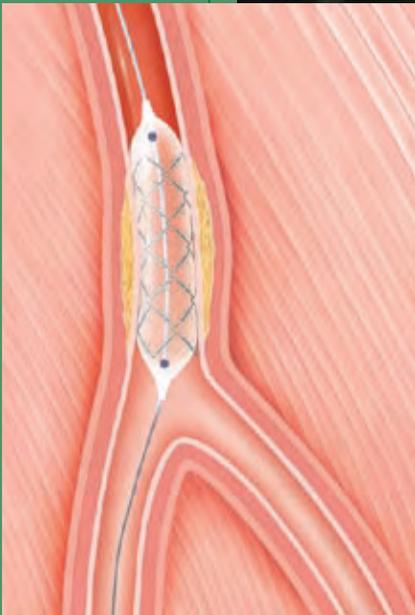


Angioplasty and Stenting for PAD



What Is PAD?

Your doctor has told you that you have peripheral arterial disease, also called PAD. This means the arteries in your legs are narrowed or blocked. You may have had tests that confirm a blockage. And you may already have tried lifestyle changes to relieve your symptoms. Unfortunately, PAD can't be cured. But treatment along with a healthy lifestyle can improve blood flow, helping to keep the disease from getting worse.

Who Gets It?

Certain health problems and habits increase the chances of developing PAD. The more risk factors you have, the greater your chances of getting this disease. The most common risk factors include:

- Smoking
- Diabetes
- Heart disease, such as coronary artery disease (CAD)
- Being age 60 or older
- High blood pressure
- High cholesterol, a high-fat diet, or both

What Are the Symptoms?

PAD can cause cramping or aching in your buttocks, thighs, or calves after a short walk. The pain, called **claudication**, goes away when you stop but returns when you move again. It's likely to be worse when you climb stairs or go uphill. As PAD gets worse, you may have pain more often. Having PAD also makes it more likely that other arteries may be blocked. Arteries that carry blood to the heart or brain are often affected. This puts you at risk of heart attack or stroke.



Treating PAD with Endovascular Procedures

Sometimes PAD can be controlled with lifestyle changes alone. These include stopping smoking, exercising daily, and managing health problems such as diabetes. You also may benefit from combining lifestyle changes with certain medications. But lifestyle changes and medication do not always relieve symptoms. For that reason, your doctor has suggested an endovascular procedure to help clear the blockage. Read on to learn more about this procedure. You will learn how to prepare for the procedure, how it is done, and what to expect after.



