



Cascade Women's Health
PHYSICIANS AND SURGEONS

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OSTEOPOROSIS PREVENTION EXERCISES

Weight-bearing exercise is essential in preventing osteoporosis. In children and teenagers regular weight-bearing exercise helps produce strong bones; in adults it helps maintain bone mass; after the menopause it can be part of an overall treatment plan that aims to slow the rate of bone loss; and in older adults physical activity can both reduce the rate of bone loss and avoid injury to bones by improving muscle strength and balance.

The strength of your bones also determines the type of exercise that is appropriate and safe. If you already have osteoporosis or other medical conditions, if you are over 60, or if you are over 45 and have not exercised regularly in recent times, speak to your primary care doctor about designing an exercise program that is suitable for you.

Weight-bearing exercises

Exercises that make your body work against gravity, such as running, brisk walking, stair climbing, dancing and tennis are good options for promoting healthy bones. Each time your foot hits the ground you apply a stress to your bones, which respond by maintaining or sometimes increasing their strength. Swimming, although good for aerobic fitness, is not as helpful for strengthening your bones because it isn't weight-bearing.

Bone strength is measured in terms of bone mineral density. With higher-impact activity, there is proportionately greater benefit to your bones. This is why weight-bearing exercises that include running or jumping (for example, jogging or rope skipping) are of greater benefit to your bone health than gentler weight-bearing exercises such as walking. But brisk walking as little as 3-5 miles a week can help maintain your bone health. By itself, relaxed-paced walking does not increase bone density or reduce your risk of fracture, but it can be a good way of starting if you haven't exercised for a long time.

Jumping is a simple weight-bearing exercise that can help build up your bones. It can fit easily into your routine since just a couple of minutes per day are useful. You can jump while holding on to a rail or another person if you need support. Experts advise working up to approximately 50 jumps of about 8 cm in height, 3–6 days per week — you can jump on the spot, use a skipping rope or jump from a step or box. As you get stronger you can jump higher and build up to hopping on one leg. However, jumping and hopping may not be suitable for people with osteoarthritis or with stress urinary incontinence.

To maintain the bone-strengthening benefits of weight-bearing exercise, you need to exercise regularly, for the long term. If you stop exercising, the benefit wears off. Experts advise 45–60 minutes of weight-bearing exercise three days per week to increase the strength of your bones.

Balance & Flexibility exercises

Balance training is an important part of looking after your bones. It can improve your stability and help prevent falls, which is important because falls can cause fractures.

Recommended balance & flexibility exercises include:

- standing on one leg
- sitting on an exercise ball
- walking heel-to-toe
- Tai Chi
- balancing with a pillow or rocker board under your feet
- yoga & Pilates

Start with a balance exercise that you find easy and work up to those you find harder — you can also challenge yourself by closing your eyes during exercises that you've mastered.

Resistance exercises (also called Strength Training)

Exercises such as weight-lifting or using exercise rubber bands, are another good way to strengthen your bones and build strong muscles. Resistance exercises can involve weights that you hold or have strapped to you, resistance machines where you use a programmed weight, or elastic bands or tubes that provide the resistance against which your muscles work. Alternatively, some resistance exercises use your own body weight as the load, such as push ups. Doing a program of resistance exercises three days a week has been shown to help maintain healthy bones.

- First, check with your doctor whether the exercises shown here are suitable for you. This is especially important if you have other medical conditions, or you are over 45 and have not exercised regularly in recent times.
- These exercises are not designed for people who already have osteoporosis. If you know you have osteoporosis, see your doctor for an exercise program that is suited to your needs. People who already have osteoporosis need to be gentle with exercises that involve bending and twisting at the waist. This motion can put you at risk of fracture. Exercises to avoid or modify include sit-ups, toe touches, rowing machines, golf, tennis, bowling and some yoga poses.

Equipment

For this exercise program you'll need a sturdy armless chair with a high back, approximately level with your waist. Your chair is the correct size, if when you sit with good upright posture, your bottom rests against the back of the chair while your feet are flat on the floor and the backs of your knees touch the seat of the chair.

You'll also need a pair of portable or strap-on wrist weights and a pair of strap-on ankle weights. When starting out, use light weights you can lift comfortably. Plan to increase the weight as you grow stronger. This is vital for building strength. Wear comfortable, non-restrictive clothing, thick socks and comfortable exercise shoes.

Exercise tips

Warm up first. Warm up first by doing a repetitive, gentle movement such as walking for a few minutes or slowly going through the motions of a couple of the weight-training exercises, minus the weights. This helps circulate blood to your muscles and reduce the risk of an injury.

Slow repetitions. Perform each exercise slowly 8–10 times. A slow repetition means taking about 3 seconds to lift the weight, 1 second to rest, then 3 seconds to lower the weight. Repeat for the opposite leg or arm. These 8–10 repetitions make up one ‘set’. An exercise session should consist of 2–3 sets of 6–8 different types of resistance exercises. It’s best to rest for 10–14 seconds between repetitions.

