Blood vessel stents

Improving blood flow

When it comes to treating a clogged or narrowed artery that leads to the heart, you may be aware of the tiny, expandable mesh tubes — or stents — that help prop open the narrowed artery. Less well-known is that stents can be used to hold open arteries in other areas of the body, as well.

In certain situations, stents are used to prop open arteries in the neck (carotid arteries) that supply blood to the brain. They are also used to open narrowed or clogged iliac arteries in the legs of people with peripheral artery disease (PAD), or to keep open arteries leading to the kidneys.

In general, vascular stenting provides an important option for improving blood flow. It may be considered when more-conservative drug therapies aren’t adequate — and also as an alternative to surgery.

The common element

The most common disease treated by vascular stenting is atherosclerosis. This is when cholesterol-containing fatty deposits build up over time inside artery walls. This accumulation narrows, hardens and roughens the inside surface of the arteries.
When arteries that supply the heart with blood (coronary arteries) narrow enough, blood flow to part of the heart is reduced. The result may be chest pain or pressure, especially when you exert yourself or are under stress. If a heart artery becomes totally clogged, a heart attack can result.

With atherosclerosis in the main (carotid) artery leading to the brain, one of the biggest concerns is slow or turbulent blood flow over the fatty deposits. This can trigger blood clot development. A blood clot can clog the artery where the clot develops, or break loose and travel downstream to block a smaller artery within the brain. When blood supply to part of the brain is blocked, this develops, or break loose and travel downstream to block a smaller artery within the brain. When blood supply to part of the brain is blocked, this can result in a stroke.

Heart focus

Placing a stent in a heart artery — or performing bypass surgery — to improve blood flow to the heart may be considered when:

- Medical or lifestyle changes aren’t enough to relieve chest pain caused by a narrowed heart artery
- You’re having a heart attack
- Chest pain is worsening

Deciding whether angioplasty or bypass is best depends on factors such as the location, severity and number of blockages in your heart arteries. Overall health also is an important consideration. Generally, you’re a good candidate for angioplasty if:

- Your blockage is short in length and few arteries are involved
- The affected artery isn’t the main vessel supplying blood to the left side of your heart
- You don’t have symptomatic heart failure
- You can safely take blood-thinning anti-platelet drugs

Unlike bypass surgery, with angioplasty the chest doesn’t have to be opened up and general anesthesia and a heart bypass pump aren’t needed. This makes recovery time from angioplasty much shorter.

Most angioplasty is performed using stents that are drug-releasing (drug-eluting). The stents are coated with a drug that’s released over about 30 days to inhibit scar tissue growth within the stent. Excessive tissue ingrowth can re-narrow an artery to the point where a repeat angioplasty is needed. Repeat angioplasty is necessary in less than 5 percent of those who have drug-eluting stents.

The counterparts to drug-eluting stents are called bare-metal stents, which aren’t coated with a drug. These are used less frequently because tissue growth around bare-metal stents makes repeat angioplasty necessary about 10 to 15 percent of the time.

With either type of stent, you’ll be prescribed medications to reduce your risk of developing blood clots.

Placing a stent

The procedures used to place a stent can usually be done with local anesthesia and sedation. Sometimes, you can go home the same day, while other times a short hospital stay may be required.

To begin, a needle is used to access an artery, usually in your leg or wrist. A small cut is made in the skin. A thin guide wire is then inserted into the artery, followed by a narrow tube (catheter). Using X-ray guidance, the catheter is maneuvered into the artery that is blocked. A small amount of contrast material is injected through the catheter. This provides a detailed view of the blockage and blood flow on X-ray images.

With all of the procedures, a flexible guide wire is used to go beyond the blockage and this wire is then used to position a small balloon at the site of the narrowing. It’s then inflated to widen the narrowed artery. The balloon may be inflated and deflated several times before it’s removed, stretching the artery bit more each time.
Health tips

Enhancing your relationship

When it comes to expressing feelings, many in long-term relationships fall into patterns of complacency and predictability. You may be able to enhance your relationship by:

■ **Going for a walk together** — This gets you away from distractions and opens the door for conversation.

■ **Showing your appreciation** — Express thanks for something your partner does well, especially if you haven’t said it lately.

■ **Listening attentively** — Be open to hearing your partner’s thoughts and feelings. Truly consider what your partner says rather than debate or immediately try to make your own point.

