

Patient information from the BMJ Group

Peripheral arterial disease

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Peripheral arterial disease

Peripheral arterial disease occurs when the arteries that supply your lower limbs become too narrow, meaning that not enough blood is getting to your legs. This can make your legs hurt, so you can't walk very far. There are treatments that can help with your symptoms. They can also stop the disease affecting the blood supply to your heart and brain.

We've brought together the best research about peripheral arterial disease and weighed up the evidence about how to treat it. You can use our information to talk to your doctor and decide which treatments are best for you.

What is peripheral arterial disease?

If you have peripheral arterial disease, the big blood vessels in your body, called arteries, become too narrow. Your arteries carry blood from your heart to the rest of your body. Peripheral arterial disease usually affects the arteries that go through your abdomen and groin and then down to your legs.

Peripheral arterial disease (PAD for short) is sometimes called peripheral vascular disease (PVD). You might also hear it called peripheral artery occlusive disease (PAOD).

Every cell in your body needs oxygen and nutrients from blood to survive. If the arteries in your legs become too narrow, not enough blood, oxygen, and nutrients get through. The muscle and other cells in your leg may die. If your leg gets badly damaged, it may have to be amputated. But this doesn't happen to many people. ^[1]

Arteries usually become narrow when clumps of fat (called plaques) build up in the wall of the artery. Over time, these plaques make your artery narrower, stiffer, and rougher. This is called **atherosclerosis**.

If a plaque breaks open, a blood clot forms over the tear. The clot tries to patch up the plaque, just like a scab on your skin if you cut yourself. Doctors call this clot a **thrombus**. The thrombus may make your artery even narrower, or block it completely.

Sometimes a clot in an artery in another part of your body can break off and reach your leg. It may attach itself to the inside of an artery in your leg. So the artery in your leg

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becomes narrow or gets blocked. When a clot from another part of your body gets stuck in a leg artery, it's called an **embolus**.

If the arteries in your legs have become narrow, other important arteries to your heart or your brain may also have become too narrow. If the arteries to your heart are too narrow, you may get chest pain. (To read more, see our information on [Angina](#) .) If arteries in other parts of your body are affected, you may get pain in your back or your buttocks. If you're a man, you may get erection problems.

You are more likely to get peripheral arterial disease if: ^[2]

- You're over 50
- You're a man
- You smoke
- You have **diabetes**
- You have **high blood pressure**
- You have **high cholesterol**
- You're overweight
- You don't take much exercise.

What are the symptoms of peripheral arterial disease?

In the early stages of your peripheral arterial disease, you may not know there is anything wrong. But as your disease gets worse, you'll probably get some discomfort and pain in your legs.

If you have peripheral arterial disease you may get some of these symptoms:

- An aching or cramping pain in your calf, thigh, foot, or buttock (doctors call this pain **claudication**)
- The pain may occur only when you exercise, in which case you have **intermittent claudication**
- Pain, numbness or tingling in your calf, thigh, foot, or buttock even when you're sitting down
- Cuts, bruises or ulcers on the skin of your legs or your feet, which don't heal properly or heal very slowly.

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- Violet to black discoloration of your toes or other areas of your foot.

These symptoms can happen with other diseases too. You should go to your doctor if you have any of these symptoms to get them checked out.

Your doctor may ask you some or all of the following questions to find out if you have peripheral arterial disease. ^[3] ^[4]

- Where do you get this pain?
- Do you get pain when you walk?
- Does the pain ever start when you are standing still or sitting?
- Do you get pain if you walk uphill or hurry?
- Do you get pain if you walk normally on level ground?
- What happens if you stand still?

Your doctor will also examine you by: ^[5]

- Taking your blood pressure in both your arms
- Checking your pulse at different places in your legs and feet to see how well the blood is going through the arteries in your legs, and at other places such as your wrist and neck
- Looking for unhealed cuts and bruising on your legs and feet.

If your doctor isn't sure whether you have peripheral arterial disease, you may be referred to a specialist (a vascular surgeon) for more tests.

You may have some or all of the following tests: ^[4] ^[5] ^[6]

- Exercise tests to see how far you can walk before your leg hurts
- Blood pressure measurements in your arms and legs
- Blood tests
- An **ultrasound scan** to see how well blood is flowing through the arteries to your legs
- Angiography (a type of **x-ray** that's used to find out if there is a blockage in one of your arteries)

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- Tests on arteries to your heart and other organs to check for damage.

