

OSTEOPOROSIS OVERVIEW

Osteoporosis is a common problem that causes bones to become abnormally thin, weakened, and easily broken (fractured). Women are at a higher risk for osteoporosis after menopause due to lower levels of estrogen, a female hormone that helps to maintain bone mass.

Fortunately, preventive treatments are available that can help to maintain or increase bone density. For those already affected by osteoporosis, prompt diagnosis of bone loss and assessment of fracture risk are essential because therapies are available that can slow further loss of bone or increase bone density.

This topic review discusses the therapies available for the prevention and treatment of osteoporosis. A separate topic discusses bone density testing.

OSTEOPOROSIS PREVENTION

Some of the most important treatments for preventing osteoporosis include diet, exercise, and stopping smoking.

Diet — An optimal diet for preventing or treating osteoporosis includes eating an adequate number of calories as well as calcium and vitamin D, which are essential in helping to maintain proper bone formation and density.

Calcium intake — Experts recommend that premenopausal women consume at least 1000 mg of calcium per day; this includes calcium in foods and drinks plus any calcium supplements. Postmenopausal women who do not take estrogen should consume 1200 to 1500 mg of calcium per day (total of diet plus supplements). However, you should not take more than 2000 mg calcium per day due to the possibility of side effects.

The main dietary sources of calcium include milk and other dairy products, such as cottage cheese, yogurt, or hard cheese, and green vegetables, such as spinach and broccoli. A rough method of estimating dietary calcium intake is to multiply the number of dairy servings consumed each day by 300 mg. One serving is 8 oz of milk or yogurt, 1 oz of hard cheese, or 16 oz of cottage cheese.

Calcium supplements (calcium carbonate or calcium citrate) may be suggested if you cannot get enough calcium in your diet. Calcium doses greater than 500 mg/day should be taken in divided doses (eg, once in morning and evening).

Vitamin D intake — Experts recommend that most people consume 800 International Units (IU) of vitamin D each day. This dose appears to reduce bone loss and fracture rate in older women when there is adequate calcium intake.

Milk is the primary dietary source of dietary vitamin D, containing approximately 100 IU per cup. Experts recommend vitamin D supplementation for all patients with osteoporosis whose intake of vitamin D is below 400 IU per day. This can be found in a daily multivitamin or a calcium/vitamin D supplement.

Alcohol, caffeine, and salt intake — A healthcare provider may recommend limiting the amount of alcohol you drink. Drinking alcohol excessively can increase the risk of fracture due to an increased risk of falling, poor nutrition, etc.

It is not clear if restricting caffeine or salt is helpful; these measures have not been proven to prevent bone loss in people who consume an adequate amount of calcium.

Exercise — Weight-bearing exercises can improve bone mass in premenopausal women and help to maintain bone density for women after menopause. Physical activity reduces the risk of hip fracture in older women as a result of increased muscle strength. Most experts recommend exercising for at least 30 minutes three times per week.

The benefits of exercise are quickly lost if you stop exercising. A regular, weight-bearing exercise regimen that you genuinely enjoy improves the chances of continuing to follow the routine over the long term.

Stop smoking — Stopping smoking is strongly recommended if you are at risk for osteoporosis because smoking cigarettes is known to speed bone loss. One study suggested that women who smoke one pack per day throughout adulthood have a 5 to 10 percent reduction in bone density by menopause, resulting in an increased risk of fracture.

Preventing falls — Repeated falling may significantly increase the risk of osteoporotic fractures in older adults. Taking measures to prevent falls can decrease the risk of fractures. Such measures may include the following:

- Remove loose rugs and electrical cords or any other loose items in your home that could lead to tripping, slipping, and falling.
- Ensure that there is adequate lighting in all areas inside and around the home, including stairwells and entrance ways.
- Avoid walking on ice, wet or polished floors, or other potentially slippery surfaces.

- Avoid walking in unfamiliar areas outside.

WHAT DOES BONE DENSITY TESTING DO AND WHY IS IT IMPORTANT?

People tend to think that bones are static and unchanging, but the truth is that bones are in constant flux. Cells in your body are busy destroying old bits of bone and replacing them with new bone all the time. Unfortunately, as people age, they often lose bone more quickly than they can replace it, so their bones can become porous and brittle.

If left unchecked, this bone loss can lead to a disorder called osteoporosis, which weakens bones so much that they can break with even the mildest impact. For people with osteoporosis, something as innocuous as tripping on a loose rug in the living room can spell disaster.

Each year in the US, osteoporosis leads to 1.5 million fractures, including:

- 700,000 fractures of the vertebrae, the bones in the spine,
- 300,000 hip fractures,
- 250,000 wrist fractures, and
- 250,000 fractures of other parts of the body.

