowers the chances of breaking a bone in the spine by about 65% and other types of broken bones by about 53%.
 - Injection you give to yourself once a day for 1 1/2 to 2 years
- **Abaloparatide (Tymlos , 80 micrograms)**
 - Increases bone density up to 9.2% after 18 months.
 - Lowers the chances of breaking a bone in the spine by about 86% and other types of broken bones by about 43%.
 - Injection you give to yourself once a day for 1 1/2 to 2 years

- **Denosamab (Prolia, 60 mg)**
 - Builds bone up to about 6%
 - Lowers the chances of breaking a bone in the spine by about 68%.
 - Lowers the chances of breaking a bone in the hip by about 40%
 - Injection given in the skin by a health professional every 6 month

How the Medications Work:

Most of the medications for osteoporosis work by slowing down your bone losses so that your own bone building cells can get caught up and increase your bone density. Estrogen, Evista, Fosteum, the bisphosphonates, and micalcin all work in this way:

- Your bones have two types of cells that are always at work: *osteoblasts* which build bone and *osteoclasts* which break down bone. Think about your bones as a savings account with bone constantly being deposited and withdrawn.
- As we age, the bone builders slow down - they're still working, they're just not building as much bone as they used to.
- Also as we age, the bone breakdown cells speed up - working harder and breaking down more bone than ever before.
- Since the bone building cells can't quite keep up, we end up losing more bone than we can build. So, the balance in your bone bank goes down.
- Some medications for osteoporosis slow down the bone breakdown cells so that your own bone builders can catch up and increase the bone density or bone strength. In other words, these medication change your bone balance so that you can actually get some of your lost bone back.

Two medications, Forteo and Tymlos, build bone by making the bone building cells work harder.

So, the overall result of taking a medication for osteoporosis should be to increase your bone density. You may hear these types of medications called "anti-resorptive medications".

It is important to discuss your medication options with your osteoporosis specialist and for you to play a role in deciding which medication you will try. Everyone responds to the medication differently - some building more bone than others. Your physician should follow your progress and let you know if you are increasing your bone density over the years. You should always call your physician if you have any side effects that you think may be caused by your medications.



Osteoporosis Medications

Estrogen Replacement Therapy (ERT) and Hormone Replacement Therapy (HRT)

Pros:

- Can increase bone density in both the hip and the spine and may reduce fractures in post menopausal women.
- Easily taken in pill form or skin patch
- Can be effective at building bone density even if started later in life
- Relieves menopausal symptoms such as hot flashes, difficulty sleeping, dry skin
- *May* have a beneficial effect heart health in some women by lowering cholesterol
- Some studies show it *may* help maintain thought function
- Includes medications like Premarin and Prempro

Cons:

- Some studies indicate that there may be a relationship between HRT/ERT and breast cancer
- Some women experience nausea, bloating, breast tenderness and high blood pressure
- Women at risk for *Deep Vein Thrombosis* (blood clots in the lower legs) should not take HRT/ERT

Evista (Raloxifene)

Pros:

- Evista is an “estrogen imitator” but is not a hormone. It acts like estrogen in the bones by making the bones stronger but does not act like estrogen in the breast, so it does not increase the risk of breast cancer. In fact, it actually lowers the risk of one type of breast cancer.
- Approved for both the treatment and prevention of osteoporosis
- Evista increases bone density at both the hip and the spine and lowers your chances of breaking a bone in your spine (called “vertebral fractures”).
- Evista lowers your risk of the most common type of breast cancer— “invasive” breast cancer.

Cons:

- In some women, Evista may increase hot flashes (usually women who are still in menopause).
- Women at risk for *Deep Vein Thrombosis* (blood clots in the lower legs) should not take Evista.
- If you are all ready at risk for heart disease, Evista could increase your risk of dying from a stroke.



Osteoporosis Medications

Fosteum (Genistein)

Fosteum is one of the newest options for women with osteoporosis. Fosteum is not really a drug at all but a “medical food”. It is called a medical food because it comes from soybeans, however, you still need a prescription from a medical doctor to get Fosteum. Soybeans contain something called “genistein” which is a natural plant estrogen. While many researchers had hoped that eating and drinking soy foods like tofu and soy milk would help make bones stronger, you would have to eat much more than you possibly could in a day to get a good bone building effect. So, the makers of Fosteum simply took the genistein out of the bean and put it into tablet form to get the dose needed for bone building. Genistein is on the U.S. Food and Drug Administration’s “generally regarded as safe” (GRAS) list.


Pros:

- Fosteum can increase bone density in the hip and the spine in post-menopausal women with osteopenia and osteoporosis.
- You can take Fosteum with or without food. You do not need to worry about any foods interfering with the absorption of Fosteum.
- Fosteum can lower the number and severity of your hot flashes if you are having hot flashes.