■ **Just saying it: “I love you”** — But don’t stop there. Come up with specific reasons. If this is too difficult to do in person, pen a thoughtful letter.

■ **Doing something your partner likes but you usually wouldn’t do** — Be open to enjoying it. Don’t tease, gripe or mock your partner’s interest.

■ **Becoming curious** — Ask what your partner thinks, wants and feels. Listen for things that might surprise you, and let your partner know that you enjoyed hearing about it.

■ **Trying something new together** — Explore an activity that neither of you has done before. Learn a new game or take a fitness class together.

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**Legs and kidneys**

Stents are being used in areas other than heart arteries and arteries leading to the brain, but not nearly as extensively.

Angioplasty to open clogged arteries in the legs is one treatment option for peripheral artery disease (PAD). This disease reduces blood flow to the legs.

Angioplasty with balloon widening — but no stent placement — is commonly performed in people with PAD. However, stents may be placed on a selective basis when angioplasty is performed in the iliac artery near the groin area.

Renal artery stenosis is narrowing that occurs in arteries that supply blood to your kidneys. When blood supply to the kidneys is diminished, it can cause kidney damage and other problems.

Angioplasty and stent placement in these clogged renal arteries can be an effective therapy for this condition, but controversy remains. It’s associated with significant risk of major complications, and there is uncertainty in identifying who is likely to benefit from the procedure because 30 to 40 percent of those who undergo it show no improvement in blood pressure or kidney function. Renal artery stenting can provide major health benefits for some, but selecting those who may benefit requires careful clinical evaluation.

Clots. This often includes taking:

■ A daily dose of aspirin, usually for life

■ A more powerful anti-platelet drug, such as clopidogrel (Plavix) or prasugrel (Effient), for at least a year if you have a drug-eluting stent, or at least a month for bare-metal stents

The reason for this difference is that the process of artery healing occurs much quicker with a bare-metal stent than it does with a drug-eluting stent. This natural healing on the stent surface prevents blood from touching the stent directly and reduces the risk of clot formation.

For this reason, bare-metal stents are sometimes used when long-term use of anti-platelet medications aren’t an option.

**Brain focus**

In select people with at least 50 percent narrowing of the carotid artery, carotid endarterectomy — surgically opening the artery, removing fatty deposits (plaques) and closing the artery — is the traditional procedure for widening the artery and reducing stroke risk.

However, carotid angioplasty and stenting may be an appropriate stroke treatment or stroke prevention option if:

■ You aren’t in good enough health to undergo surgery — for example, if you have severe heart or lung disease or had radiation for neck tumors

■ You’ve already had a carotid endarterectomy and are experiencing new narrowing of the artery after surgery

■ The location of the narrowing is difficult to access with endarterectomy

Unlike in coronary angioplasty, bare-metal stents are usually used in carotid angioplasty. That’s because the artery is wider and the risk of re-narrowing is less than 2 percent.

After carotid angioplasty with stent placement, you’ll require drugs to reduce the risk of developing blood clots, including aspirin usually for life and an anti-platelet drug for one to three months.
Mediterranean diet

To your good health

Photos of the Mediterranean region have graced travel magazines for decades. Even if it’s a vacation destination on your “someday” list, you can still bring home some of the true goodness of the Mediterranean by adopting the region’s traditional eating patterns.

The Mediterranean diet encompasses the basics of heart-healthy eating with a few ingredient twists that emphasize more plant-based foods. And research shows the benefits of adapting this colorful and fresh-tasting cuisine go beyond heart-health improvement.

A Mediterranean mix

Topping the list in the Mediterranean diet are fruits and vegetables, whole grains, olive oil, nuts and legumes. In general, foods that undergo less processing are better, insofar as nutrients are concerned. Flavors are enhanced with herbs and spices — not salt, salty additives and preservatives. Diet basics include:

■ **Eating lots of vegetables and fruits** — Work these into every meal, aiming for seven to 10 servings daily. Toss a handful of berries onto whole-grain cereal. Keep baby carrots, apples and oranges on hand for quick snacks. Sauté a blend of colorful, crisp vegetables — such as bell peppers, onion, celery — in a drizzle of olive oil and serve as a main focus of your evening meal. Enjoy a bowl of fresh sliced fruit with seasonal berries topped with a dollop of yogurt.