Fractures of the spine and hip can lead to chronic pain, deformity, depression, disability, and even death. Plus, half the people who break a hip never regain the ability to walk without assistance and a quarter wind up needing long term care.

The problem is, osteoporosis does not cause any symptoms, so people do not usually know they have the condition until they break a bone unexpectedly. That's where bone density tests come in.

Bone density tests measure the minerals that are in a person's bones. They reveal, roughly speaking, how strong a bone is. Healthcare providers use these tests to both screen for and diagnose osteoporosis. The tests are important, because they can alert you to problems with your bones before you have a fracture.

If it turns out that you have osteoporosis or are at risk for it (known as low bone mass or osteopenia), you can take steps to prevent fractures.

WHO SHOULD GET BONE DENSITY TESTING?

Osteoporosis targets women much more often than men, and it becomes more common after menopause and with advancing age. As a result, healthcare providers recommend bone density testing for women who have been through menopause and are at least 65 years old. In addition, there are certain characteristics that put people at higher risk for fracture, so healthcare providers sometimes recommend testing in men or women younger than 65 who have one or more risk factors.

Risk factors for fracture — Factors that increase a person's risk of fracture and may lead to earlier bone density testing include:

- Cigarette smoking
- Long-term use of steroid (glucocorticoid) medications such as prednisone
- Low body weight (less than 127 lbs or 58 kg)
- Rheumatoid arthritis
- History of a non-traumatic or low trauma bone fracture in self or parents (eg, breaking a bone after falling from standing height or less)
- Excessive alcohol consumption (three or more servings a day)
- A disorder strongly associated with osteoporosis, such as diabetes, untreated hyperthyroidism, hyperparathyroidism, early menopause, chronic malnutrition or malabsorption, or chronic liver disease

WHICH TEST WILL I GET?

There are several different types of bone density tests. We use the Dual-energy x-ray absorptiometry (DXA).

Dual-energy x-ray absorptiometry (DXA) — Experts agree that the most useful and reliable bone density test is a specialized kind of x-ray called dual-energy x-ray absorptiometry, or DXA. DXA provides precise measurements of bone density at important bone sites (such as the spine, hip, and forearm) with minimal radiation.

We recommend DXA of the hip and spine because measurements at these sites are effective for predicting osteoporotic fracture at any site, choosing candidates for therapy, and for monitoring response to therapy.

WHAT TO EXPECT FROM A DXA TEST

During DXA, you lie on an examination table. An x-ray detector scans a bone region, and the amount of x-rays that pass through bone are measured and displayed as an image that is interpreted by a radiologist or metabolic bone expert. The test causes no discomfort, involves no injections or special preparation, and usually takes only five to 10 minutes.

The amount of radiation that's used is minimal, amounting to roughly the same radiation that an average person gets from the environment in one day. After the test is completed and the doctor interprets the results, you will be given a score that speaks to the condition of the bones.

WHAT DO THE RESULTS MEAN?

The results of a bone density test are expressed either as a "T" or a "Z" score. T-scores represent numbers that compare the condition of your bones with those of an average young person with healthy bones. Z scores instead represent numbers that compare the condition of your bones with those of an average person your age. Of these two numbers, the T-score is usually the most important. T-scores are usually in the negative or minus range. The lower the bone density T-score, the greater the risk of fracture.

Normal bone density — People with normal bone density have a T-score between +1 and -1. People who have a score in this range do not typically need treatment, but it is useful for them to take steps to prevent bone loss, such as having adequate amounts of calcium and vitamin D and doing weight-bearing exercise.

Osteopenia (also known as low bone mass) — Osteopenia is the term healthcare providers use to describe bone density that is lower than normal but that has not yet reached the low levels seen with osteoporosis.

A person with osteopenia does not yet have osteoporosis, but is at risk of developing it. People with osteopenia have a T-score between -1.1 and -2.4.

If you have other risk factors for fracture, and have a T-score in the osteopenic range, you may be at high risk for fracture. People with osteopenia are usually advised to take steps to prevent osteoporosis, sometimes including medications.

Osteoporosis — People with osteoporosis have a T-score of -2.5 or less. Larger numbers indicate lower bone density because this is a negative number.

The lower the bone density, the greater the risk of fracture. If you discover that you have osteoporosis, there are several things you can do to reduce the chances that you will break

a bone. For instance, taking osteoporosis medications combined with calcium and vitamin D supplements and an exercise program can reduce your fracture risk.

DO I NEED TO HAVE BONE DENSITY TESTING AGAIN?

Even if your bone density test shows that you do not have osteoporosis today, you may need to have the test again. How long to wait between tests depends on your gender and on whether you have risk factors that represent an ongoing threat to your bones.

- If you take medications that decrease bone density or have medical conditions that can adversely affect the bones, experts recommend repeat bone density testing every one to two years.
- For women who have multiple risk factors for fracture, experts recommend repeat bone density testing every two years during the first five years following menopause, when bone loss is most rapid.
- For women who have no risk factors for fracture, experts recommend repeat bone density testing every three to five years.

