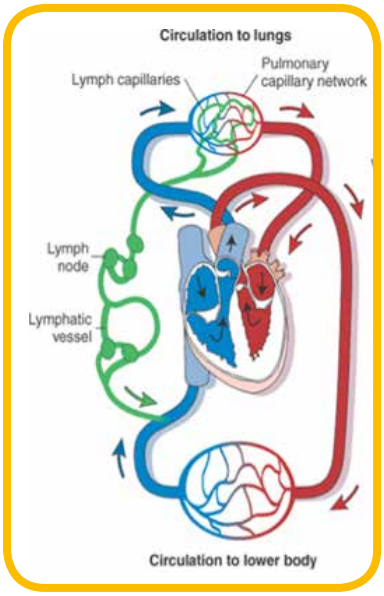
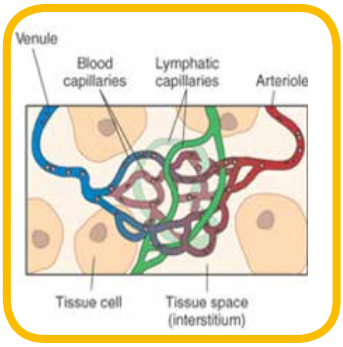
What is Oedema?

For you to understand how swelling occurs, the normal movement of fluid in your body and the role that the lymphatic system plays also needs to be understood.

Your lymphatic and circulatory systems work together





The lymphatic system is an integral part of your cardiovascular system, and it is responsible for clearing your body of fluid that has passed into tissue spaces.[1]

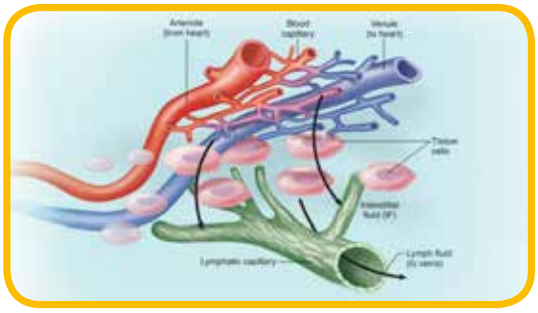
BEFORE

AFTER

Capillary fluid exchange

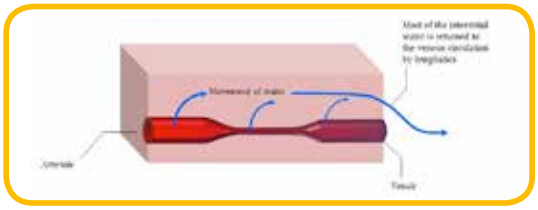
Your body's tissues need oxygen and proteins to stay alive. These nutrients are transported through arterial blood vessels all the way down into the capillary bed. Here, the nutrients pass out of the blood vessels and into your body's tissues.

This is called capillary fluid exchange, and is how fresh oxygen is delivered to your cells. It occurs several times a day as part of the normal blood and fluid movement around your body.



Normally, most of this fluid is picked up by the lymphatic system and returned back into the venous circulation.

However, if the lymphatic vessels don't remove excess fluid from the tissue spaces fast enough, or at an adequate volume, then this can result in fluid retention and swelling of body parts. This is the definition of oedema.



Why does oedema occur?

There are many reasons why swelling may initially occur.

Some of these reasons are associated with your body's attempts to heal an injured body-part area as part of an initially normal wound-healing response:

- Post surgery i.e. post-op swelling around wounds and joints
- Post trauma i.e. haematoma and bruising
- Post sports injury i.e. ankle sprain
- Post blood clot i.e. deep vein thrombosis (DVT)
- Post infection in an area of skin

Other reasons for swelling may result because your body has reduced internal cardiovascular or muscle pump that is needed to keep fluid moving. This may occur owing to:

- Heart disease
- Post flying
- Post stroke
- Immobility
- Lack of walking

Swelling may also occur due to hormonal disruptions or chemicals in your body, such as:

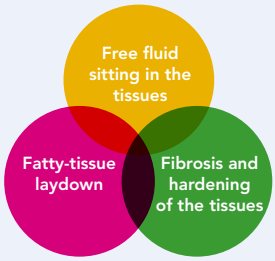
- Pregnancy
- Chemotherapy agents
- Some medications can cause swelling
- Allergic response

When oedema persists for a long time it is classified as a chronic health condition. All forms of long-term swelling represent a 'lymphatic system insufficiency' of some kind. There are five main causes of long-term swelling:

1. Lymphoedema

Chronic swelling characterised by high-protein oedema sitting in the tissue spaces because the lymphatic system has not adequately transported the fluid from the tissues back into the venous system.

Early intervention of lymphoedema is recommended by the Australasian Lymphology Association (the peak professional organisation for Lymphology in Australia and NZ) as it is understood that lymphoedema is an inflammatory process involving a combination of fluid accumulation in the tissues, fibrosis and fatty-tissue laydown.[2]



There are several types of lymphoedema:

- Primary lymphoedema i.e. not enough lymph nodes in the body or incompetent lymph vessels
- Secondary lymphoedema i.e. cancer surgery and radiation that has damaged the lymphatic vessels
- Cellulitis i.e. infections in the tissues as a secondary consequence of bacterial infection
- Obesity-related lymphoedema i.e. large stomach physically blocking flow out of the lymphatics in the legs
- Post-trauma-related lymphoedema i.e. major skin surgery or burns that have damaged the lymphatics

You can get lymphoedema in any area of the body including the face, breast, arms, legs, abdomen and genitals.

2. Lipoedema

Lipoedema is a condition characterised by abnormal fatty-tissue deposits that are often tender even when touched lightly. The condition mainly affects women and usually involves symmetrical fatty-tissue deposits in the lower body without affecting the feet.

Lipoedema should not be confused with obesity – people often have a small upper body and are of normal weight even with lipoedema. If you have lipoedema, it is recommended that you maintain a healthy weight, and it should be noted that general weight loss may not necessarily result in removal of the lower-body fatty deposits.

3. Venous insufficiency

Venous insufficiency is an umbrella term to describe a range of disorders that are caused from problems with your veins causing lower-limb swelling. Some examples are:

- Varicose-vein-related swelling
- Cellulitis
- Venous leg ulcers
- Swelling post blood clot in the vein
- Venous leg swelling

4. Systemic causes of swelling

Swelling can be due to problems relating to the internal pumping of your cardiovascular system, organ systems or hormonal changes or imbalances. This is why your physiotherapist may ask to consult with your Medical team especially if you are experiencing pain, shortness of breath, sudden weight loss, heart arrhythmias or if you appear to be malnourished.
Some examples are:

- Renal failure i.e. problems with your kidneys
- Heart failure
- Tumours
- Hormonal imbalances
- Poor diet resulting in malnutrition

5. Dependant oedema

This swelling results due to an ongoing poor mobility and lack of muscle pump. Some examples include:

- Post stroke
- Elderly with poor mobility
- Bedbound clients who do not walk enough

References: 1. Crockett. (2014). Endothelial Glycocalyx and The Revised Starlings Principle. PVRI Chronicle, Vol 1, Issue 2.
2. Tassenoy. (2011). Postmasectomy lymphoedema and different patterns of fluid distribution visualised by ultrasound.