Graduated elastic compression for limb oedema. Diagnosis and treatment.

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**Background:** Graduated Elastic Compression (GEC) stocking in leg oedema are applied in order to improve the efficiency of the calf muscle pump. As a result they will prevent or reduce oedema and/or the post-thrombotic syndrome. These stockings are prescribed for both superficial $C_{2-6}$ and deep venous disease, pregnancy, travel, post-traumatic conditions and lymphatic oedema.

**Class and indications:** The Comité Européen de Normalisation (CEN) or European Committee for Standardization has standardized the pressure exerted at the ankle by the GECs and indicated their use as follow: Class I slight compression 20 mmHg for heaviness and fatigue at the legs, with little varicosities and no oedema and incipient pregnancy Varicose Veins (VV); Class II moderate compression 30 mmHg for pronounced VV, post traumatic oedema, mild $C_{3.5}$, following superficial thrombophlebitis, sclerotherapy, venous surgery and more severe pregnancy VV; Class III strong compression 40 mmHg for all follow-up conditions, severe $C_{3.5}$, post-thrombotic venous insufficiency and Class IV extra strong compression $>60$ mmHg for lymphoedema and elephantiasis. Hirai demonstrated that the pressure exerted by GEC varies with the posture, exercise and at the different sites of the lower limb.¹

**Use for prophylaxis:** The GEC stockings can be used also prophylactically. Partsch et al. have shown that GEC Class I or II reduces or prevents oedema on people with professions with long periods of sitting or standing.² Similar results were found by Kraemer et al.³ The relief of symptoms in $C_{2}$ patients by light weight 7-14 mmHg CEG has been explained with air-plethysmography by increase of the ejection fraction and decrease of the venous filling index, residual volume fraction and by inference ambulatory venous pressure.⁴ The beneficial effected of GEC on the femoral blood flow velocity during late pregnancy has been studied by Norgren and his co-workers.⁵,⁶ Partsch and Mosti have shown with MRI scan that with a standing patient a pressure of 22 mmHg external compression results in a 71% reduction of the soleal venous volume but only a 7% reduction in variceal volume.⁷ This work has been presented at the Paris Eurochap 2010 meeting by Uhl.⁸ It confirms that the VV are under higher pressure than a competent deep venous system.

**Stockings Application:** The way we recommend to apply GEC stockings can be found on: [http://bmj.com/cgi/eletters/322/7280/188#20424](http://bmj.com/cgi/eletters/322/7280/188#20424) Special aids designed to wear the stockings like the Medi stocking valet, venotrain glider etc should be used following the above recommendations and not the manufacturers’ instructions. Patient compliance is of paramount importance. Patients with ankylosis in the area of the legs or fingers, awaiting for total hip replacement or obese, whose mobility is highly restricted, will not be able to apply GEC class II-IV. In this case two class I GEC can be worn one on top of the other achieving the effect of a class II stocking.
References