Because certain drugs may increase the risk of falls, drug regimens should be reviewed on a regular basis. In some cases, the healthcare provider may decide to substitute a medication if it has a risk of causing falls. In addition, people with poor vision should see an eye specialist (eg, optometrist or ophthalmologist) for corrective lenses (glasses).

OSTEOPOROSIS MEDICATIONS

The non-drug measures discussed above can help to reduce bone loss. A medication or hormonal therapy may also be recommended for certain men and women who have or who are at risk for osteoporosis.

Who needs treatment with a medication? — People with the highest risk of fracture are the ones most likely to benefit from drug therapy. In the United States, the National Osteoporosis Foundation (NOF) recommends use of a medication to treat postmenopausal women (and men ≥ 50 years) with a history of hip or vertebral fracture or with osteoporosis (T-score ≤ -2.5). An explanation of T-scores is provided in table 3.

In addition, the NOF recommends drug therapy for people who have osteopenia (T-score between -1.0 and -2.5) as well as one of the following risk factors:

- High risk of bone loss from long-term use of prednisone or another glucocorticoid
- High risk of future fracture based upon previous history of fracture with minimal force (eg, fall from standing height)
- Estimated 10-year risk of hip or osteoporosis-related fracture ≥ 3 or ≥ 20 percent, respectively.

Treatment in premenopausal women — The relationship between bone density and fracture risk in premenopausal women is not well defined. A premenopausal woman with low bone density may have no increased risk of fracture. Thus, bone density alone should not be used to diagnose osteoporosis in a premenopausal woman; further evaluation is generally recommended.

Bisphosphonates — Bisphosphonates are medications that slow the breakdown and removal of bone (ie, resorption). They are widely used for the prevention and treatment of osteoporosis in postmenopausal women.

These drugs need to be taken first thing in the morning on an empty stomach with a full 8 oz glass of plain (not sparkling) water. The person must then wait:

- At least half an hour (with alendronate (Fosamax®) and risedronate (Actonel®)) before eating or taking any other medications.
- At least one hour (with ibandronate (Boniva®)) before eating or taking any other medications.

These dosing instructions help to reduce the risk of side effects and potential complications.

Side effects of bisphosphonates — Most people who take bisphosphonates do not have any serious side effects related to the medication. However, it is important to closely follow the instructions for taking the medication; lying down or eating sooner than the recommended time after a dose increases the risk of stomach upset.

There has been concern about use of bisphosphonates in people who require invasive dental work. A problem known as avascular necrosis or osteonecrosis of the jaw has rarely developed in a small number of people who used bisphosphonates. The risk of this problem

is small in people who take bisphosphonates for osteoporosis prevention and treatment. However, there is a slightly higher risk of this problem when higher doses of bisphosphonates are given into vein during cancer treatment.

Experts do not think that it is necessary for most people to stop bisphosphonates before invasive dental work (eg, tooth extraction or implant). However, people who take a bisphosphonate as part of a treatment for cancer should consult their doctor before having invasive dental work.

Alendronate — Alendronate (Fosamax®) reduces vertebral and nonvertebral fractures, and decreases the loss of height associated with vertebral fractures. It is available as a pill that you take once per day or once per week.

Risedronate — Risedronate (Actonel®) is approved for both prevention and treatment of osteoporosis. It can be taken once per day, once per week, or once per month. Risedronate reduces the risk of both vertebral and hip fractures.

Ibandronate — Ibandronate (Boniva®) can be used for prevention and treatment of osteoporosis. It is available as a pill that you take every day or once per month. It is also available as an injection that is given into a vein once every three months. Although ibandronate reduces the risk of bone loss and spine fractures, there is no proof that it reduces the risk of hip fractures.

Zoledronic acid — A once yearly intravenous dose of zoledronic acid (Reclast®) is also available for the treatment of osteoporosis. This medication is given into a vein over 15 minutes and is usually well tolerated. Yearly intravenous zoledronic acid can improve bone density, decrease the risk of spine and hip fractures, and decrease the risk of recurrent fractures in high-risk patients with recent hip fracture.

Side effects of zoledronic acid can include flu-like symptoms within 24 to 72 hours of the first dose. This may include a low grade fever, muscle, and joint pain. Treatment with a fever-reducing medication (ibuprofen or acetaminophen) generally improves the symptoms. Subsequent doses of ZA typically cause milder symptoms.

Intravenous ZA is an appealing alternative for people who cannot tolerate oral bisphosphonates or who prefer a once yearly to a monthly, weekly, or daily regimen. However, the ideal duration of therapy and long-term safety (>3 years) have not been established.