Cons:

- You should not take Fosteum if you have had cancer of the breast or other reproductive organs such as the uterus or ovaries.
- While Fosteum can increase bone density, the research that has been done so far did not look at whether it actually lowers your chances of breaking a bone. So right now, we cannot say that Fosteum lowers fracture risk. You may see research in the future that looks at Fosteum’s ability to lower your chances of breaking a bone.
- Researchers have not studied Fosteum and breast cancer. So we do not know how it affects your chances of getting breast cancer. However, researchers did study changes in breast tissue and the lining of uterus in women who took Fosteum and did not see any changes in the thickness of the lining of the uterus or the density of the breast tissue.
- Women who took Fosteum rarely had side effects but those who did experienced stomach upset, vomiting, constipation, and heartburn. If you have any of these side effects after you start taking Fosteum, try taking it with food.

How to take Fosteum: Take one Fosteum tablet twice daily approximately 12 hours apart. Each Fosteum tablet contains 27 mg of genistein, 200 IU’s of vitamin D, and 20 mg of zinc chelazome.



Osteoporosis Medications

The Bisphosphonates: Fosamax, Actonel, Boniva, Reclast

The bisphosphonates are a popular family of medications used to treat osteoporosis. The following drugs are all in the bisphosphonate family: Fosamax, Actonel, Boniva, and Reclast. See detailed descriptions of each of these on the following pages.

These medications are all very similar with some differences. The bisphosphonates generally give patients the same amount of bone building—so one is not better than the other in building bone density than another. However, some people have fewer side effects with one than another.

How to take your bisphosphonate:

If you are taking a bisphosphonate in tablet form, then you should take it in a very specific way to make sure that it is absorbed well and to lower your chances of having stomach upset. Stomach upset is the most common side effect when these drugs are taken by mouth. About 10% of the people who take them have stomach upset.

Bisphosphonates should be taken in the following way to assure absorption and lower the chances of stomach upset:

- Take your bisphosphonate first thing in the morning when your stomach is empty
- Swallow the tablet whole with 8 ounces of plain water.
- Do not eat, drink, or take any other medications or supplements for 30 minutes after you take Fosamax and weekly Actonel and for 60 minutes after you take Boniva or monthly Actonel.
- Stay upright (do not lie back down) for 30 minutes after you take Fosamax or weekly Actonel and for 60 minutes after you take Boniva or monthly Actonel.
- If you forget to take your Fosamax or weekly Actonel on your usual day, just take it the next morning and then continue on your usual schedule.
- If you forget to take your Boniva or monthly Actonel and your usual day is 7 or more days away, just take it the next morning and then continue on your usual schedule.

Your doctor may prescribe intravenous (I.V.—meaning it goes directly into the vein) Boniva or Reclast (which is an infusion—also going directly into a vein) if you have side effects, such as stomach upset, with the bisphosphonates that you take by mouth.



Osteoporosis Medications

Fosamax (Alendronate)

Pros:

- Fosamax can increase bone density in both the spine, the hip, and other bones too.
- Fosamax can lower your chances of breaking a bone in both the spine and the hip.
- Both men and women can take Fosamax to treat their osteopenia or osteoporosis.
- You can take Fosamax in a 5 mg daily prevention dose, a 10 mg daily treatment dose, or a 70 mg weekly dose.

Cons:

- Fosamax may cause stomach upset and irritation to the food pipe (esophagus) - should not be taken by patients with certain stomach and food pipe disorders.

How to take Fosamax:

- Patients need to take it first thing in the morning on an empty stomach with an 8-ounce glass of water and then wait thirty minutes before eating or drinking anything else besides plain water. People taking this drug should also remain in an upright position during the 30 minutes (sitting or standing). Taking Fosamax this way helps absorption and also lowers your chances of stomach & esophagus (food pipe) irritation.

Actonel (Risedronate)

Pros:

- Actonel can increase bone density in both the spine and the hip.
- Actonel lowers your chances of breaking a bone in both the spine and the hip.
- Both men and women can take Actonel.
- You can take Actonel in a daily 5 mg dose for both prevention and treatment, a 35 mg weekly treatment dose, and a 150 mg monthly treatment dose.

Cons:

- Actonel may cause stomach upset and irritation to the esophagus (food pipe) - should not be taken by patients with certain stomach and food pipe disorders.

How to take Actonel:

- Patients need to take it first thing in the morning on an empty stomach with an 8-ounce glass of water and then wait thirty minutes before eating or drinking anything else besides plain water. People taking this drug should also remain in an upright position during the 30 minutes (sitting or standing) for the weekly dose or 60 minutes for the monthly dose. Taking Actonel this way helps absorption and also lowers your chances of stomach & esophagus (food pipe) irritation.



