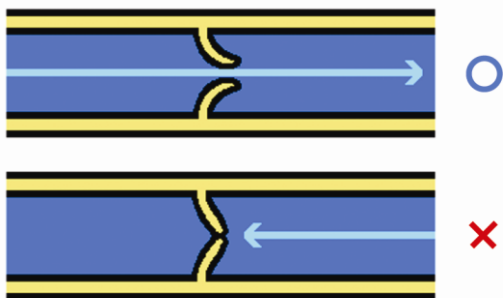


Venous Insufficiency

Venous insufficiency is one of the most common conditions affecting people of all races, particularly the aging population. In the U.S. approximately half of the population suffers from some form of venous disease (Radiology, 2009).

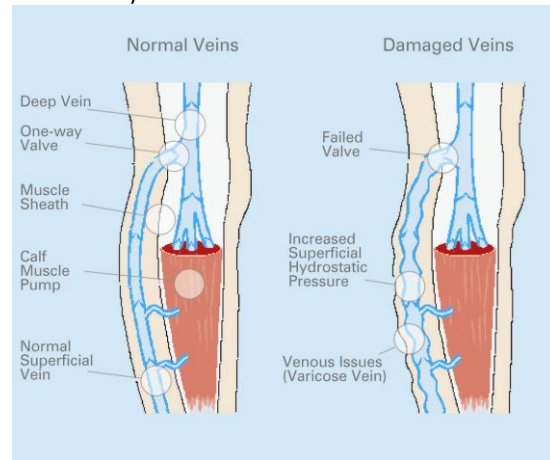
Venous insufficiency (often referred to as venous or vascular disorder) is a condition in which the veins have problems sending deoxygenated blood from the extremities' back to the heart. This is known as Venous Return. Inadequate Venous Return increases hydrostatic pressure within the venous system which can lead to failure of the venous valves and the onset of Venous Stasis when a large volume of blood accumulates in the lower extremities.

Figure 1 Cross section of a vein showing a valve which prevents backflow.



If this increased hydrostatic pressure is not treated it leads to chronic venous insufficiency (Browse NL, 1982), which in turn results in oedema, lipodermatosclerotic changes, skin infections, varicose eczema, varicose veins, thrombosis and deep vein thrombosis (DVT), and venous ulcers. Venous return and increased hydrostatic pressure within the venous system can be prevented safely with the application of external compression (Roake, 2007).

Figure 2 Normal (left) and damaged (right) venous system.



The Encircle Therapy is a systemised multilayer graduated external compression device which controls the amount of fluid in the tissue by exerting a resting pressure.

The daily build-up of pressure is controlled by the textiles ability to control stretch, so incompetent venous valves are approximated, the diameter of veins are kept small, venous return is accelerated, the fibrinolytic activity of the venous wall is increased, and the risk of thrombosis is reduced.

Figure 3 Mechanics of Encircle Therapy. Compression of the veins leads to a shift in blood volume.

