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## Chronic venous insufficiency: a new concept to understand pathophysiology at the microvascular level - a pilot study

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**Objectives:** The real mechanism for the development of the later stages of chronic venous insufficiency still remains unclear. Venous hypervolemia and microvascular ischemia have been reported to be the consequences of venous insufficiency. The aim of this study was to investigate the effects of induced venous hypovolemia by dorsiflexion exercise in patients with venous leg ulcers.

**Methods:** Thirty-six participants, all of whom had an ankle brachial pressure index between 0.8 and 1.2 mmHg, were chosen for this study. The participants were divided into two groups: Group A, a non-exercise group and Group B which performed regular exercise in the form of dorsiflexion. The basic assessment, including the history and examination, ankle-brachial pressure index (ABPI), Duplex scan and tcPO<sub>2</sub> measurements, was performed on two occasions at the beginning of the trial and after

three months.

**Results:** The tcPO<sub>2</sub> level was low in the beginning in all the subjects, but the picture was different at the end of the trial. There was a significant increase in the tcPO<sub>2</sub> level ( $p < 0.001$ ) in the patients who performed exercise while there was no difference in the measurements ( $p > 0.05$ ) in the non-exercise group.

**Conclusions:** Induced venous hypovolemia through regular evacuation of the peripheral venous system improved tissue oxygenation at skin level. Venous hypervolemia may be the main contributing factor for the development of venous hypoxia and microvascular ischemia.

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