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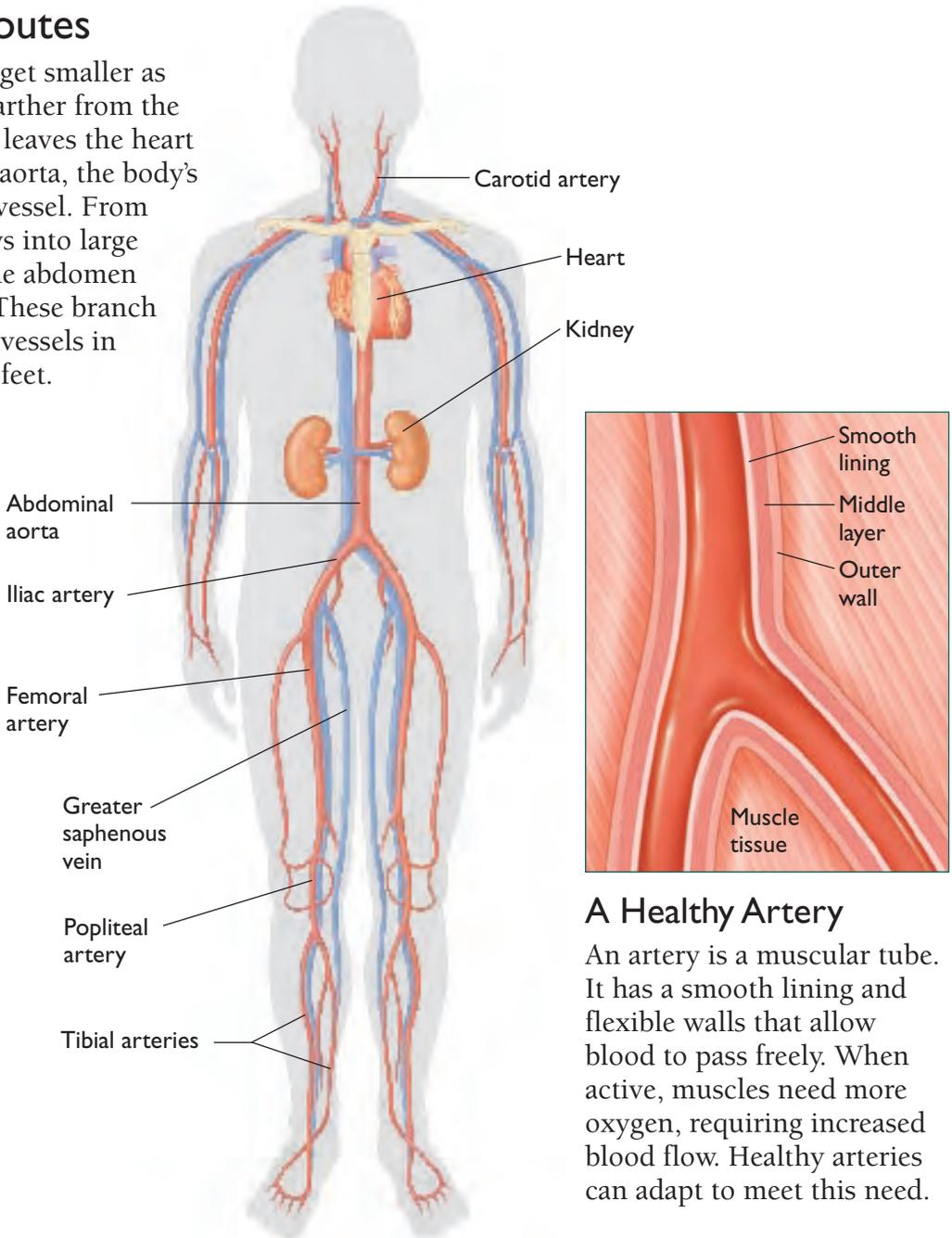
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How Blood Circulates

With each beat, your heart pumps oxygen-rich blood throughout the body. Arteries carry this blood to your organs and muscles. Veins then return oxygen-poor blood to the heart. This cycle works well when the arteries and veins are healthy. But if an artery is damaged, blood flow may be slowed or blocked. This means your muscles and tissues don't get all the oxygen they need.

Major Routes

The arteries get smaller as they travel farther from the heart. Blood leaves the heart through the aorta, the body's main blood vessel. From there, it flows into large arteries in the abdomen and thighs. These branch into smaller vessels in the legs and feet.

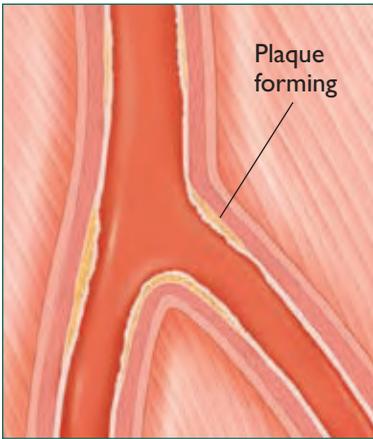


A Healthy Artery

An artery is a muscular tube. It has a smooth lining and flexible walls that allow blood to pass freely. When active, muscles need more oxygen, requiring increased blood flow. Healthy arteries can adapt to meet this need.

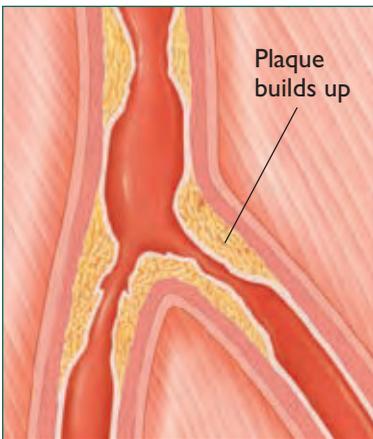
When Blood Flow Changes

As you age, your arteries become stiffer and thicker. In addition, risk factors, such as smoking and high cholesterol, can damage the artery lining. This allows plaque (a buildup of fat and other materials) to form within the artery walls. The buildup of plaque narrows the space inside the artery and sometimes blocks blood flow.