"Estrogen-like" medications — Certain medications, known as selective estrogen receptor modulators (SERMs) produce some estrogen-like effects in the bone. These medications provide protection against postmenopausal bone loss. In addition, SERMs

decrease the risk of breast cancer in women who are at high risk. Currently available SERMs include raloxifene (Evista®) and tamoxifen. Raloxifene can be used for the prevention and treatment of osteoporosis in postmenopausal women, although it may be less effective in preventing bone loss than bisphosphonates or estrogen.

SERMs are not recommended for premenopausal women.

Estrogen/progestin therapy — In the past, estrogen or estrogen-progestin therapy was considered the best way to prevent postmenopausal osteoporosis and was often used for treatment. Data from the Women's Health Initiative (WHI), a large clinical trial, found that combined estrogen-progestin treatment reduced hip and vertebral fracture risk by 34 percent. A similar reduction in fracture risk was seen in women who took estrogen alone.

Estrogen had the additional advantage of controlling menopausal symptoms. However, the WHI found that estrogen plus progestin does not reduce the risk of coronary artery disease, and slightly increases the risk of breast cancer, stroke, and blood clots. The details of the WHI are discussed elsewhere.

Thus, estrogen is not recommended for the treatment or prevention of osteoporosis in postmenopausal women. However, some postmenopausal women continue to use estrogen, including women with persistent menopausal symptoms and those who cannot tolerate other types of osteoporosis treatment.

Estrogen may be an appropriate treatment for prevention of osteoporosis in young women with amenorrhea (absence of menses). This is often in the form of a birth control pill.

Calcitonin — Calcitonin is a hormone produced by the thyroid gland that, together with parathyroid hormone, helps to regulate calcium concentrations in the body. Synthetic calcitonin is sometimes recommended as a treatment for osteoporosis. Calcitonin may be administered via nasal spray or injection (subcutaneous salmon calcitonin). Nasal administration is typically preferred due to ease of use and because the injections tend to cause more nausea and flushing.

Other drugs are usually recommended before calcitonin because it is not clear if calcitonin increases bone density and decreases the fracture rate outside the spine. However, due to its pain-relieving (analgesic) effects, calcitonin may be suggested as a first-line therapy for those who have a sudden, intense (acute) onset of pain due to vertebral fractures. The treatment regimen is typically changed once the acute pain subsides or if the pain fails to subside over a prolonged period (eg, four weeks).

Parathyroid hormone (PTH) — PTH is produced by the parathyroid glands and stimulates both bone resorption and new bone formation. Intermittent administration stimulates

formation more than resorption. Clinical trials suggest that PTH therapy is effective in both the prevention and treatment of osteoporosis in postmenopausal women and in men.

A PTH preparation called Forteo®, given by daily injection for two years, is approved for the treatment of severe osteoporosis. It is more effective at building spine bone density than any other treatment, although it is unclear if it also prevents fracture better than other treatments (specifically, the bisphosphonates). Because it requires a daily injection and is expensive, it is usually reserved for patients with severe hip or spine osteoporosis (T score <-2.5 AND an osteoporosis-related fracture). It is not recommended for premenopausal women.

Denosumab — Denosumab (Prolia®) is an antibody directed against a factor (RANKL) involved in the formation of cells that break down bone. Denosumab improves bone mineral density and reduces fracture in postmenopausal women with osteoporosis. It is administered as an injection under the skin once every six months. Although denosumab is generally well tolerated, side effects can include skin infections (cellulitis) and eczema. A mild transient lowering of blood calcium levels has also been reported.

Because it is a new drug and there are no long-term safety data, denosumab is usually reserved for patients who are intolerant of or unresponsive to other therapies. Denosumab should not be given to patients with low blood calcium until it is corrected.

Foods and drinks with calcium

Food	Calcium, milligrams
Milk (skim, 2 percent, or whole, 8 oz)	300
Yogurt (6 oz)	250
Orange juice (with calcium, 8 oz)	300
Tofu with calcium (1/2 cup)	435
Cheese (1 oz)	195-335 (hard cheese = higher calcium)
Cottage cheese (1/2 cup)	130
Ice cream or frozen yogurt (1/2 cup)	100
Soy milk (1 cup)	100
Beans (1/2 cup cooked)	60-80
Dark, leafy green vegetables (1/2 cup cooked)	50-135
Almonds (24 whole)	70
Orange (1 medium)	60