How common is peripheral arterial disease?

Many middle-aged and older people get peripheral arterial disease. It's less common in younger people.

About 1 in 7 men over 55 and 1 in 8 women over 55 have peripheral arterial disease. ^[7]
^[8]

In the UK, about 100,000 people are diagnosed with peripheral arterial disease each year. ^[9]

What treatments work for peripheral arterial disease?

There are many treatments that can help with your symptoms of peripheral arterial disease. The treatments can also reduce your risk of other health problems. There are also things you can do to help yourself.

Key points about treating peripheral arterial disease

- Taking antiplatelet medicines to prevent blood clots forming may reduce your chance of having a heart attack or a stroke . It can also reduce your chance of needing an operation to unblock an artery in your leg.
- Taking regular exercise (at least three times a week) may help you to walk further and exercise for longer before you get pain in your leg.
- Taking statins can help with pain. Statins are medicines that help reduce the amount of cholesterol in your blood. They can also reduce your risk of having a heart attack or a stroke.
- Other medicines can also help with pain, including one called naftidrofuryl oxalate. This is a type of drug called a vasodilator. It works by widening your blood vessels.
- Stopping smoking may stop peripheral arterial disease getting worse.
- If the arteries to your leg get very narrowed, you may need an operation to make them wider or bypass the most damaged parts. But the benefits may not last more than a few months or years.

We've looked closely at the research and ranked the treatments into categories, according to whether they work.

Treatment Group 1

Treatments for peripheral arterial disease

Treatments that work

- [Antiplatelet medicines](#)
- [Exercise](#)

Treatments that are likely to work

- [Stopping smoking](#)
- [Naftidrofuryl oxalate](#)
- [Cilostazol](#)
- [Statins](#)
- [Angioplasty \(surgery to widen your arteries\)](#)
- [Bypass surgery](#)

Treatments that work, but whose harms may outweigh benefits

- [Prostaglandins](#)

Treatments that need further study

- [Pentoxifylline](#)

What will happen to me?

Everyone is different, and it's difficult to say exactly what will happen to you. Your symptoms may get better on their own, they may stay the same, or they may gradually get worse.

If you have peripheral arterial disease, you're more likely to have a **heart attack** or a **stroke**. Your legs may also get badly damaged.

Here's what we know from the research. ^[10] ^[11]

- Over a period of five years, 1 in 5 people with pain in their calf when they exercise have a heart attack or a stroke.

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- People with peripheral arterial disease are two to three times more likely to die earlier than people who don't have this condition.
- About 3 in 10 people with peripheral arterial disease die within five years of having the disease diagnosed. About 7 in 10 die within 15 years. Mostly, people die because of heart disease or a stroke.
- Some people get very bad damage to the arteries in their leg. In rare cases, people end up needing to have their leg amputated. In one study, fewer than 2 in 100 people needed to have a leg amputated in the first eight years after being diagnosed.^[12] This study was published in the 1980s, so the outlook is likely to be better now.

These figures may sound alarming. But remember that the research can't say what will happen to you as an individual. Treatment may help improve your symptoms, reduce your chances of having a heart attack or a stroke, and stop your condition getting worse.

Treatments:

Antiplatelet medicines

In this section

Antiplatelet medicines prevent blood clots from forming, so they reduce your risk of getting blood clots in your arteries. This means you may be less likely to have a heart attack or a stroke, or need an operation to unblock an artery in your leg.

Your doctor will probably treat you with one of these medicines or combinations of medicines:

- Aspirin
- Aspirin and dipyridamole (a brand name for the combination is Asasantin Retard)
- Clopidogrel (Plavix).

These medicines make the tiny cells called **platelets** in your blood less sticky. The platelets help your blood to clot when you are injured. But if your platelets are less sticky, they will be less likely to form clots that could block the arteries to your legs, or other arteries (such as those that carry blood to your heart or your brain).

