

Supporting Microcirculation for Health



Why is microcirculation so important?

A healthy microvascular system is essential to the health of the entire body. It functions to supply blood, oxygen and nutrients to all of the body's cells, tissues and organs.¹ As such, poor microcirculation can lead to the initiation and gradual worsening of many chronic diseases including cardiovascular disease, diabetic complications and osteoarthritis.²

What is the circulatory system – a quick biology lesson

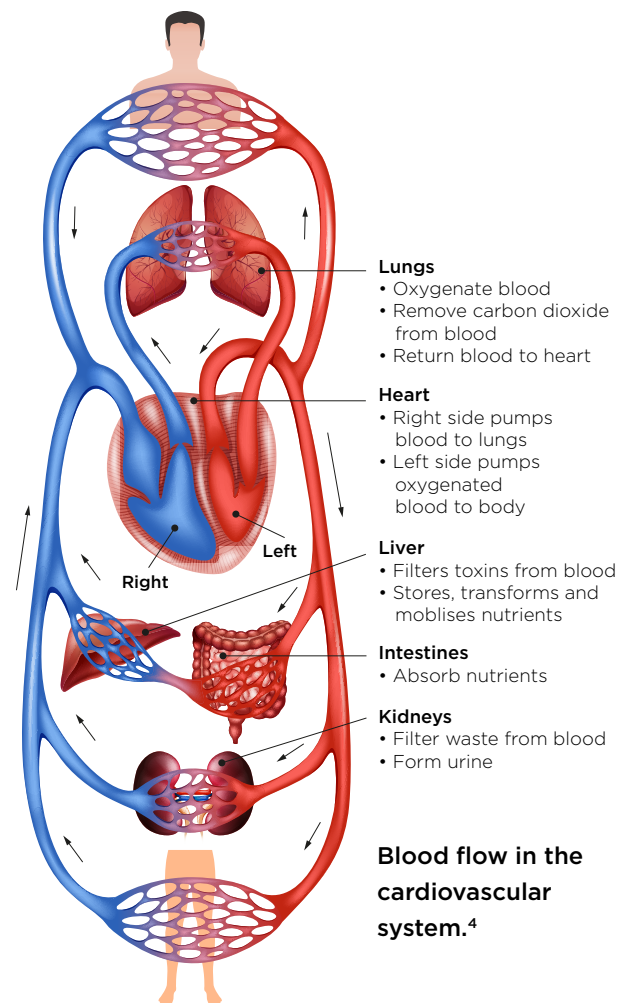
Blood must circulate to sustain life and the health of all cells and tissues. The circulatory system or cardiovascular system is an organ system that transports nutrients, oxygen, carbon dioxide, and hormones through the blood to all the tissues and cells of the body to provide nourishment and to support their function. It also carries waste away from the cells and tissues for removal from the body to maintain their health.³

On the macrovascular level, the heart pumps blood around the body through a network of veins and arteries, which rapidly transports oxygen-rich blood to, and oxygen-poor blood from, organs.³