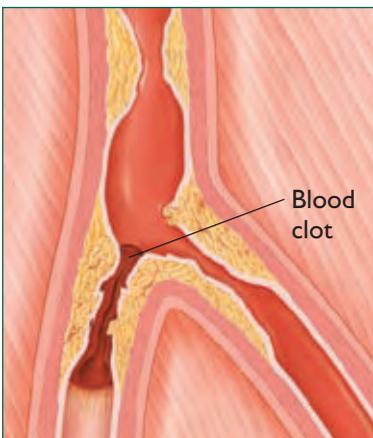
A Damaged Artery

PAD begins when the lining of an artery is damaged. This is often due to a risk factor such as smoking or diabetes. Plaque then starts to form within the artery wall. At this stage, blood flows normally, so you're not likely to have symptoms.



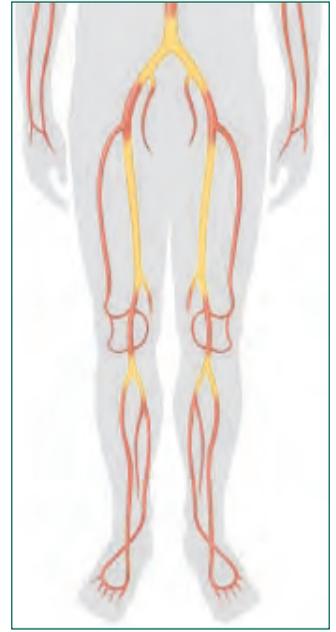
A Narrowed Artery

If plaque continues to build up, the space inside the artery narrows. The artery walls become less able to expand. The artery still provides enough blood and oxygen to your muscles during rest. But when you're active, the increased demand for blood can't be met. As a result, your leg may cramp or ache when you walk.



A Blocked Artery

An artery can become blocked by plaque or by a blood clot lodged in a narrowed section. When this happens, oxygen can't reach the muscle below the blockage. Then you may feel pain when lying down (**rest pain**). This type of pain is especially common at night when you're lying flat. In time, the affected tissue can die. This can lead to the loss of a toe or foot.



With PAD, a leg can have more than one blockage. The yellow areas show common sites of blockages.

Your Medical Evaluation

You've probably been referred to a specialist who evaluates and treats blood vessel problems. The referral may have been due to your symptoms or the results of blood flow measurements. Your health history, a physical exam, and certain tests help determine whether you have PAD. Other tests can show which arteries are narrowed or blocked.

Your Health History

You'll be asked about the symptoms and risk factors you may have for PAD. Be sure to mention any medications you're taking, including aspirin, blood thinners, and herbs.

Physical Exam

Plaque can form in blood vessels throughout your body. For that reason, your doctor will feel for pulses and listen to blood flow in your major arteries. Your upper arms and abdomen are also likely to be checked. And your feet and legs will be examined carefully for signs of PAD. These can include nail problems, changes in color and temperature, and sores that don't heal.



Your doctor will listen to your major arteries, including the carotid arteries in the neck

Tests to Measure Blood Flow

You also may have tests that check the blood flow in your legs and feet. These tests are quick and painless.

- **Ankle-brachial index (ABI)** compares blood pressure in your ankle with the pressure in your arm. Based on the results, your doctor may diagnose PAD.
- **Doppler ultrasound** looks at the blood flowing through your arteries. It can show changes in blood flow due to artery narrowing or blockage.



.Doppler ultrasound is a painless test that shows blood flow in your arteries.

Imaging Tests

If you're found to have PAD, you may have other tests. These show the amount of damage in an artery and its exact location. Your doctor will use the results to plan the most effective treatment for you.

Arteriography

In this test, x-rays help pinpoint where the artery is narrowed or blocked. Before the procedure, you'll be given medication to make you comfortable. A long, thin tube (**catheter**) is then inserted into an artery, usually in your groin. From there, it's carefully threaded to the affected artery. Once the catheter is in place, a contrast dye is injected into the artery. The contrast dye fills the artery so blood flow shows up clearly on the x-rays. Several images (**arteriograms**) are then taken.

Other Imaging Tests

You may have other tests to help detect a narrowing or blockage. The use of contrast dye allows the condition of the arteries to be seen more easily.

- **CT arteriography** uses computer-generated x-rays to provide detailed images of arteries.
- **MR arteriography** uses a strong magnet and radio waves to produce images of blood flow in the arteries.