Mindfulness improves irritable bowel syndrome

New research suggests that training in mindfulness, including training to help you calm your mind and focus on a nonjudgmental awareness of the present, can help relieve irritable bowel syndrome (IBS).

Signs and symptoms of IBS include abdominal cramping and pain, bloating, gas, diarrhea, and constipation. Changes in diet, lifestyle and ability to manage stress often reduce milder symptoms. However, treatment for more-severe symptoms can be elusive.

The study, published in the September 2011 issue of *The American Journal of Gastroenterology*, divided 75 adult women with IBS into two groups. One group received support through group therapy, the other training in mindfulness meditation. The reduction in symptoms was significantly higher in the mindfulness group.

The exact mechanism behind the effect of mindfulness isn’t known. Researchers theorize that it may have been either calming the anxiety and stress related to painful symptoms, or mental disengagement from the symptoms that made a difference.

Mayo Clinic experts say that this small but well-done study adds to evidence that mindfulness or other psychological therapy — such as cognitive behavioral therapy or hypnosis — may help manage IBS. Although not a cure-all, it may be worth trying.

Tea, coffee and an antibiotic-resistant ‘superbug’

A recent study suggests regularly drinking a cup of coffee or tea may influence whether you’re a carrier of one type of “superbug” — meticillin-resistant *Staphylococcus aureus* (MRSA).

There’s some evidence that tea and coffee may have antimicrobial effects against certain bacteria, including *S. aureus* — sometimes called staph. Generally, *S. aureus* is carried harmlessly by many healthy people in the nose or on the skin. However, it can cause pneumonia as well as skin, bloodstream, joint and heart valve infections. Up to 30 percent of people carry staph in their nostrils and have no signs or symptoms of infection. A much smaller percentage — less than 2 percent — carry the antibiotic-resistant form of MRSA in their nostrils. MRSA carriage is more likely to be associated with infections — and these infections are often harder to treat.

The study — published in the July-August 2011 issue of *Annals of Family Medicine* — looked at the association between tea and coffee consumption in more than 5,500 participants. Overall, 1.4 percent of the participants were nasal MRSA carriers. However, those who drank hot tea or coffee were about half as likely to have MRSA in their noses as were nondrinkers of the beverages. While it’s an interesting association, study authors say it doesn’t prove cause and effect. Instead, the findings raise new questions about MRSA nasal carriage and possible factors that might influence the superbug’s presence.

Mayo Clinic doctors agree. Although interesting, there are many important factors — including a person’s age and prior exposure to antibiotics and health care facilities.
The foods to eat | How often
---|---
Vegetables, fruits, whole grains, olive oil, legumes, nuts and seeds, herbs, and spices | Every meal is based primarily on plant-based foods, using herbs and spices instead of salt to flavor what you eat.
Fish and seafood | These are eaten at least twice a week.
Poultry, eggs, yogurt and cheese | Portions are moderate on a daily to weekly basis.
Meats and sweets | These are eaten less often, about once a week. Red meat is limited to lean cuts in small amounts — 3 to 4 ounces at a time.

Usually contain very few unhealthy trans fats. Check labels for the term “whole” to ensure you’re getting the benefits. Dip a rustic, whole-grain bread in a small amount of olive oil, or enjoy whole-grain pasta topped with fresh chopped tomatoes, parsley and onion or maybe heaped with sautéed vegetables.

- **Making olive oil a primary source of fat** — Olive oil is a monounsaturated fat. This type of fat helps control low-density lipoprotein (LDL) cholesterol, the “bad” cholesterol, and raise levels of high-density lipoprotein (HDL) cholesterol, the “good” cholesterol. Extra-virgin olive oil contains higher levels of antioxidants and has been shown to decrease blood clotting often associated with decreased sudden heart attack risk, improve blood vessel health, and help moderate blood pressure. Use olive oil in place of animal (saturated) fats or other processed spreads, which may contain partially hydrogenated (trans) fats.

- **Choosing nuts and legumes as good sources of healthy fats, protein and fiber** — Nuts are a source of heart-healthy monounsaturated and omega-3 fatty acids. They also contain healthy phytonutrients that help keep your arteries strong and prevent dangerous heart rhythms that can lead to heart attack. However, nuts are high in calories, so keep to no more than one handful a day. Avoid candied, honey-roasted and heavily salted nuts. Make legumes such as peas, lentils and dried beans a routine part of your menus as main ingredients in entrees, soups, salads and dips.