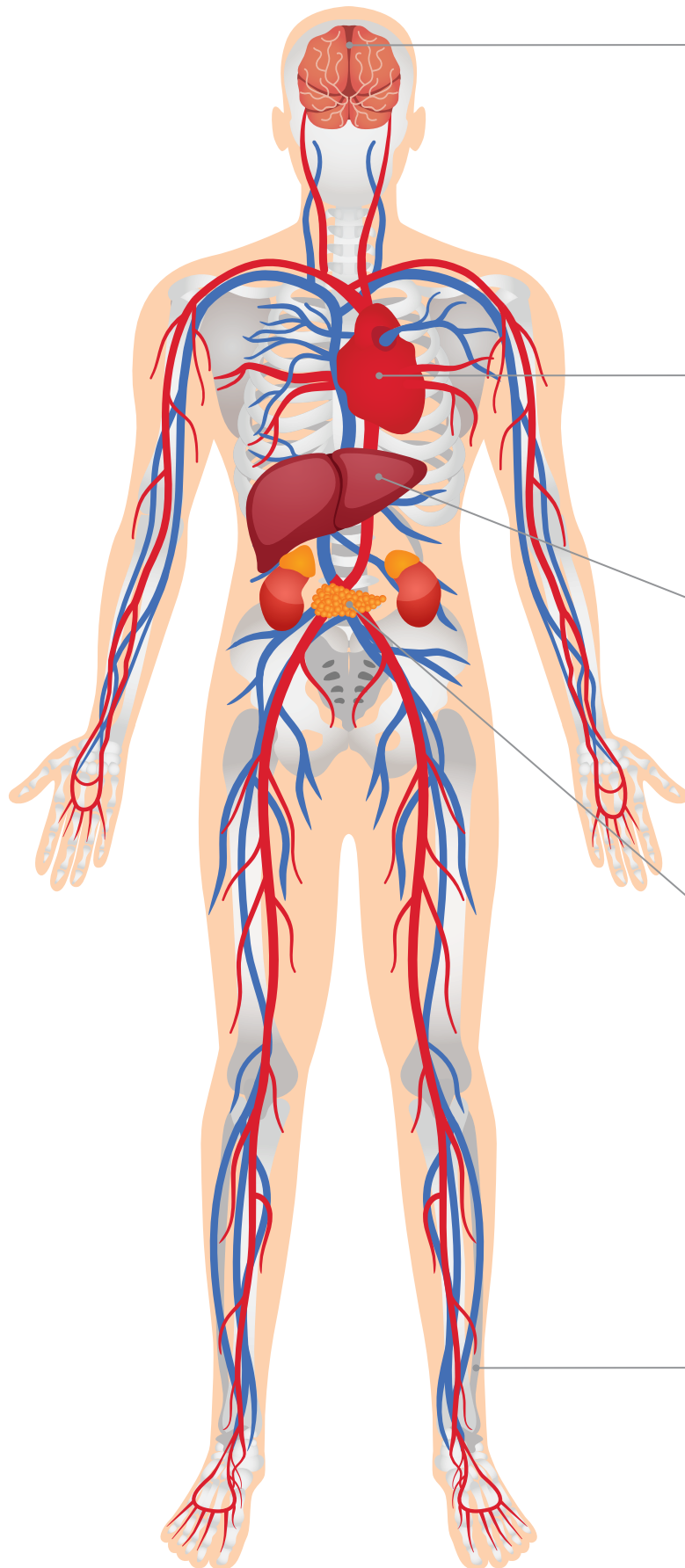
On the microvascular level, blood flows from the arteries, branching into smaller blood vessels that form an interconnected network of capillaries, which ensure nourishment of all cells.³

The movement of blood in and out of cells and tissues is orchestrated by constriction and dilation of blood vessels. A key molecule in this process is nitric oxide (NO), which is produced and regulated by a type of cell that lines the entire vascular system (endothelial cells).³

Damage to these cells can lead to disease, this is because the supply of oxygen and nutrients to the tissues, and the ability to carry waste products away, is reduced. As such, poorly functioning endothelial cells are associated with certain diseases including heart disease, erectile dysfunction, diabetes, osteoarthritis, and neurodegenerative conditions.²



What health conditions may be associated with poor microcirculation?



Brain

Due to the complex structure of the brain, over time, certain regions of the brain may not receive enough blood, oxygen and nutrients to remain healthy, as seen in conditions such as Alzheimer's disease.²



Heart

Poor microcirculation can lead to numerous cardiovascular issues including hypertension, angina and erectile dysfunction.²



Liver

Aging is associated with changes in the microcirculation of the liver, which is thought to contribute to high cholesterol, cardiovascular disease, liver degeneration and malfunction, and reduced ability to process drugs.⁶



Pancreas/Kidneys

The secondary complications of diabetes are directly caused by damage to the endothelial lining due to consistently raised blood sugar levels. This impairs microcirculation leading to retinopathy (eye damage), nephropathy (kidney damage) and neuropathy (nerve damage).⁴