A summary of the research found that people who took antiplatelet drugs were able to walk further, on average, than people given a dummy treatment (a placebo) for comparison.^[13]

Researchers have also looked at whether antiplatelet medicines helped people to get well enough so that they didn't need an operation to unblock their arteries. The summary found that people who took antiplatelet medicines were about one third less likely to need

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an operation to unblock their arteries compared with people who took the dummy treatment.^[14]

Lots of research has also shown that antiplatelet medicines help people with peripheral arterial disease live longer. This is because they reduce your risk of having a heart attack or a stroke.

One summary of the research (a **systematic review**) looked at about 4,000 people with peripheral arterial disease.^[14] The people took either antiplatelet medicines or a dummy treatment (called a **placebo**). The summary looked at many antiplatelet medicines, not just the main ones we have listed above. But all the medicines did the same job.

The summary found that:

- 53 in 1,000 people who took antiplatelet medicines had a heart attack, a stroke, or another serious problem caused by damage to their arteries
- 65 in 1,000 people who took the dummy treatment had a heart attack, a stroke, or another serious problem caused by damage to their arteries.

The summary also looked at whether one antiplatelet medicine was better than any others. It looked at studies of more than 6,400 people, and found that clopidogrel might be better than aspirin at preventing problems.^[14] The summary found that:

- 47 in 1,000 people who took clopidogrel had a heart attack, a stroke, or another serious problem caused by damage to their arteries
- 58 in 1,000 people who took aspirin had a heart attack, a stroke or another serious problem caused by damage to their arteries.

You might want to discuss with your doctor which medicine is best for you.

Taking aspirin and clopidogrel together might be better than just taking aspirin when it comes to preventing heart attacks for people with peripheral arterial disease. One study found that, over 26 months, people who took both drugs had fewer heart attacks than people who took aspirin with a dummy treatment (a placebo).^[15]

The most common side effect of antiplatelet medicines is bleeding more than usual. By stopping you from getting harmful blood clots, antiplatelet medicines may also prevent your blood from clotting when it needs to. Some studies have found that antiplatelet medicines double your risk of serious bleeding (**haemorrhage**), from about 1 in 100 if you don't take these medicines to 2 in 100 if you do take them.^[16] But other studies have found your risk of bleeding is much smaller than this.^[16]

Exercise

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In this section

If you have peripheral arterial disease, you might find taking regular exercise helpful. It can help you walk further and exercise for longer before you get pain in your calf.

No one knows exactly why exercise helps. It probably improves the blood supply to your legs and helps the muscles of your legs to work more efficiently. This means that it takes longer before your legs start hurting.^[17]

Lots of research has shown that exercise can help people with peripheral arterial disease to go further before their legs start to hurt. People have done different types of exercise in the studies, including walking outside or on a treadmill, and using an arm-crank machine.

We found several large summaries of research ([systematic reviews](#)) that looked at how exercise could help people with peripheral arterial disease.^{[18] [19] [20] [21] [22] [23] [24]}

^[25] In most studies, people also took [antiplatelet medicines](#) to prevent their blood from forming harmful blood clots.

- One summary of research found that people who exercise at least twice a week are able to walk further and for longer than people who have no treatment or "usual care". The summary couldn't tell if exercise helped prevent leg amputation, heart attack, stroke, or death.
- It doesn't seem to matter what exercise you do.^[25] It can involve either your upper body or lower body. One study found that people who used an arm-crank machine for 12 weeks were able to walk further without pain than those who did no exercise.^[26] It might be that any exercise helps your heart work better, which then helps you walk further.
- In one study, some people took part in a programme in which they were given advice and help to stop smoking, as well as taking exercise. About 23 in 100 people who did both of those things could walk further 12 months later. Out of those people who didn't take part in the programme, only 15 in 100 could walk further a year later.

Several studies have also looked at how doing exercise compares with having an [angioplasty](#) (an operation to make your narrowed arteries wider). Researchers found that exercise and angioplasty both worked well in helping people walk farther and feel better. But some studies found that having an angioplasty and doing exercise helped people even more than just doing one or the other.^{[27] [28] [29]}

As long as you exercise sensibly and don't overdo it, you shouldn't come to any harm. Your doctor, nurse, or physiotherapist can advise you on what exercise is best for you.

Stopping smoking

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In this section

If you smoke, you're at greater risk of getting many diseases, including peripheral arterial disease.

If you already have peripheral arterial disease, stopping smoking reduces the chances of: ^[5]

- Having a heart attack
- Having your leg amputated
- Dying sooner than someone who has peripheral arterial disease but doesn't smoke.