- **Eating fish, poultry and lean dairy products** — Fish and poultry take the place of red meat in a Mediterranean diet. Fatty fish — such as lake trout, herring, sardines and salmon — are rich sources of omega-3 fatty acids. Mediterranean cuisine also features the benefits of protein and calcium from cheese and yogurt. Eat these in moderation and choose low-fat or fat-free products.

- **Drinking wine, in moderation** — Wine is typical with Mediterranean eating. Drinking in moderation means up to one drink a day for women of all ages and men older than 65, and up to two drinks a day for men 65 and younger. While alcohol in moderation may reduce risk of heart disease, don’t start drinking if you don’t drink or if your health is better served by refraining from alcohol altogether. Drinking purple grape juice — not a grape-flavored drink — may offer similar benefits to wine.

**Dish up the evidence**

A recent analysis of more than 1.5 million healthy adults found that following a Mediterranean diet was associated with a reduced risk of overall cardiovascular mortality, a reduced incidence of cancer and cancer mortality, and a reduced incidence of Parkinson’s and Alzheimer’s disease.

Another study found that the more closely eating practices conformed to the Mediterranean diet, the greater the benefit was for reduced risk of death from all causes, including deaths due to cardiovascular disease and cancer.

In 2011, an analysis of multiple studies showed that the Mediterranean diet improved risk factors that can lead to metabolic syndrome. Metabolic syndrome is a cluster of conditions — increased blood pressure, a high blood sugar level, excess body fat around the waist or abnormal cholesterol levels — that occur together, increasing your risk of heart disease, stroke and diabetes. Also last year, a study published in the *Annals of Neurology* took a close look at the brains of more than 700 adults age 65 and older. With the help of magnetic resonance imaging (MRI), researchers found that those who adhered most closely to a Mediterranean diet were up to 36 percent less likely to have brain damage related to small strokes.

One more thing to consider — if you eat like someone in the Mediterranean region, but skip the physical activity, you might be forfeiting a benefit reported in 2009 in the *Journal of the American Medical Association*. Researchers found that regular activity combined with adherence to Mediterranean eating patterns could reduce by 48 percent the risk of developing Alzheimer’s disease. ☐
Foot orthotics

Inexpensive is often best

You’re not sure what caused it, but the annoying foot pain that developed a few weeks ago just isn’t going away.

Now, a visit to the drugstore to look for a shoe insert (orthotic device) presents a whole new problem — which kind is right for you?

Orthotics come in many styles ranging from inexpensive prefabricated devices available at drugstores and shoe stores, to relatively expensive custom devices that are molded to your foot.

Fortunately, most people with common causes of foot pain can get satisfactory results from a low-cost, prefabricated orthotic device. Still, it helps to know what type of orthotic is likely to work best for the type of foot pain you have, and how to avoid some of the common pitfalls of orthotic use.

Cushion and support

An orthotic is a device that goes into your shoe to help support the foot. Orthotics can provide cushioning and help even out pressure — and help control abnormal motion that might be causing some discomfort and pain. The main categories of orthotics include:

- **Nonprescription orthotics** — These prefabricated orthotic inserts are found in drugstores and shoe stores. They can be made of very soft, cushioned materials or of semirigid materials with more structure to them. Some types of nonprescription orthotics can be heat molded to better fit the contours of your foot.

- **Custom molded orthotics** — These are made from a mold or computer analysis of your foot. Custom orthotics are commonly made of rigid materials, but they can also be semirigid or soft.

If your doctor recommends an orthotic device to treat foot pain, nonprescription orthotics are often a great place to begin. Most people with common foot problems such as plantar fasciitis may be able to achieve just as much benefit from nonprescription, over-the-counter orthotic devices as from custom-molded orthotics.

Before you buy a nonprescription orthotic, try wearing it in your shoe. Select an orthotic that feels comfortable from the start. If it hurts or simply doesn’t feel right, it’s unlikely to ever feel any better.