This arteriogram shows narrowing in both iliac arteries. The sites are shown in the circle above.

Risks and Complications of Arteriography

Although complications of arteriography are fairly rare, risks may include:

- Bleeding from the catheter insertion site
- An allergic reaction to the contrast dye
- Small blood clots
- Artery damage
- Kidney problems

Forming Your Treatment Plan

In planning treatment, your doctor considers several factors. These include the number of arteries affected and the site and extent of the damage. Your overall health is also a factor. Lifestyle changes are a key part of care. But medication and treatment are also often needed to improve symptoms. Endovascular procedures are a key treatment.

Endovascular Procedures

These procedures may be used to treat a severely narrowed artery or a short blockage. They can be done through small punctures. Endovascular procedures include angioplasty and stenting. Both use catheters (thin tubes) to reach blockages in your arteries.

- **Angioplasty** uses a tiny balloon to open blocked arteries.
- **Stenting** is the insertion of a tiny wire mesh tube into an artery to hold it open.



After the evaluation, you'll meet with your doctor to discuss your treatment options.

Changing for Life

Although there is no cure for PAD, you can play a major role in the treatment process. Long-term lifestyle changes can reduce risk factors that damage arteries. By staying committed to a healthy lifestyle, you can help slow the progress of this disease. For a slightly narrowed artery, your symptoms are likely to improve if you stop smoking, exercise daily, and eat low-fat foods. These measures help improve blood flow throughout your whole body. This can reduce your risk of heart attack and stroke.

Preparing for Your Procedure

Before an endovascular procedure, you are likely to have tests to assess your overall health. The types of tests depend partly on your risk factors. You also may be given special instructions about medications and diet.

Testing Before Treatment

To help ensure that your procedure goes smoothly, you may have one or more of these tests:

- An ECG checks the health of your heart. You also may have a test that measures how your heart responds to stress. You won't have to exercise during this test.
- A routine chest x-ray helps detect lung problems.
- Some blood tests show how well your kidneys are working. Others assess the blood's ability to clot. Blood sugar levels are also likely to be checked.

Getting Ready for the Procedure

Being well prepared can make you feel more at ease on the day of your procedure. Be sure to:

- Know all the medications you take, including vitamins, herbs, and other supplements.
- Stop taking medications as directed. You are likely to receive special instructions if you have diabetes or use blood thinners.
- Keep taking certain medications as instructed by your doctor.
- Don't eat or drink anything after the midnight before your procedure.
- Arrive at the hospital early to fill out paperwork.
- Arrange for an adult family member or friend to drive you home. Pack a bag if you're likely to stay overnight.



Have a family member help you make a list of your medications.

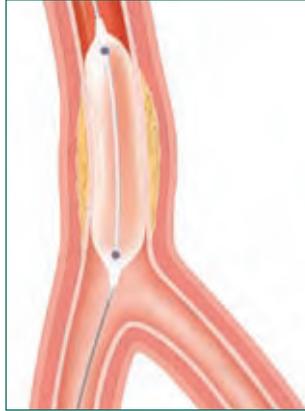
Endovascular Procedures

Angioplasty is used to widen a narrowed artery or open a blockage. Then a stent may be inserted to hold the artery open. More than one artery may be treated during these procedures.

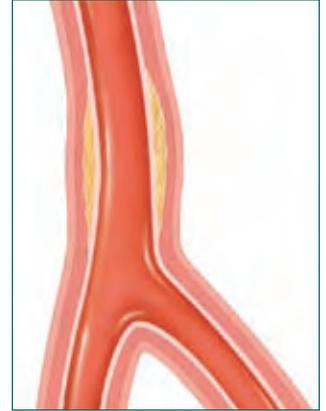
Angioplasty



A balloon-tipped catheter is inserted into the artery and threaded to the narrowing or blockage.

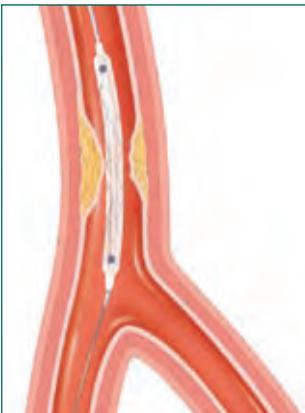


The balloon is inflated and deflated several times. This presses the plaque against the artery walls.