But there hasn't been much good-quality research on the effect of stopping smoking if you have peripheral arterial disease. It isn't ethical to do good-quality studies (randomised controlled trials) on peripheral arterial disease and stopping smoking. This is because some people in the study would have to continue smoking, even when doctors know that stopping smoking could help them.

Statins

In this section

Taking medicines called statins can reduce your chances of having a heart attack or a stroke, and help you walk further or for longer before you get pain in your legs. Taking statins also reduces people's chances of dying because of a heart attack or a stroke.

Doctors usually use the following statins:

- Atorvastatin (brand name Lipitor)
- Fluvastatin (Lescol)
- Pravastatin (Lipostat)
- Rosuvastatin (Crestor)
- Simvastatin (Zocor).

Statins work by reducing the amount of cholesterol that gets into your blood. This means there's less build-up of clumps of fat (plaques) in the walls of your arteries that carry blood to your legs, your heart, your brain and other parts of your body. In this way, statins prevent your damaged arteries getting any narrower so the blood supply to your legs and other parts of your body isn't reduced further. Taking statins may even reverse some of the damage that has already happened. ^[30]

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There have been some good-quality studies (randomised controlled trials) on statins in people with narrowed arteries to their heart. ^[31] ^[32] ^[33] The studies looked at whether taking statins helped reduce people's chances of having a heart attack or a stroke and helped them live longer.

One large study involved about 2,700 people with peripheral arterial disease. It found that: ^[31]

- Nearly 6 in 100 people who took a statin died of a heart attack, compared with nearly 7 in 100 who took a dummy treatment (a placebo)
- Just over 4 in 100 people who took a statin had a stroke, compared with nearly 6 in 100 people who took the dummy treatment.

These differences may not sound very big. But, as thousands of people have peripheral arterial disease, taking statins can save lives.

There have also been some good-quality studies (randomized controlled trials) looking at statins in people with peripheral arterial disease. These studies also found that taking a statin increased how far or how long people with peripheral arterial disease could walk before they got pain in their legs. But the benefit was quite small. ^[34] ^[35] ^[36] ^[13] In the largest of these studies: ^[36]

- People who took a statin for 12 months could walk for 81 seconds longer without pain than before they started treatment
- People who took a dummy treatment (a placebo) could walk for 39 seconds longer than before they took the dummy treatment.

Statins can cause pain in your muscles. This is different from the pain you get with peripheral arterial disease. This is because it can happen in any muscle, not just the muscles of the legs. And it doesn't go away if you sit down or rest. But in some studies people who took a dummy treatment (a placebo) were just as likely to get muscle pain as those who took a statin. ^[31]

The drug atorvastatin may be less suitable for people who are at risk of a stroke caused by bleeding in the brain (a haemorrhagic stroke). ^[37] Make sure you tell your doctor if you've had a stroke before.

If you have diabetes, your doctor might talk to you about statins before prescribing them. Statins can affect blood sugar in some people with diabetes. But even so, the benefits of statins will probably outweigh any problems they might cause. ^[38]

Angioplasty

In this section

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Having an angioplasty to make your narrowed artery wider will probably help you to walk further at first. But the benefits may not last.

You'll be awake while you have this operation, but you'll have an injection (a **local anaesthetic**) so that you don't feel any pain.

The operation to widen narrowed or blocked arteries is called angioplasty. The full name is **percutaneous transluminal angioplasty (PTA)**. **Percutaneous** means the operation is done through a tiny hole in your skin. **Transluminal** means you'll have a thin tube passed through your blood vessels.

Here's what happens during the operation.

- Your doctor will insert a thin tube with a tiny deflated balloon at its tip into your body. The tube is usually inserted near your groin through a fine needle.
- Your doctor then feeds the tube through your blood vessels until it reaches the part of your artery that is blocked.
- Your doctor then inflates and deflates the balloon several times. This helps widen your artery and gets blood flowing through it again.

But your artery may become narrower again in the weeks or months after the operation. So doctors often insert a small tube, called a stent, in the place where your artery was blocked or very narrow. This can help to keep it open.

There's been lots of research on angioplasty. Studies have looked at how much further people can walk after angioplasty and how long the effect lasts.

