A simple guide to circulation and what can go wrong with it?

What should I do next?

Even if you don’t have exactly the symptoms described in this leaflet, if you have any concerns about the condition of your legs or feet you should have them professionally assessed. In the first instance, speak to your doctor, nurse or local Leg Club who will give you a thorough examination. This may include a full health check and review of the circulation in your lower limbs.

What is a Leg Club?

The Leg Club Model is a research-based initiative which provides community-based treatment, health promotion, education and ongoing care for people of all age groups who are experiencing leg-related problems.

Leg Club nursing teams are employed by local primary care trusts or primary care organisations, with the nurses incorporating Leg Clubs into their everyday practice.

No appointments are needed and Leg Club opening hours are available from your local surgery, community nurses’ office, adverts in the local Parish magazine, village shops, or from the local Leg Club’s website.

Education and ongoing advice and support from Leg Club nurses mean that prevention or recurrence of leg-related problems is for life.

Visit your nearest Leg Club

The Lindsay Leg Club Foundation
Ipswich
PO Box 689
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registered charity no 1111259;
The Lindsay Leg Club Foundation, PO Box 689, Ipswich, IP1 9BN
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Circulation and the heart

The heart is a pump that behaves a little like a tap and hose. The higher the tap (heart) is turned on, the higher the pressure within the hose (veins).

The heart pumps the blood around the body — based on a rate of 72 beats a minute and a stroke volume (amount of blood pumped out by one ventricle with each heart beat) of 70ml per beat. The average adult cardiac output (amount of blood pumped out by each ventricle in one minute) varies between 5–6 litres per minute and is dependent on many factors, such as physical activity, cardiac output and return of blood from the veins to the heart.

The heart can form different pressures in the veins, depending on a person’s medical condition, the amount of exercise that he/she takes, or any stress that he/she may be under.

Blood pressure is the force the heart exerts against the walls of arteries as it pumps the blood out to the body.

Heart rate is the number of times the heart beats per minute.

To cope with blood pressure, artery walls contain tiny muscles to hold them in shape and allow them to become wider or narrower as the flow of blood demands.

As blood goes around the body it collects oxygen, nutrients and is very efficiently cleaned. Once the blood has been forced around the body and the nutrients and oxygen have been dispersed into the tissues, the veins take up the challenge of returning the blood to the heart. Small valves in the veins permit blood to pass upwards towards the heart and then prevent gravity from pulling the blood backwards towards the feet. Figure 1 shows how the circulation works:

1 red = arteries; blue = veins.

This can have several effects. For example, the ankles may swell and varicose veins can occur. This is when the veins are so full of fluid that they protrude (Figure 2), which can lead to venous ulcers which are difficult to heal.

In 9% of the population, the arteries can also fail. This means that less blood reaches the lower limbs, reducing the oxygen and nutrients available and making the skin more vulnerable to breaking down. This is known as peripheral arterial disease (PAD), which can be caused by one or many factors.

Peripheral arterial disease

One of the main reasons for PAD is smoking. Each cigarette smoked causes a fight or flight reaction, resulting in the immediate release of stored fats into the bloodstream. Fats are used to provide the instant energy needed to fight any threat. The fat then sticks to the artery walls and hardens, gradually narrowing the arteries and reducing the delivery of oxygen-rich blood to the legs and other organs. This leads to PAD and possibly critical ischaemia (where the blood does not reach the feet and toes and/or feet become discoloured), which occurs in 20% of those with PAD. One to two percent of people with critical ischaemia will eventually require limb amputation, while many more die within five years of presentation.

FACT

Smoking harms nearly every organ in the body, including the heart, blood vessels, lungs, eyes, mouth, reproductive organs, bones, bladder, and digestive organs. It is the leading risk factor for PAD, and risk of critical ischaemia can be significantly reduced by stopping smoking.

Diabetes is also a risk factor for PAD — about 20% of people with PAD have diabetes. If you have diabetes it is important to choose footwear carefully (in case shoes pinch and cause injury) and to have regular check-ups with your diabetic team to ensure that blood sugar levels remain stable and your feet remain healthy.

The most common symptom of PAD is something called intermittent claudication, which is defined as pain, cramping, or aching in the calves, thighs or buttocks that occurs when walking and is relieved by rest. If you have this symptom you should talk to your GP, district nurse or visit your local Leg Club for limb assessment.

What can I do to avoid PAD?

The best action to take, whether a smoker, non-smoker or someone with diabetes is, of course, to maintain a healthy lifestyle. You can also visit your local Leg Club for advice and a full risk assessment. The Leg Club nurses can advise on how to avoid the condition developing or worsening.

To find your nearest Leg Club (no appointment needed), visit: http://www.legclub.org/about-leg-clubs
ring: 01473 749565