

## Compression Stocking with Transdermal Skin Care

a report by

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A major drawback of wearing conventional medical compression stockings is that the skin dries out fast and easily gets rough. The purpose of this study was to assess the effectiveness of an innovation – the Venotrain® micro-balance (Bauerfeind, Zeulenroda, Germany). This stocking combines medically effective compression (25–30mmHg) with integrated skin care. While wearing this new product, a concentrated mixture of oils, vitamin E and urea is gradually released from the fibres onto the patient's legs. The skin only absorbs as much care as it needs in order to readjust its natural balance.

### Method

#### Study A

In a randomised, controlled trial, 42 patients (36 female, 6 male) suffering from vein disorders of different severity (n=35 with Widmer stage 1, n=7 with Widmer stage 2) were randomised into two groups: 20 patients wearing Venotrain micro balance; and 22 wearing Venotrain micro – for seven days.

#### Study B

Forty patients (36 female, 4 male); with chronic venous insufficiency (Widmer stage 1 n=29, n=10 Widmer stage 2, n=1 Widmer stage 3. Patients used the stockings for 21 days. The stockings were re-impregnated after each washing procedure by the patient themselves. The re-impregnation occurred either by means of the skin care emulsion or by pure water.

Objective assessment of skin humidity, transepidermal condensation and skin roughness was achieved with standardised measurement devices (Corneo- and Tewameter and FOITS Dermatop) on the first and last day of the study period (Study A: 7 days, Study B: 21 days). Patient compliance was evaluated by a daily questionnaire.

### Results

Whereas the skin of patients wearing the classical medical compression stocking showed a significant reduction of humidity ( $p=0.004$ ), the Venotrain micro balance allowed all patients to maintain a normal moisture level of the skin. Transepidermal condensation was significantly decreased ( $p=0,043$ ) in patients wearing the Venotrain micro balance. In contrast, the classical medical compression stocking created an increased water loss of the patient's skin ( $p=0.024$ ).

The difference between both groups for this criteria was significant ( $p<0.01$ ). The skin condition was significantly different from one group to the other ( $p<0.001$ ): an increasingly rougher skin could be observed in the group wearing classical medical compression stockings ( $p<0.001$ ) whereas the skin surface was kept active in the group with the Venotrain micro balance ( $p=0,109$ ). Increased sweating at the stocking's

silicone top border was a side effect mentioned by patients wearing the new type of stocking, whereas the majority of the people wearing the classical version complained about a temporary itchiness. Principally the same results were measured in study B: the re-impregnation of the stockings by means of the emulsion prevented the skin from dryness and itching; the skin of the lower limbs stayed smooth and the barrier function of the skin was improved.

### Conclusions

This new compression hosiery with skin care is a revolutionary medical compression device offering hemodynamically effective compression therapy in combination with a long-lasting and tangible skin care effect. This 'intelligent' combination supplies the skin with active ingredients over the course of the day. The study results confirm superiority of the new compared with the classical stocking with regard to skin physiology, smoothness and patients' comfort. ■