- One small study found that six months after angioplasty, people could walk 500 metres (about 550 yards) more before their leg hurt, compared with those who hadn't had surgery to widen their arteries. But after two years, people who'd had surgery weren't any better at walking than people who hadn't had surgery. ^[39]

Other studies have compared angioplasty with exercise.

- One small study found that people who had angioplasty could walk an extra 130 metres (142 yards) six months after the surgery. People who took part in an exercise programme could walk an extra 50 metres (54 yards). But the benefits of the surgery didn't last. ^{[40] [41]}
- Another study found that angioplasty led to quicker improvement than exercise. ^[42] People had fewer symptoms during the first few months. However, the benefits faded, and there was no difference between angioplasty and exercise after a year.

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Studies have also found that having angioplasty with a stent to keep the artery open might be slightly better than angioplasty without a stent.^[43] ^[44] However, the advantage is small, and fades over time. Studies found a benefit after six months, but a year or two after surgery there was no advantage to having a stent.

All operations have some risk of complications. In angioplasty there is a risk of bleeding during the operation. There's also a very small risk that you might lose a limb during the operation, have a heart attack or a stroke, or die.^[45] ^[46]

Bypass surgery

In this section

If you have long-term peripheral arterial disease that is very bad and getting worse, doctors think that you are likely to benefit from surgery to bypass your diseased artery.

In a bypass operation, your surgeon makes a new way for blood to flow past the blocked part of your artery. He or she takes a small piece of a **vein** from your leg and stitches it onto the damaged artery, so that blood goes through the vein. This can help improve the blood supply to your leg. Sometimes doctors use an artificial tube instead of a piece of your vein.

Research shows that this operation can help to improve the flow of blood in your arteries, but the effects may not last more than two years. Your doctor will probably suggest this operation when the blocked or narrowed arteries in your abdomen, groin, or leg cannot be opened up with [surgery to widen your arteries with a balloon \(angioplasty\)](#) .

One summary of the research looked at four good-quality studies on bypass surgery in people with peripheral artery disease. After one to two years, people who had bypass surgery had better blood flow in the diseased area than those who had angioplasty.^[47] But after four years the advantage had worn off.

However, a follow-up of one of the studies found that people who had bypass surgery were less likely to have died two to seven years after their operation, compared with those who had angioplasty.^[48]

All operations have some risk of complications. About 8 in 100 people who have bypass surgery for peripheral arterial disease have serious problems after the surgery. Between 2 in 100 and 3 in 100 people die during or soon after surgery.^[49] ^[50]

Cilostazol

In this section

Taking a medicine called cilostazol may help you to walk further before your legs hurt.

However, cilostazol is not recommended for peripheral arterial disease by the National Institute for Health and Care Excellence (NICE), the body that advises the government

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on which treatments should be available on the NHS. ^[51] Studies suggest that another medicine, called [naftidrofuryl oxalate](#) , works better.

We don't know exactly how cilostazol (brand name Pletal) works in peripheral arterial disease. It seems to make your arteries wider and stops the platelets in your blood from sticking together to form blood clots. ^[17] (Platelets are tiny cells in your blood that help your blood to clot when you are injured.)

A few summaries of the research looked at several studies on cilostazol for peripheral arterial disease. ^[52] ^[53] ^[54] The first summary found that cilostazol helped people walk further without their legs hurting. It also found that people who took cilostazol felt their walking speed had improved a lot. But some of the studies in this summary weren't done very well. ^[52] A later study also found that cilostazol helped people walk further in the first six weeks of treatment, but the improvement had disappeared after 24 weeks. ^[55]

The second summary of the research found that people who took cilostazol were less likely to have a stroke, compared with people who took a dummy treatment (a [placebo](#)). ^[54] However, cilostazol didn't seem to lower people's risk of having a heart attack.

A third summary found that cilostazol didn't work as well as [naftidrofuryl oxalate](#) in helping people walk further without pain, but it did work better than a treatment called [pentoxifylline](#) . ^[56]

The side effects that people usually have while taking cilostazol include headache, diarrhoea , palpitations , and dizziness. ^[17]

In one study, about 5 in 100 people stopped taking cilostazol because of headaches. None of the people taking a placebo stopped for this reason. ^[57]

In another study, 44 in 100 people who took cilostazol had side effects that affected their stomach or intestines (gut). ^[58] Only about 15 in 100 people who took a placebo had these problems.