Don’t hold your breath. Remember to breathe regularly during these exercises. For example, take a deep breath in, then breathe out slowly as you lift the weight; breathe in as you lower the weight. Do not hold your breath while lifting or lowering the weight.

You should not feel pain. You should use strong effort when lifting the weights in these exercises, but remember to stay within a range of movement that does not cause you pain.

Stretch your muscles. After you have completed all the exercises in the sequence, gently stretch, in turn, all of the muscles you have just worked.

A day of rest. Do these resistance exercises on three days of the week, allowing a non-weight-training day between weight-training days, so that your muscles can recover.

Progression. Do not increase the weight that you lift until you can easily complete the eighth repetition of an exercise. Gradually add enough weight to challenge your muscles, so that it feels hard to complete the repetitions. When you can lift a weight 8–15 times, then add more weight to challenge your muscles again. Repeating this process will help build strength. Make sure you don’t overdo it. If you can’t lift a weight 8 times in a row, it’s too heavy for you so use a lighter weight.

Power training. As you get stronger, you can try lifting the weight rapidly and lowering it slowly. This maximizes the benefit to your bones

It is also possible to develop strength and flexibility of the back and abdominal muscles as you go about daily activities. Pay attention to posture and try not to slouch when standing at the sink doing dishes or other tasks. When you walk, keep your spine straight and imagine a string pulling your head upward while keeping your shoulders pulled down and back but still relaxed. Take full deep breaths.

Talk to your doctor or a qualified fitness professional to make sure your exercise program is right for you.

Sample resistance exercises



1. Calf raises. Wear ankle weights for this exercise. Rest both hands on the back of your chair for balance. Lift your heels and rise up on the toes of both feet, hold, then slowly lower your heels. As you become stronger, you can rise up on one foot at a time, while you hold your other foot slightly off the ground.



2. Knee flexion. Wear ankle weights for this exercise. Rest both hands on the back of your chair for balance. Bend one knee and slowly lift this foot backwards, off the ground, while keeping the thigh of this leg still. Try to reach your foot towards the back of your thigh, hold, then slowly lower your foot to the ground. Repeat for the other leg.



3. Hip extensions. Wear ankle weights for this exercise. Rest both hands on the back of your chair for balance. Bend forward at the waist so that your torso is leaning towards your chair at about 45 degrees. Slowly lift one leg backwards while keeping your knee straight. Lift as high as you can without losing balance and without bending further forward. Hold, then slowly lower your leg. Repeat for the other leg.



4. Hip flexion. Wear ankle weights for this exercise. Stand side-on to the back of your chair, resting one hand on the back of the chair for support. Raise one knee towards your chest with your leg bent. Keep your back and waist and other leg straight. Hold, then slowly lower your leg. Repeat for the other leg.



5. Lateral leg raises. Wear ankle weights for this exercise. Rest both hands on the back of your chair for balance. Lift one leg slowly to the side with your knee straight. Hold as high as possible without losing your balance, then slowly lower to the ground. Repeat for the other leg.



6. Leg raises. Try this exercise without weights first to be sure your back is not strained. If not, wear ankle weights for this exercise. Sit on your chair with good upright posture, your bottom against the back of the chair and your feet flat on the floor. Now hold onto the sides of the seat for balance and slide your bottom forward towards the front of the seat. Rest your shoulders against the back of the chair for support. Slowly raise both legs 5-10 cm off the ground with your knees straight and your feet together. Hold, then slowly lower your feet to the ground.



7. Knee extensions. Wear ankle weights for this exercise. Sit on your chair with good upright posture, your bottom against the back of the chair and your feet flat on the floor. Hold onto the sides of the seat for balance. Raise one foot slowly forward, aiming to straighten your knee as much as possible, while keeping your thigh on the chair. Hold, then slowly lower your leg. Repeat for the other leg.



8. Shoulder strengthening. Wear wrist weights for this exercise. Sit on your chair with good upright posture, your bottom against the back of the seat and your feet flat on the floor. Starting with your hands by your sides, slowly lift both hands outward, tracing a large circle that allows your hands to meet overhead, in a 'prayer' pose. Hold, then slowly lower your hands to your sides by retracing the same large circle.



9. Triceps lift. Wear wrist weights for this exercise. Sit on your chair with good upright posture, your bottom against the back of the seat and your feet flat on the floor. Raise both arms either side of your head, with elbows slightly bent. Bend one elbow so that your wrist moves down behind your head to the base of your neck (avoid bending your head forwards). Hold, then slowly raise your wrist to be level with your opposite wrist. Repeat for the other arm.



10. Biceps curl. Wear wrist weights for this exercise. Sit on your chair with good upright posture, your bottom against the back of the seat and your feet flat on the floor. Rest your hands on either side of the seat. Bend the elbow of one arm to raise your hand towards your shoulder. Hold, then slowly lower your hand. Repeat for the other arm.