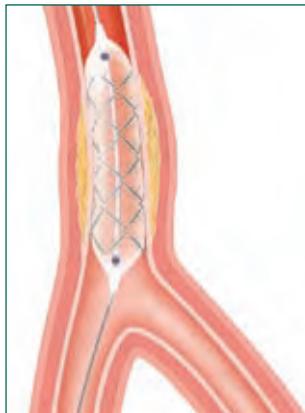


Once the artery is open, the balloon is deflated and removed. Blood flows freely through the widened channel.

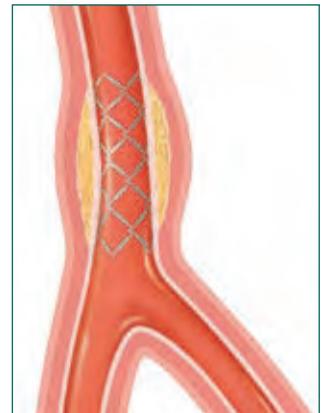
Stenting



A collapsed stent is mounted onto a balloon catheter and guided across the blockage.



The balloon is inflated to open the stent, which locks into place inside the artery.



The balloon is deflated and removed. The stent remains in place, holding the artery open.

While You Recover

You will need to lie flat right after the procedure. And you may be asked not to bend your leg for 2 to 6 hours. The blood flow in your legs will be closely monitored during this time. Most people are able to go home the same day. Once home, take any medications as directed. Follow all your discharge instructions for the best recovery.

If Symptoms Return

Arteries sometimes become narrowed or blocked again in the same place (restenosis). This may even occur a few months after treatment. If you notice a return of claudication or rest pain, contact your doctor. In many cases, a second balloon angioplasty can reopen the artery and reduce symptoms.



You're likely to go home within hours of your procedure. An adult family member or friend should be with you.

Risks and Complications

As with any procedure, angioplasty and stenting have certain risks. They include:

- Rupture of the treated artery
- Bleeding
- Blood clots
- Heart or lung complications
- Kidney problems
- Loss of toe or foot
- Death (rare)

When to Call Your Doctor

Following an endovascular procedure, call your doctor if you have:

- Swelling or bleeding at the insertion site
- Chest pain or trouble breathing
- A temperature of 101.4°F (38.5°C) or higher
- A change in the temperature or color of your foot
- A return of symptoms similar to those you had before the procedure

Living a Healthier Life

Maintaining a healthier lifestyle can help slow the disease. It can also improve the overall health of your arteries, reducing the chance of heart attack or stroke.

Keep Follow-up Visits

Be sure to keep all of your follow-up appointments. During these visits your doctor will check your blood flow. If problems are found, they can be treated right away.

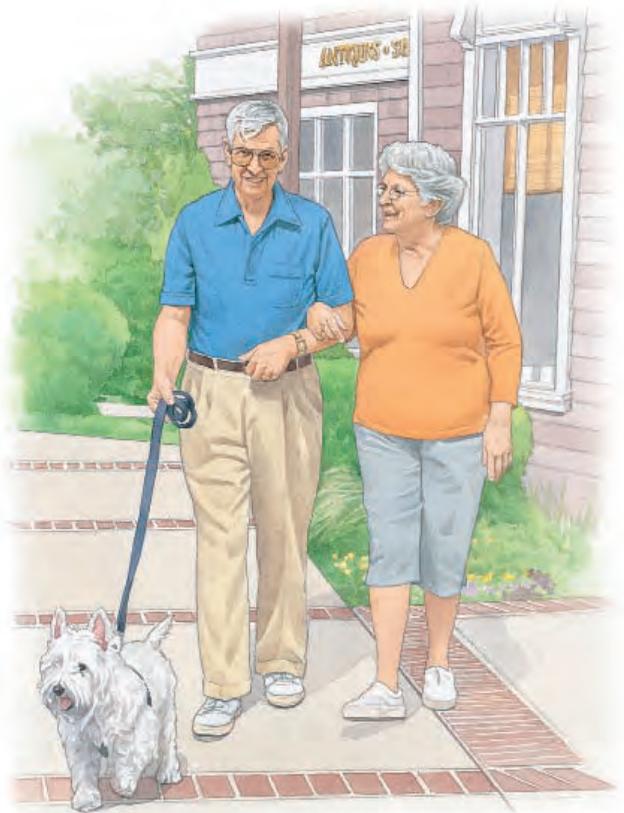
Exercise Daily

Frequent exercise is important for your health. It improves blood flow and helps lower blood pressure. When you resume your walking program, start with short walks. Then increase your distance a little each day. Ask your doctor if a supervised exercise program is right for you.

