

Effect of 'antiembolism' compression hosiery on leg blood volume.

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Blood volume in the legs of healthy volunteers and the ability of graduated compression hosiery to reduce that volume were investigated with gamma scintigraphy.

Changing posture from supine to upright, or pneumatic thigh cuffs inflated to either 20 or 40 mmHg with the subject supine, significantly increased leg blood volumes; the mean increase was: upright 126 ml, 20 mmHg cuff 44 ml, and 40 mmHg cuff 113 ml.

A significant trend in reducing these volumes was noted in three brands of commercially available stockings, with the subject supine and without thigh cuffs (Page's L trend 132.5, $P < 0.01$) and when cuffs were applied at 20 mmHg (Page's L trend 128, $P = 0.05$). Few of the commercially available stockings delivered the 'standard' compression profile of 18 mmHg at the ankle, 14 mmHg at the calf and 8 mmHg at the upper thigh.

The effects of other compression profiles were assessed, using custom-made stockings, and pneumatic cuffs inflated to 20 mmHg applied to the upper thighs to impede venous return. There was no consistent reduction of blood volume in the popliteal region, although decreases were seen in the upper and lower calf.

The major determinant of performance was compression at the calf; the ankle to calf compression gradient was not important. Stockings with a profile of 16.8 mmHg at the ankle, 14.5 mmHg at the calf and 6.4 mmHg at the upper thigh performed best.

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