Elemental calcium content per pill of different calcium supplements

	Elemental Ca/tablet	Ca compound	Vitamin D
Caltrate 600	600 mg	Carbonate	
Caltrate 600 + D	600 mg	Carbonate	200 I.U.
Caltrate 600 plus chewables	600 mg	Carbonate	400 I.U.
OsCal 500	500 mg	Carbonate	
OsCal 500 + D	500 mg	Carbonate	200 I.U.
Oscal 500 + Extra D	500 mg	Carbonate	400 I.U.
Oscal Ultra	600 mg	Carbonate	200 I.U.
Tums	200 mg	Carbonate	
Tums EX	300 mg	Carbonate	
Tums Ultra	400 mg	Carbonate	
Citracal Ultradense Petites	200 mg	Citrate	200 I.U.
Citracal caplets + D	315 mg	Citrate	200 I.U.
Citracal 250 + D	250 mg	Citrate	200 I.U.
Caltrate 600 + soy	600 mg	Carbonate	200 I.U.
Posture-D	600 mg	Phosphate	125 I.U.
Cal-100 with vitamin D	1000 mg	Carbonate	400 I.U.
Calcium gummy bears	200 mg	Phosphate	
Viactiv plus D + K	500 mg	Carbonate	200 I.U.



Selected Calcium - Rich Foods

Food Item	Serving Size	Calcium Content (mg)	Calories
Milk			
Whole	8 oz.	291	150
Skim	8 oz.	302	85
Cal Enriched Fruit Juices	8 oz.	150-300	calcium and calorie content vary
Yogurt (w/added milk solids)			
Plain, low-fat	8 oz.	415	145
Fruit, low-fat	8 oz.	343	230
Frozen, fruit	8 oz.	240	223
Frozen, chocolate	8 oz.	160	220
Cheese			
Mozzarella, part-skim	1 oz.	207	80
Muenster	1 oz.	203	105
Cheddar	1 oz.	204	115
Ricotta, part-skim	4 oz.	335	190
Cottage, low-fat(2%)	4 oz.	78	103
Ice Cream, Vanilla (11% fat)			
Hard	1 cup	176	276
Soft Serve	1 cup	236	375
Ice Milk, Vanilla			
Hard(4% fat)	1 cup	176	185
Soft Serve(3% fat)	1 cup	274	225
Fish and Shellfish			
Oysters, raw(13-19med)	1 cup	226	160
Sardines, canned in oil, drained incl bones	3 oz.	372	175
Salmon, pink, canned including bones	3 oz.	167	120
Shrimp, canned, drained	3 oz.	98	100
Vegetables			
Bok Choy, raw	1 cup	74	9
Broccoli, cooked, drained from raw	1 cup	100	40
Broccoli, cooked, drained from frozen	1 cup	100	50
Soybeans, cooked drained, from raw	1 cup	131	235
Collards, cooked drained, from raw	1 cup	357	65



Common Calcium Supplements

This list of supplements was compiled based on a survey of a private pharmacy, large grocery store chain pharmacy, and large drugstore chain pharmacy. This list is provided for informational purposes only. (No endorsement of any product is implied by inclusion on this list.)

Brand Name	Type of Salt	Made By	Mg/Tab*	Vitamin D Unit	Take With Meals
Calcet	Mixed	Mission	152.8	100	Yes
Calcium-Rich Roloids	Carbonate	Warner	220	0	Yes
Calel-D	Carbonate	Rorer	500	0	Yes
Caltrate 600	Carbonate	Lederle	600	0	Yes
Caltrate 600 + Vitamin D	Carbonate	Lederle	600	125	Yes
Citracal	Citrate	Mission	200		No
Citracal Caplets + D	Citrate	Mission	315	200	No
Citracal Liquitab	Citrate	Mission	500		No
Dical-D Tablet	Phosphate	Abbot	117	133	Yes
Dical-D Wafer	Phosphate	Abbot	232	200	Yes
Extra Strength Roloids	Carbonate	Warner	400	0	Yes
Fosfree	Mixed	Mission	175.5	150	Yes
Jameson Calcium 600	Carbonate	Jameson	600		Yes
Jameson Hi Pot Oyster Shell Cal	Carbonate	Jameson	500	0	Yes
Jameson Cal 600 w/ D	Carbonate	Jameson	600	125	Yes
Liquid-Cal	Carbonate	Advanced Nutritional	600	0	Yes
Nutra Vescent Cal Drink	Citrate	CIMA Labs	500	200	No
Nature Made 100% Oyster w/ D	Carbonate	Nature Made	500	200	Yes
Nature Made 100% Oyster x-str	Carbonate	Nature Made	625	0	Yes
Os-Cal 250 + D	Carbonate	Marion	250	125	Yes
Os-Cal 500	Carbonate	Marion	500	0	Yes
Os-Cal 500 Chewable	Carbonate	Marion	500	0	Yes
Os-Cal 500 + D	Carbonate	Marion	500	125	Yes
Posture	Phosphate	Whitehall	600	0	
Posture + D	Phosphate	Whitehall	600	125	
Scientific Nutrition Cal 600	Carbonate	Mission	600	100	Yes
Top Care Calcium	Carbonate	Topco	600	0	Yes
Top Care Calcium Hi-Cal	Carbonate	Topco	500	0	Yes
Tums	Carbonate	SmithKline	200	0	Yes
Tums EX	Carbonate	SmithKline	300	0	Yes
Windmill Calcium Citrate	Citrate	Windmill	200	0	No
Windmill Oyster Shell w/ Vit D	Carbonate	Windmill	250	125	Yes
Windmill Oyster Shell w/ Vit D	Carbonate	Windmill	500	125	Yes
Windmill Oyster Shell Cal	Carbonate	Windmill	500	0	Yes

* Milligrams of elemental calcium, not total milligrams of calcium salt.

