

## Type of compression for reducing venous stasis

**Sigel B, Edelstein A, Hasty J, Felix R (1975).**  
*Archives of Surgery; 110:171-175.*

### Abstract

### Overview

This study was performed to identify the optimal compression profile of elastic stockings so that maximal venous blood flow is achieved.

### Methodology

Using human volunteers, ultrasonic examination was conducted of the lower limb and a 5 chambered pneumatic sleeve was applied to enable individual regulation of compression areas to simulate application of elastic stockings. Different compression profiles were applied and statistical analysis of the results undertaken to identify the optimal profile.

### Results

Gradient compression always produced a higher venous blood flow than uniform compression. The optimal pressure gradients were identified as 18mmHg at the ankle and 8 mmHg at the knee and this resulted in an increased blood flow velocity of 138.4%. Body position is an important factor and affects the amount of compression needed to produce maximal venous flow velocity. A higher amount of compression would be needed to prevent venous dilation when subjects had limbs dependent. However since hospitalised patients are in bed for the majority of time, ideal pressure gradients need to work on this principle.

### Conclusion

The application of elastic stockings using a gradient compression profile of 18mmHg to 8mmHg is optimal for increased venous blood flow in dependent patients.