Prostaglandins

In this section

Prostaglandins are still being studied for people with peripheral arterial disease. In studies they have often been used in people with severe symptoms and who can't have surgery.

The research so far shows mixed results. Some studies have found that prostaglandins help, but other studies found that they don't. Also, people often get side effects with these drugs, and some side effects are serious.

In studies, the prostaglandins that have been used include:

- Beraprost

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- Ecraprost
- Lipo-ecraprost
- Lipoprost
- Prostaglandin E1.

Most of these drugs are given as a drip into your **vein** or artery over a few hours. You might be treated for three or four days or for up to 28 days.^[59] Beraprost comes as a tablet, but it isn't available in the UK.

We found three summaries of studies on prostaglandins. Most of the studies looked at prostaglandin E1.

One summary looked at people who had pain when walking or exercising, but not at other times. It found some studies showing that people taking these drugs could walk further without pain, compared with people taking a dummy treatment (a **placebo**).^[60] However, the authors concluded that there's not enough research to be certain.

Another summary looked at people with more severe symptoms. It found that having treatment with prostaglandin E1 helped to reduce pain. And fewer people who took prostaglandin E1 needed an amputation than those who had a placebo.^[61]

A third study looked at people who had a very severe form of the disease, with open sores (ulcers) on their legs or pain even while resting. It found that prostaglandins didn't make much difference in people's pain, their ulcer healing or their risk of amputation.^[62]

Prostaglandins can cause headaches, nausea, vomiting, diarrhoea, pain, dizziness, and a fast heart beat.^[61] In one study, **heart failure** and **heart attacks** were about twice as common in people who took lipo-ecraprost as in those who took a dummy treatment.^[63]

Pentoxifylline

In this section

We don't know whether a medicine called pentoxifylline helps people with peripheral arterial disease to walk further without pain or reduces their risk of heart attacks or strokes.^[13] ^[64] ^[65] There hasn't been enough research.

Pentoxifylline is not recommended for peripheral arterial disease by the National Institute for Health and Care Excellence (NICE), the group that advises the government on which treatments should be available on the NHS.^[51] Studies suggest that another medicine, called [naftidrofuryl oxalate](#), works better.

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Pentoxifylline (brand name Trental) seems to make your blood thinner and less likely to form clots. But it works in a different way from [antiplatelet medicines](#), which help prevent clots by making tiny blood cells called [platelets](#) less sticky. ^[17]

The biggest summary of studies on pentoxifylline found that the studies that have been done have not produced clear results. So it's hard to say how well it works. ^[65]

Another summary of studies found that pentoxifylline didn't work as well as [naftidrofuryl oxalate](#) or another treatment called [cilostazol](#). ^[56]

Pentoxifylline can cause a sore throat, indigestion, nausea, and diarrhoea.

Naftidrofuryl oxalate

In this section

Naftidrofuryl oxalate (brand name Praxilene) is a medicine called a vasodilator. It improves blood flow by widening your blood vessels. Your doctor may recommend this treatment if you have peripheral arterial disease and get pain while walking or taking other types of exercise. ^[51]

A summary of studies found that naftidrofuryl oxalate helped people walk further without their legs hurting. Also, around 55 in 100 people taking naftidrofuryl oxalate said their pain improved by more than half, compared with around 30 in 100 people taking a dummy treatment (a [placebo](#)). ^[66]

Another summary of the research compared naftidrofuryl oxalate with two other treatments for peripheral arterial disease called [cilostazol](#) and [pentoxifylline](#). It found that people who took naftidrofuryl oxalate could walk further without pain, and also walk further overall, compared with people taking the other drugs. ^[56]

Side effects from naftidrofuryl oxalate are usually mild. Some people get diarrhoea, nausea, or pain in their upper abdomen. ^[66]

Further informations:

Glossary:

atherosclerosis

Atherosclerosis is also called 'hardening of the arteries'. It happens when fatty material sticks to the inner wall of your arteries. Over time, cholesterol, fats and other things in your blood stick to the same area and the artery wall becomes thick and narrow, making it progressively more difficult for blood to flow through the affected vessels.

diabetes

Diabetes is a condition that causes too much sugar (glucose) to circulate in the blood. It happens when the body stops making a hormone called insulin (type 1 diabetes) or when insulin stops working (type 2 diabetes).

high blood pressure

Your blood pressure is considered to be high when it is above the accepted normal range. The usual limit for normal blood pressure is 140/90. If either the first (systolic) number is above 140 or the lower (diastolic) number is above 90, a person is considered to have high blood pressure. Doctors sometimes call high blood pressure 'hypertension'.