Before considering an orthotic device, take a look at your shoes. Orthotics are meant to work in conjunction with a quality shoe, not as a way to try to improve a poor-quality shoe. In fact, a quality walking shoe with a supportive arch that accommodates your foot problems may be just as helpful as an orthotic insert. It’s also important to replace shoes when they are worn out.

Orthotics often can provide at least some pain relief, but depending on the condition, they may not do the entire job. Shoe modifications may be needed along with an orthotic, such as a heel wedge or a brace to support a painful or weakened ankle. In addition, an orthotic is usually part of a larger plan for pain relief, which may also include physical therapy or weight loss.

<table>
<thead>
<tr>
<th>Foot problem</th>
<th>Orthotic device recommendations</th>
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<tbody>
<tr>
<td><strong>Plantar fasciitis</strong></td>
<td>A silicone heel cup can be effective. So can a semirigid orthotic that cups the heel and extends to the ball of the foot with a contour on the arch. This prevents the plantar fascia from being overstretched.</td>
</tr>
<tr>
<td><strong>Bunion or hammertoe</strong></td>
<td>The key is to have a properly fitting shoe with a toe box that has enough depth and width to give the bunion or hammertoe room. Toe and bunion shields can help limit irritation, but without enough toe box room, they may make the problem worse.</td>
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<tr>
<td><strong>Neuropathy or poor circulation related to diabetes</strong></td>
<td>Orthotic devices with layers of soft material that cushion and decrease friction are most important. You’ll typically want to avoid hard, rigid plastics.</td>
</tr>
<tr>
<td><strong>Metatarsal pain such as metatarsalgia or neuroma</strong></td>
<td>A soft pad that goes just behind the metatarsals or behind a painful neuroma in between metatarsals helps relieve impact and pressure on the joint. The pad can be affixed to a shoe sock liner, or be part of a removable orthotic device.</td>
</tr>
<tr>
<td><strong>Arthritis of the big toe (hallux rigidus)</strong></td>
<td>An orthotic with a rigid, finger-like projection under the big toe prevents painful movement of the toe. Also helpful is a traditional rocker bottom shoe with a mostly flat sole and an upward curve at the toes.</td>
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Molecular breast imaging

Seeing past dense breast tissue

Mammogram screening plays a vital role in detecting breast cancer. But in women with dense breasts, it’s difficult to distinguish normal breast tissue from tumor tissue.

To solve this, a team of scientists from Mayo Clinic developed a new tool for looking at dense breast tissue. Mayo Clinic researchers found that molecular breast imaging (MBI) detected three times as many cancers in women with dense breasts as did mammography.

MBI isn’t a replacement for mammography, which remains an accurate screening tool in women with nondense breasts. However, MBI’s ability to clearly depict what might be hidden in dense breast tissue makes it an important tool in addition to mammography.

Density matters

Breasts are a mixture of fatty and dense tissue. Younger women tend to have more dense tissue, and older women have more fatty tissue. Mammography of breasts with more fatty tissue typically produces images in which the breast tissue appears fairly dark. In contrast, tumors generally appear white.

Dense breast tissue also looks white on a mammogram. Some describe viewing mammograms of dense tissue as being similar to looking through a frosted glass window. A tumor can easily hide in a dense tissue mammogram.

About half of women younger than 50 have breasts that are considered dense on mammogram images. The same problem is seen in one-third of women older than 50.

Most commonly, breast density is classified using a four-category system that’s based on the appearance of the breast tissue on a mammogram. To find out how dense your breasts are, ask for and read the details of your most recent mammography report. When the breast is 25 percent or less dense, the radiologist’s mammography report describes the breast pattern as fatty replaced. The next category is described as scattered fibroglandular densities, followed by heterogeneously dense and finally extremely dense. Breasts are considered dense when they fall into these last two categories.

Seeing past whiteout

MBI is designed to see beyond dense breast tissue. Instead of using low-energy X-ray as in mammography, MBI relies on gamma radiation. This type of radiation has the advantage of being unaffected by breast tissue density. Before the MBI images are made, a short-lived radioactive tracer (radioisotope) is injected into an arm vein.

After the radioisotope is injected into your arm, you’ll be seated in front of the gamma camera. Your breast is positioned between two plates that are compressed, but with only about one-third the pressure used in a mammogram.

Two 10-minute images are taken of each breast. If breast tumor cells are present, they absorb this substance like a sponge and become illuminated as hot spots on MBI.