Osteoporosis Medications

Boniva (Ibandronate)

Boniva is in the “bisphosphonate” family and is very similar to both Fosamax and Actonel - with a few differences.

- The Boniva dose is 150 mg *per month*.
- You should take your Boniva first thing in the morning on an empty stomach with an 8-ounce glass of water and then wait 60 minutes before eating or drinking. People taking this drug should also stay upright position during the 60 minutes (sitting or standing) - this helps absorption and prevention of stomach & esophagus (food pipe) upset.
- Boniva can also be given as an I.V. (intravenously—an injection directly in the vein). This works well for people who cannot take a bisphosphonate medication because of stomach upset. The I.V. lasts just a few minutes and is given once every three months.

Reclast (Zoledronic Acid)

Reclast is the newest medication in the bisphosphonate family. Reclast is not a tablet but an I.V. injection that is give over a 15 minute time period once a year.

- Reclast can increase bone density and lowers your chances of breaking a bone in the hip, spine, and other bones as well.
- After people take Reclast, they may have flu-like symptoms, pain in muscles and joints, feel tired, have water retention and chills.
- For most people, these symptoms stopped after 3 days. For some people, the symptoms did not stop until 7 to 14 days after the injection. Taking a Tylenol can lower the likelihood that you will have the flu-like symptoms.



Osteoporosis Medications

Forteo (Parathyroid Hormone)

Forteo is the brand name for PTH or parathyroid hormone. Our bodies produce PTH continuously throughout the day. Many studies have shown that when parathyroid hormone is given in a single dose once a day, bone density increases dramatically.

Because the stomach would destroy PTH before it enters bloodstream if you took it as a pill, PTH is taken as an injection. If you are interested in taking Forteo, discuss with your physician if it is the right drug for you. It is often the drug of choice for people with severe osteoporosis (people who have osteoporosis and have already experienced fractures).

Pros:

- Forteo is a drug that works by increasing bone building – it actually increases the activity of the bone building cells.
- Forteo can increase your bone density to higher levels than other medications.
- Forteo can lower your risk of breaking a bone quickly—often within 6 months.
- Forteo has few side effects and does not interact with food or other medications.

Cons:

- Most common side effects: dizziness, leg cramps
- Forteo comes with a “black box warning” because it increased the risk of bone cancer (osteosarcoma) in laboratory rats in research studies. However, when researchers studied Forteo in primates (monkeys), they did not find any increased risk of bone cancer.
- None of the people in the human studies got bone cancer. People with naturally high PTH levels do not have a higher risk of bone cancer, however, some patients should not take Forteo for specific reasons that your doctor will discuss with you.
- Forteo is an injection – but the injection is in the form of an easy-to-use pen where you simply dial up the dose and push a button.

Forteo tips:

- At first, sit down when taking Forteo to make sure you do not experience dizziness
- You can take Forteo any time – with or without food.
 - Try to take it at the same time every day
- Don't use your Forteo pen if it looks cloudy or colored
- Don't use a Forteo pen that is past the expiration date
- Keep Forteo refrigerated
- Be sure your doctor or a patient educator teaches you how to use your Forteo pen step by step.

Calcium and vitamin D are vital for better bone health. Most adults need **1000 to 1500 mg (milligrams) of calcium each day**. Most need **800 to 1000 IU's (International Units) of vitamin D** a day. You can get your daily calcium dose from foods, supplements, or a combination of the two. Taking a multivitamin and calcium plus D tablets to get their daily dose of D since few foods are high in vitamin D.

Where's the Calcium?

1 cup calcium-added orange juice = 350 mg
 1 c milk (any type) = 300 mg
 1 c calcium-added soy milk = 300 mg
 1 c of yogurt = 300 mg
 1 ounce of cheese = 200 mg
 1/2 c cooked collard greens = 180 mg
 1 ounce almonds = 80 mg
 1/2 c cooked broccoli = 40 mg



Nutrition Facts

8 servings per container	
Serving size	2/3 cup (55g)
Amount per serving	
Calories	230
	% Daily Value*
Total Fat 8g	10%
Saturated Fat 1g	5%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 160mg	7%
Total Carbohydrate 37g	13%
Dietary Fiber 4g	14%
Total Sugars 12g	
Includes 10g Added Sugars	20%
Protein 3g	
Vitamin D 2mcg	10%
Calcium 260mg	20%
Iron 8mg	45%
Potassium 235mg	6%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Read labels for calcium content:

- Always look at the serving size first. All of the numbers on the nutrition facts label are for that specific serving size. If you eat or drink two servings, double all of the numbers. If you eat or drink half a serving, than cut all of the numbers in half.
- Calcium is listed as milligrams (mg). Take a look at the foods and drinks you get throughout the day to see how close you get to 1200 to 1500 mg.
- Calcium is also listed as a percentage of your daily need. The daily need used on the label is 1300 mg. If you ate a serving of the food on the label pictured here, You'd get 20% (or 1/5) of your daily need for calcium.