Take Care of Your Feet

Even after treatment, your feet need extra care. Sores or blisters may take a long time to heal. This increases the risk of infection. To protect your feet:

- Have a podiatrist (foot specialist) trim your toenails.
- Wear sturdy shoes. Avoid high heels and shoes with open toes.
- See a healthcare provider if you have cuts or wounds on your feet.



If You Smoke, Quit!

Smoking is the main risk factor for PAD. It interferes with blood flow and injures the walls of the arteries. Quitting isn't easy, but these steps may help:

- Ask your doctor for advice on programs and aids.
- Get support from your family, friends, or support groups.
- Avoid places and situations where you're likely to smoke.
- Don't give up—it may take 3 or 4 tries to finally quit.

Eat Healthy Foods

A healthy diet is a good way to lower your risk of PAD. It helps prevent plaque buildup and reduces blood pressure and cholesterol levels. For the greatest health benefits:

- Limit all fats to one-third of your daily calories. Then choose the right kinds of fats. Use olive or canola oil instead of butter or margarine.
- Eat at least 5 servings of fruits and vegetables each day. They contain fiber, vitamins, minerals, and antioxidants.
- Limit red meat, dairy products, and processed foods. Instead, choose chicken, fish, or tofu.
- Bake, broil, or steam foods. They taste great and have less fat.
- Follow diet changes that can help control health problems. Use less salt if you have high blood pressure. Limit sugar and carbohydrates if you have diabetes.
- Eat smaller portions to reach or maintain a healthy weight.



Better nutrition is good for you and your family.

Manage Any Health Problems

Managing other health problems is a big part of keeping your arteries healthy. Talk to your doctor about the best way to control diabetes, high blood pressure, high cholesterol, or heart disease. In general:

- Take medications as directed. Don't skip days or stop taking them without your doctor's okay.
- Have your cholesterol and blood pressure checked as often as directed.
- Maintain a healthy weight.
- If you have diabetes, test your blood sugar as directed.



If you have diabetes, controlling blood sugar can help keep arteries healthier.

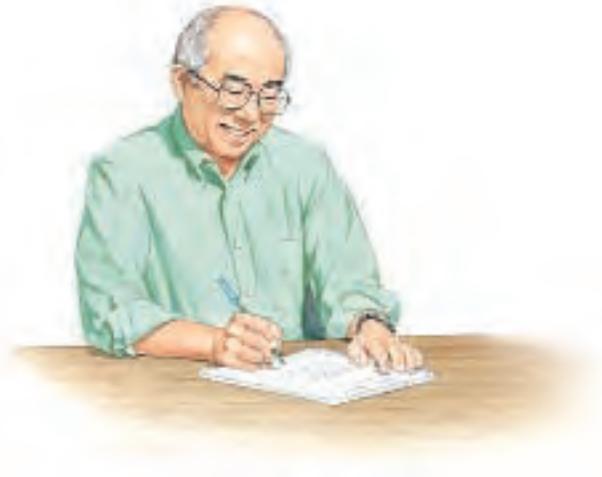
Starting a Walking Program

Exercise plays a major role in managing artery disease. For that reason, you may be told to walk daily. Start with one or two short walks each day. Then try to increase your time or distance.

To Get on Track

If you are given guidelines for your walking program, be sure to follow them. For instance, your healthcare provider may tell you to keep walking even when you feel leg pain. Doing so can help improve circulation. Over time, this may help lessen your pain. Try the suggestions below to help make your program a success:

- Stretch before and after you walk. This helps reduce the risk of injury.
- Warm up and cool down. Walk slowly for 5 minutes before and after you exercise.
- Don't let bad weather stop you. When you can't walk outside, walk indoors. You can walk in a mall or even at home.
- Don't walk through pain unless your doctor says it's okay.
- Track your progress. Each day, record how long and how far you walked.



Use a notebook or a wall chart to record how long you walk.

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