**Note: Regular, Original, Spearmint and Wintergreen Roloids DO NOT contain calcium carbonate and should not be used as calcium supplements. Extra-Strength, Cherry, and Peppermint Roloids DO contain calcium carbonate and may be used as calcium supplements.



Calcium Prescriptions

	<u>Evista</u>	<u>Fosamax / Actonel / Boniva</u>	<u>Miacalcin</u>
<u>Benefits</u>	40 - 50% reduction of hip and spine fracture (if no previous history)	47-49% reduction of spine fracture 51-56% reduction of hip fracture	36% reduction of new spinal fractures
<u>Indication</u>	Prevention	For prevention and treatment	Treatment
<u>Type</u>	Oral	Oral	Nasal spray
<u>Note</u>	Good choice for women unable to tolerate HRT	Must be taken on empty stomach with full glass of water-avoid lying down 30 minutes within taking to avoid esophageal irritation	May be good adjunct for HRT with women who continue to lose bone

8 Ways To Step Into An Exercise Program (Even You Could Love!)

Step 1

Get in your car and note the reading on the odometer. Drive a half mile from your home in all non-hilly directions; make a note of the most “scenic/interesting” routes on paper and note the half-mile points (landmarks, etc.)



Step 2

Decide whether you’d prefer to exercise before breakfast or before dinner (or both).



Step 3

Tape a calendar on your refrigerator or bathroom mirror, buy a box of gold stars at your grocery or stationary store. Purchase some comfortable walking shoes if you don’t have a pair.

Step 4

Walk the one-mile round trip at a moderate, steady pace that doesn’t cause you to become breathless.* Note on your calendar how long it took you to walk a mile, and reward yourself with a gold star for exercising.

Step 5

Walk the same course before breakfast or dinner EVERY day, always note on your calendar how long it took and reward yourself with a gold star.

Step 6

When you can walk ONE MILE comfortably in 15 MINUTES (your first goal), you’re ready to reach for your second—2 MILES IN 30 MINUTES. (Either map out a two-mile round trip route starting at your front door, or walk the one-mile route twice.)



Step 7

As before, concentrate on keeping a steady pace and on comfortably completing the 2 mile route. GRADUALLY increase your pace until you reach the goal of 2 miles in 30 minutes.



Step 8

When you can walk 2 miles comfortably in 30 minutes (your second goal), you’re ready to reach for your third—3 miles in 45 minutes.

By now, you’ve seen the benefits of setting specific manageable goals, and recording your gradual progress on a daily calendar. You can either continue to devote 45 minutes a day to exercise, or increase the time and distance.

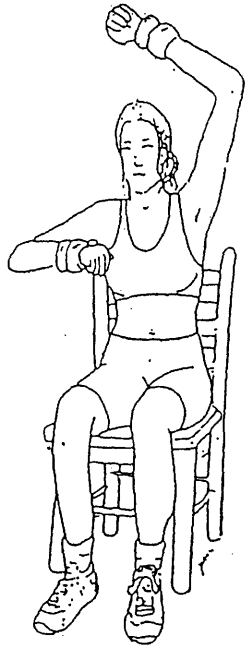
*If you experience any pain or shortness of breath, stop and contact your doctor. If you’re over 35, if you have a personal or family history of high blood pressure or heart disease, or if you haven’t had a checkup recently, get an OK from your doctor before increasing your level of activity.

Walking’s a Winner When it Comes to Weight Loss!

An hour of brisk (4mph) walking burns up an average of 348 calories. This translates into 36 pounds of weight (fat) loss in one year!