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high cholesterol

If you've been told that you have high cholesterol it usually means that your total cholesterol level is 5mmol/l or higher. But doctors also look at the amount of good (HDL) and bad (LDL) cholesterol you have in your blood. Having high levels of bad cholesterol can make it more likely that you'll get certain diseases in your heart and arteries.

ultrasound

Ultrasound is a tool doctors use to create images of the inside of your body. An ultrasound machine sends out high-frequency sound waves, which are directed at an area of your body. The waves reflect off parts of your body to create a picture. Ultrasound is often used to see a developing baby inside a woman's womb.

X-ray

X-rays are pictures taken of the inside of your body. They are made by passing small amounts of radiation through your body and then onto film.

heart attack

Doctors call a heart attack an acute myocardial infarction (or acute MI). This is the name for the damage that occurs to the heart muscle if it isn't getting enough blood and oxygen because a branch of the coronary arteries is blocked. During a heart attack, you may have pain or heaviness over your chest, and pain, numbness or tingling in your jaw and left arm.

stroke

You have a stroke when the blood supply to a part of your brain is cut off. This damages your brain and can cause symptoms like weakness or numbness on one side of your body. You may also find it hard to speak if you've had a stroke.

arteries

Arteries are the blood vessels that take blood that is rich in oxygen and food away from your heart. The arteries carry this blood to all the tissues in your body.

cholesterol

Cholesterol is a fat-like substance made by your liver or absorbed from food. It is used by your body to make bile acids (which help your intestines absorb nutrients) and steroid hormones (like testosterone or oestrogen). Cholesterol is also an important part of cell membranes, which are the structures that surround cells. 'Good cholesterol' is called HDL; 'bad cholesterol' is LDL.

platelets

Platelets are small disc-shaped particles found in your blood (along with red blood cells and white blood cells). Platelets form the clots that stop the bleeding when you've been cut. People who don't have enough platelets have problems with bleeding too much.

systematic reviews

A systematic review is a thorough look through published research on a particular topic. Only studies that have been carried out to a high standard are included. A systematic review may or may not include a meta-analysis, which is when the results from individual studies are put together.

placebo

A placebo is a 'pretend' or dummy treatment that contains no active substances. A placebo is often given to half the people taking part in medical research trials, for comparison with the 'real' treatment. It is made to look and taste identical to the drug treatment being tested, so that people in the studies do not know if they are getting the placebo or the 'real' treatment. Researchers often talk about the 'placebo effect'. This is where patients feel better after having a placebo treatment because they expect to feel better. Tests may indicate that they actually are better. In the same way, people can also get side effects after having a placebo treatment. Drug treatments can also have a 'placebo effect'. This is why, to get a true picture of how well a drug works, it is important to compare it against a placebo treatment.

haemorrhage

Haemorrhage is a word doctors use for bleeding. Any time blood escapes from a vessel, it's called a haemorrhage.

randomised controlled trials

Randomised controlled trials are medical studies designed to test whether a treatment works. Patients are split into groups. One group is given the treatment being tested (for example, an antidepressant drug) while another group (called the comparison or control group) is given an alternative treatment. This could be a different type of drug or a dummy treatment (a placebo). Researchers then compare the effects of the different treatments.

local anaesthetic

A local anaesthetic is a painkiller that's used to numb one part of your body. You usually get local anaesthetics as injections.

veins

Veins are blood vessels that carry blood back to your heart after your blood has delivered oxygen and food to the tissues.

diarrhoea

Diarrhoea is when you have loose, watery stools and you need to go to the toilet far more often than usual. Doctors say you have diarrhoea if you need to go to the toilet more than three times a day.

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palpitations

A palpitation is when you feel like your heart is beating very fast.

heart failure

When the heart loses its ability to push enough blood through the blood vessels, it is called heart failure.

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