Calcium Tips:

- Calcium supplements are a great way to get the calcium you need if you cannot get it from food.
- Be sure to take calcium carbonate supplements with food. Calcium citrate supplements can be taken with or without food.
- Spread your calcium dose over the course of the day—calcium is better absorbed in doses of less than 500 to 600 mg at a time. Be sure to count your calcium from foods as well!
- Always check the serving size first. The amounts of calcium and vitamin D you see listed is for the number of tablets defined as a serving.

Where's the D? There are not many foods that are good sources of vitamin D. Here are the best ways to get your 1000 to 2000 IU's a day:

- Multivitamin = 400 to 2000 IU's
- Most calcium supplements, 1 tablet = 200 to 500 IU's
- Vitamin D Supplements = 400 to 2000 IU's
- 1 cup of vitamin D fortified milk or fortified orange juice = 100 IU's

Vitamin D Dynamics

- Vitamin D helps you absorb your calcium so it can get to your bones.
- Experts recommend 1000 to 2000 IU's of Vitamin D from supplements a day. This dose of vitamin D should keep your blood levels in the normal range. If your blood levels of vitamin D are low, which can happen from years of deficiency, you may need to take a high dose prescription vitamin D tablet for several months.
- Food sources do not provide enough vitamin D for most people.
- The skin can make vitamin D from the sun. However, sunscreen, darker skin, and aging skin all lower the amount of vitamin D your skin can make from the sun.
- You don't have to worry about timing when you take vitamin D. Vitamin D is a fat soluble vitamin so it stays in your system over several weeks. You can take all of your vitamin D one time a day. If you miss your daily dose of vitamin D one day, you can just double up the next. You would NOT want to do this with calcium!
- Many calcium tablets have vitamin D in them. If your calcium tablet does not have vitamin D in it or if you get your calcium from foods, you can take an extra vitamin D tablet. However, you don't have to take your vitamin D at the same time as you take your calcium.
- There are two types of vitamin D. Vitamin D2 comes from plant sources. Vitamin D3 comes from animal sources and is what your body makes from the sun.
- Vitamin D 3 is a little more effective than vitamin D2 and is what you will usually find in over-the-counter supplements.

Dietary Sources of Vitamin D:

Food or Beverage	Serving Size	Vitamin D (IUs)
Cod Liver Oil	1 tablespoon	1,360
Swordfish	3 ounces	566
Salmon	3 ounces	447
Canned Tuna	3 ounces	154
Fortified Orange Juice	1 cup	137
Fortified Milk	1 cup	115 - 124
Sardines	2 whole	46
Egg Yolk	1 whole	25

Source: USDA 2011

Take Control of Your Health: 6 Steps to Prevent a Fall

Every 13 seconds, an older adult is seen in an emergency department for a fall-related injury.

Many falls are preventable.

Stay safe with these tips!

1

Find a good balance and exercise program

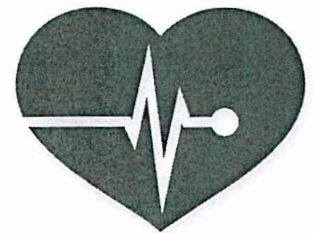
Look to build balance, strength, and flexibility. Contact your local Area Agency on Aging for referrals. Find a program you like and take a friend.



2

Talk to your health care provider

Ask for an assessment of your risk of falling. Share your history of recent falls.



3

Regularly review your medications with your doctor or pharmacist

Make sure side effects aren't increasing your risk of falling. Take medications only as prescribed.



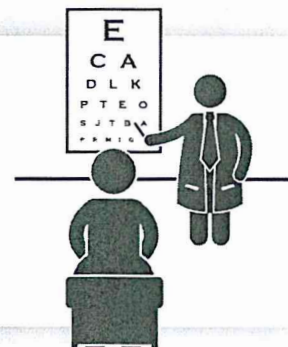
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Take Control of Your Health: 6 Steps to Prevent a Fall

4

Get your vision and hearing checked annually and update your eyeglasses

Your eyes and ears are key to keeping you on your feet.



5

Keep your home safe

Remove tripping hazards, increase lighting, make stairs safe, and install grab bars in key areas.



6

Talk to your family members

Enlist their support in taking simple steps to stay safe. Falls are not just a seniors' issue.



ncoa

National Council on Aging

To learn more, visit ncoa.org/FallsPrevention.

NATIONAL COUNCIL ON AGING

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