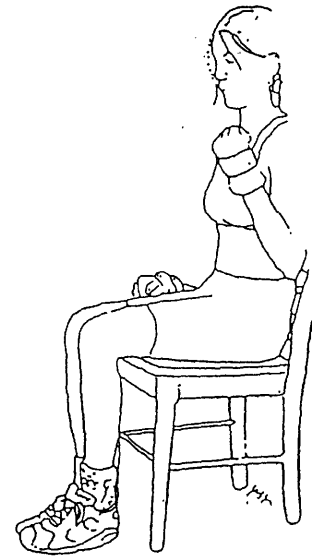
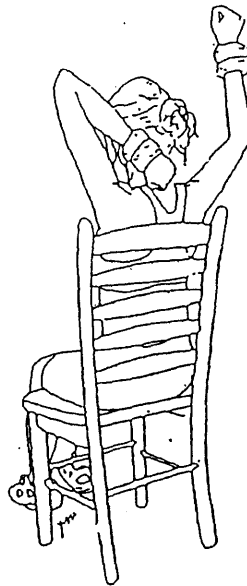
Weight—Bearing Exercises

Start by wearing the heaviest wrist and ankle weights you can comfortably bear. When you can do more than 8 repetitions of any exercise, add more weight for that exercise. Do a series of 8 repetitions, pause for 30 seconds, repeat the series. Repeat process using the other arm or leg.



Triceps I

Bring your hands to the front of your chest with elbows pointing out and straighten one arm until the weight is directly over your head.



Biceps

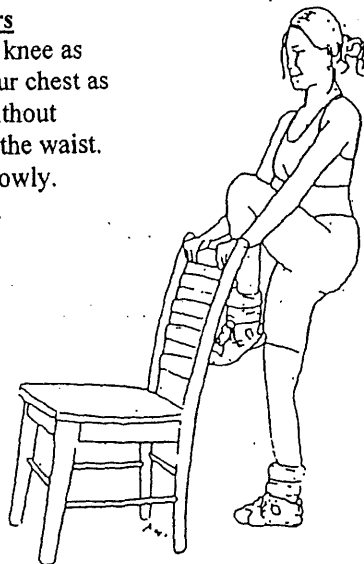
Start with your arms at your sides. Bend one arm at the elbow, lifting the weight to your shoulder without moving your shoulder or upper arm. Lower it slowly.

Triceps II

Raise your arms straight over your head and bend one elbow so that your wrist is resting behind your neck. Lift it to starting position.

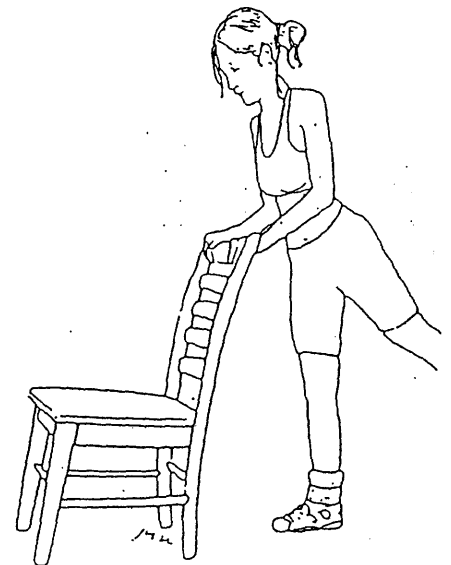
Hip Flexors

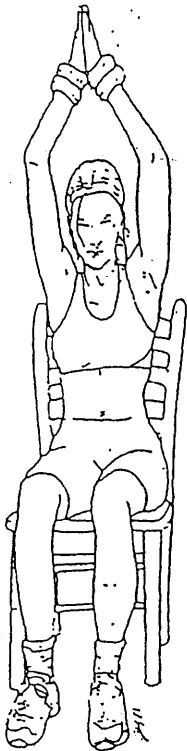
Bring your knee as close to your chest as possible without bending at the waist. Lower it slowly.



Hip Extensors

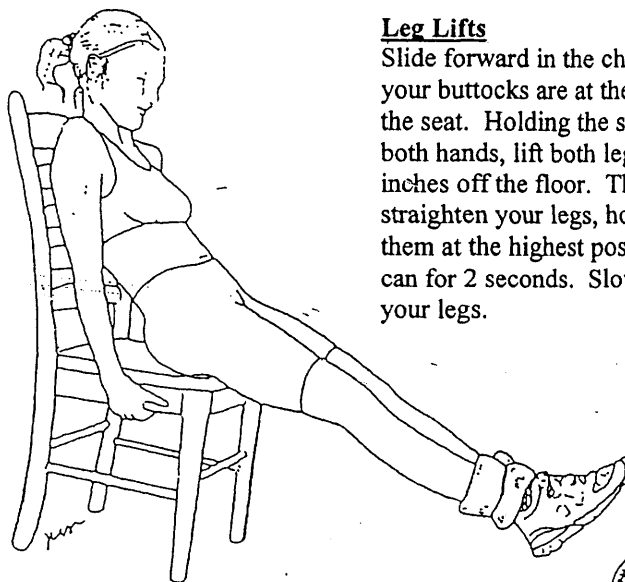
Bend forward at the waist about 45 degrees while holding the back of a chair. Lift one leg straight behind you as high as possible without bending your knee or moving your upper body. Lower it slowly.





Shoulders

Begin with your arms hanging at your sides. Raise them straight to the side without bending and try to touch your hands over your head. Keeping them straight, lower them slowly.