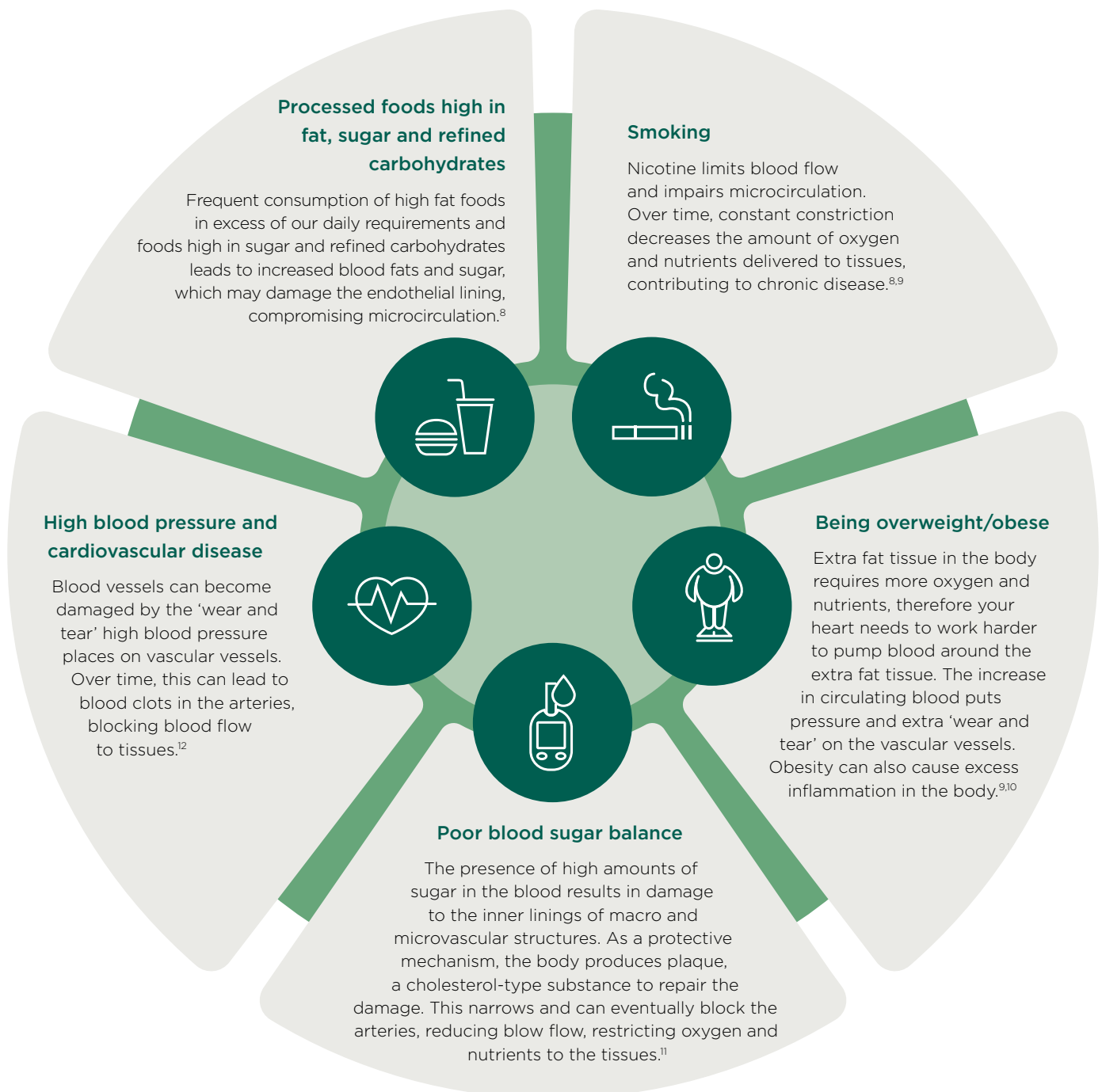
Musculoskeletal

Impaired microcirculation has been shown to play a role in osteoarthritis due to a lack of oxygen and nutrients to joint tissues.³

Diet and lifestyle factors that impact microcirculation

Both diet and lifestyle factors can impact microcirculation and therefore have a significant effect on your health. Talk to your practitioner who can work with you to identify factors that may be putting you at risk and guide you through strategies to help improve microcirculation.

What negatively impacts microcirculation?



How to boost your microcirculation

Diet

One of the best ways to improve microcirculation is through diet. Many plant foods and herbs contain nitrate, which the body will convert to Nitric Oxide – a key molecule that supports healthy microcirculation.¹³ In addition, certain plant foods and herbs contain polyphenols which not only help this process, but also protect the cells of the body (see a note on antioxidants).¹³

Certain foods (highlighted below) and herbs have been shown to improve microcirculation,² talk to your practitioner about ones that might be suitable for you.

A note on the protective effect of antioxidants

Antioxidants protect against reactive oxygen species – highly reactive molecules that can cause damage to the body and have been shown to negatively impact microcirculation. Dietary antioxidants not only protect the cells of the cardiovascular system, they also help to stop LDL cholesterol being turned into plaques on the artery walls, which can inhibit blood flow.¹⁴ Increasing your fruit and vegetable intake will ensure you get a wide variety of protective antioxidants and polyphenols.¹⁴



1

Boost dietary nitrate:

green leafy vegetables, but especially beetroot as juice or as a supplement



2

Increase cocoa intake:

85%-95% chocolate, 20 g/day or equivalent of high quality cocoa



3

Increase berry anthocyanin intake:

50-100 g/day of blueberries, strawberries, raspberries and blackberries



4

Fresh crushed raw garlic:

1/2-1 clove/day



5

Increase herbs and spices:

especially Green Tea (3-4 cups/day), Turmeric and Ginger

Lifestyle modifications to improve microcirculation

✓ Increase physical exercise

Alongside diet, exercise is perhaps one of the most effective ways to improve microcirculation as the heart must pump harder to meet the increased oxygen demands of the muscles. Exercise also increases blood flow to facilitate effective exchange of oxygen and carbon dioxide.¹⁵

✓ Quitting smoking/vaping^{7,16}

✓ Losing weight^{9,10}

✓ Staying hydrated¹⁷

✓ Reducing stress¹⁸