More recently, advances in the MBI gamma camera are making it possible to significantly reduce the needed radiation dose. Researchers and clinicians at Mayo Clinic say that the reduced MBI radiation levels are the same dose that’s delivered during one digital screening mammogram.

The addition of MBI to the tools available for breast imaging may also yield cost savings. Images generated from MBI provide physiological information about the breast similar to that of magnetic resonance imaging (MRI). While MRI is radiation-free, yields detailed images of the breast and is highly sensitive in detecting small breast cancers, the cost for this test can exceed thousands of dollars. MBI generally runs about $600. However, most insurance companies don’t cover the cost of MBI as a screening test.

A place in practice

After years of development, MBI received Food and Drug Administration approval in 2010. While not a substitute for mammography, it may aid in breast cancer detection in women with dense breasts.

Mayo Clinic offers MBI as a clinical test to women who are age 40 and older who wish to have the test done. Although MBI isn’t yet widely available at other medical centers, it’s anticipated that will change over the next few years.

Other uses for MBI are being studied. One area is whether MBI can help monitor how breast cancer tumors respond to chemotherapy. Preliminary findings show MBI is a useful and accurate tool for monitoring tumor response to pre-surgical chemo treatment.

No tumor is visible in the mammogram, at left, of dense breast tissue, but a tumor is clearly visible in the molecular breast imaging view at right. Source: Rhodes DJ, Hruska CB, Phillips SW, et al. Radiology 2011;258:106.

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Second opinion

Q: Doesn’t Graves’ disease cause bulging eyes? My brother was diagnosed with Graves’ disease several years ago, but his eyes appear to be unchanged.

A: About half the people with Graves’ disease develop some degree of eye problems due to inflammation and other tissue changes that affect the muscles and tissues behind the eyes. It’s called Graves’ ophthalmopathy, and most often it occurs at the same time as Graves’ disease. Occasionally, though, it will precede or follow Graves’ disease by many years.

The cause of Graves’ ophthalmopathy isn’t well understood. However, it appears that the same antibody to blame for the thyroid dysfunction of Graves’ disease may also be attracted to tissues behind the eyes, causing the tissues to increase in size. Signs and symptoms of Graves’ ophthalmopathy may include bulging eyes, excess tearing, sensitivity to light, dry or irritated eyes, a gritty sensation in the eyes, and possibly pressure or eye pain. Eyelids may appear puffy and the eyes may be reddened or inflamed. Light sensitivity, double vision and limited eye movements may occur.

Treatment for the problem varies. Mild symptoms may only require the use of nonprescription artificial tears or lubricating gels and sunglasses. Other treatment options for more-severe symptoms of Graves’ ophthalmopathy may include the use of prescription corticosteroids to reduce tissue swelling behind the eyeballs. Surgery may be needed to remove a small portion of the bone between the eye socket and sinuses to allow room for the expanded tissues and decrease pressure behind the eyes. If you experience double vision, surgery may be done to adjust eye muscles to help the eyes align.

Q: Is weightlifting or resistance training safe for me even though I have high blood pressure?

A: Weightlifting can cause a sharp, temporary increase in blood pressure. This increase can be dramatic — depending on how much weight you lift. But weightlifting provides many health benefits — including helping to lower blood pressure in the long term. For most people, this benefit outweighs the risk of a temporary spike.

Still, if you have high blood pressure, talk to your doctor before starting any exercise program. Your doctor can help you develop an exercise program tailored to your needs and medical conditions.

Use these tips for getting started on a weightlifting program:

- Don’t hold your breath — Holding your breath during exertion can cause dangerous spikes in blood pressure. Instead, breathe easily and continuously.
- Lift lighter weights more times — Heavier weights require more strain, which can cause a greater increase in blood pressure. You can challenge your muscles with lighter weights by increasing the number of repetitions you lift.
- Listen to your body — Stop your activity right away if you become severely out of breath or dizzy or if you experience chest pain or pressure.
- Stretch and rest — Stretch before and after exercise. Allow at least one day between resistance training sessions to allow the muscles to rest.

Have a question or comment?

We appreciate every letter sent to Second Opinion but cannot publish an answer to each question or respond to requests for consultation on individual medical conditions. Editorial comments can be directed to:

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