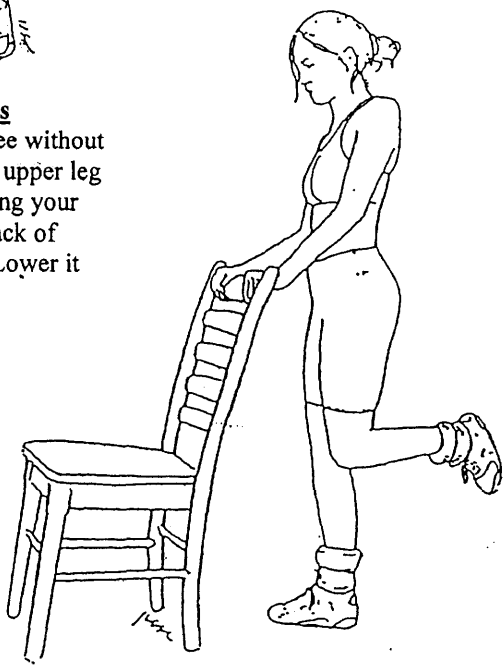


Leg Lifts

Slide forward in the chair until your buttocks are at the edge of the seat. Holding the seat with both hands, lift both legs 2-3 inches off the floor. Then straighten your legs, holding them at the highest position you can for 2 seconds. Slowly lower your legs.

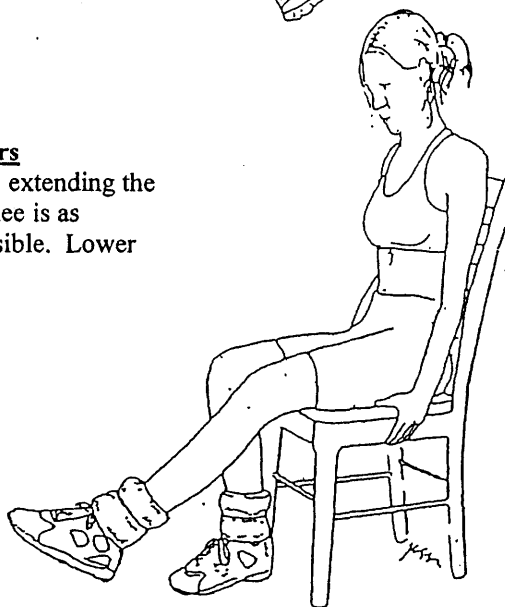
Knee Flexors

Bend one knee without moving your upper leg and try to bring your heel to the back of your thigh. Lower it slowly.



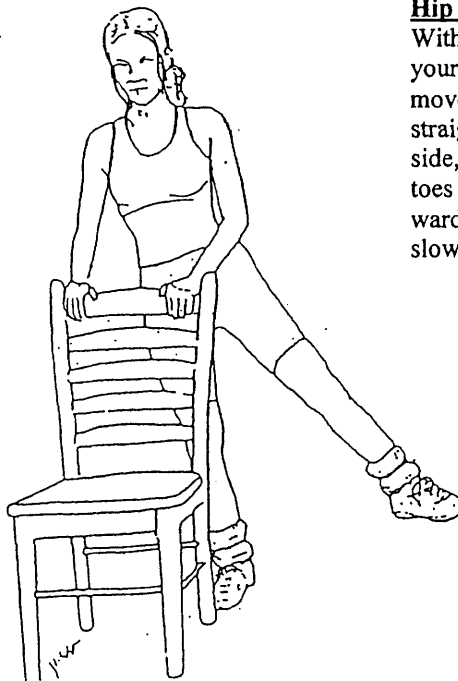
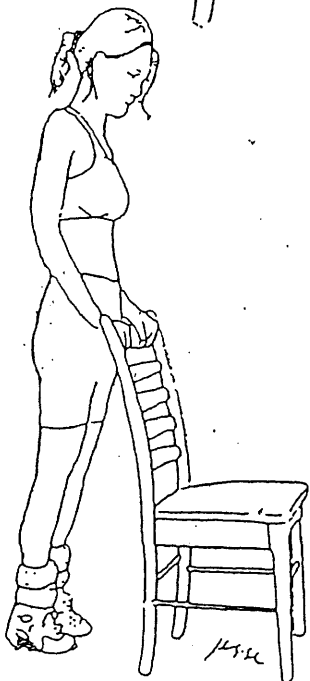
Knee Extensors

Raise one foot, extending the leg until the knee is as straight as possible. Lower your foot.



Plantar Flexors

Slowly rise on your toes, then slowly lower your heels. If this is too easy, rise on the toes of one foot, keeping the other leg bent at the knee.



Hip Abductors

Without bending your knee or waist, move one leg straight out to the side, keeping the toes pointed forward. Lower it slowly.