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COMPRESSION BULLETIN

Robert Stemmer Library on Compression Therapy

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  A meta-analysis of randomised controlled trials (RCT) that compared stocking exerting an ankle pressure of 10–20 mmHg with placebo or no treatment and with stockings exerting a pressure of more than 20 mmHg was performed.
- **Guidelines for clinical studies with compression devices in patients with venous disorders**
  The authors form a consensus group known as the International Compression Club (ICC).
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  The consensus group searched medical literature databases and reviewed their own collections of papers, monographs and books for papers providing information about experimental and clinical efficacy of different compression devices.
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  In all, 18 different brands of MECS that were devided into five categories (class II round-knitted, class II flat-knitted, class III round-knitted, class III flat-knitted and class IV flat-knitted MECS) were tested.

Robert Stemmer Library on Compression Therapy was created by Robert Stemmer. It is a complete collection of publications of scientific and medical journals. It consists of three parts:

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- The Compression Bulletin reports about important new publications.
- The table of contents of the Robert Stemmer Library:
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50th Anniversary of the DGP, Bochum October 15–18, 2008

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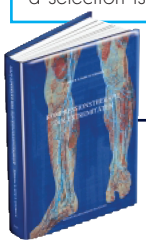

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Amsler F, Blättler W

Compression therapy for occupational leg symtoms and chronic venous disorders – a meta-analysis of randomised controlled trials

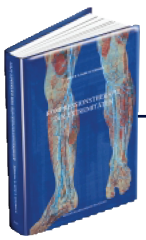
AIM
Leg discomfort and oedema are commonly attributed to a venous disorder (CVD) or chronic venous insufficiency (CVI) and treated with compressions hosiery. The pressure needed to achieve clinical benefit is a matter of debate.

METHODS
A meta-analysis of randomised controlled trials (RCT) that compared stocking exerting an ankle pressure of 10–20 mmHg with placebo or no treatment and with stockings exerting a pressure of more than 20 mmHg was performed. RCT were reviewed and analysed with the tools of the Cochrane Collaboration. Each study was reviewed independently. Subjective dichotomous and continuous factors and objective findings were pooled for statistical treatment.

RESULTS
Eleven RTC fulfilled the predefined criteria. They included 1453 randomised subjects, 794 healthy people exposed to various forms of stress, 552 patients with a chronic venous disorder or chronic venous insufficiency and 141 patients after varicose vein surgery. Over all, compression with 10–20 mmHg had a clear effect on oedema and symptoms as compared with < 10 mmHg pressure, placebo stockings, or no treatment ($p < 0.0001$). No study showed a difference between 10–20 and > 20 mmHg stockings. Despite important methodological heterogeneity and sometimes sub-standard reporting the meta-analysis suggests that leg compression with 10–15 mmHg is an effective treatment for CVD. Less pressure is ineffective and higher pressure shows no additional benefit.

COMMENT
This important meta-Analysis shows that low-compression medical stockings are sufficient to treat occupational «venous» symptoms in venous healthy individuals, in patients with CEAP – stages C1 and C2 and to a certain extent in venous edema patients (C3). In the majority of these individuals the correction of impaired venous function is not the main goal of compression treatment, but the improvement of venous symptoms like heaviness, pain and clinical signs like swelling in the ankle region in the evening. In the CEAP stages C0, C1 and C2 no edema is present by definition. This is different in stage C3 which defines a very inhomogenous group of patients reaching from mild edema in patients with teleangiectases up to severe edema in patients with marked postthrombotic syndrome. In most of the cited studies including C3 patients, mild oedema was present. The results of this meta-analysis can not be simply transferred to chronic insufficiency patients with severe edema, skin changes and venous ulcers. Nevertheless, the majority of the patients which are treated with compression treatment belong to the stages C1, C2 and mild C3. For the majority of this group, medical compression stockings with low compression between 10 und 20 mmHg seem to be suffizient for treatment. The meta-analysis could also show that these stockings are significantly superior to placebo stockings or no compression treatment.

Lit.: 28/1; Publ. Review, Lan.: En; Abstr.: En; Chap.: 9
Eur J Vasc Endovasc Surg 2008; 35: 366 – 372



E. Rabe, H. Partsch, M. Jünger, M. Abel, I. Achhammer, F. Becker, A. Cornu-Thenard, M. Flour, J. Hutchinson, K. Issberner, Ch. Moffatt, F. Pannier

Guidelines for clinical studies with compression devices in patients with venous disorders

AIM

The scientific quality of published clinical trials is generally poor in studies where compression devices have been assessed in the management of venous disease. The authors aim was to establish a set of guidelines which could be used in the design of future clinical trials of compression treatments of venous diseases.

METHODS

The authors form a consensus group known as the International Compression Club (ICC). This group obtained published medical literature in the field of compression treatment in venous disease by searching medical literature databases. The literature was studied by the group which attended a consensus meeting. A draft document was circulated to ICC members and revised until agreement between contributors was reached.

RESULTS

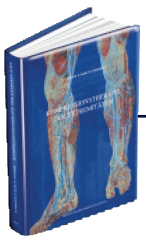
The authors have prepared a set of guidelines which should be given consideration when conducting studies to assess the efficacy of compression in venous disease. The form of compression therapy including the comparators used in the clinical study must be clearly characterized. In future studies the characteristics of the material provided by the manufacturer should be declared and also the in vivo data on pressure and on stiffness of the final compression system. The pressure on the distal lower leg should be stated in mmHg and the method of pressure determination must be quoted.

COMMENT

The standard level of clinical trials with compression devices is frequently poor. In order to drive a consistent approach to the way that trials of compression products for venous disease are designed and reported it is desirable to develop specific guidelines for clinical trials with compression devices. Currently no such guidelines are available at either a national or an international level.
The present recommendations for testing the therapeutic efficacy of compression therapy in patients with venous disorders are designed to help to determine the significance of the various treatment modalities more accurately and consistently by means of qualified clinical studies.

Lit.: 20/0; Publ. Guideline, Lan.: En; Abstr.: En; Chap.: 9

Eur J Vasc Endovasc Surg 2008; 35: 494–500



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Partsch H, Flour M, Coleridge Smith Ph, Benigni JP, Cornu-Thénard A, Delis K, Gniadecka M, Mariani F, Mosti G, Neumann HAM, Rabe E, Uhl F.

Indications for compression therapy in venous and lymphatic disease. Consensus based on experimental data and scientific evidence. Under the auspices of the UIP.

AIM
The aim of this study was to review published literature on compression treatments in the management of venous and lymphatic diseases. The focus was on those areas where reliable evidence was found to justify the use of medical compression and where further research is required to address areas of uncertainty.

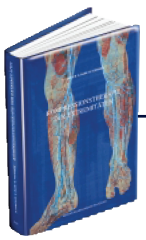
METHODS
The consensus group searched medical literature databases and reviewed their own collections of papers, monographs and books for papers providing information about experimental and clinical efficacy of different compression devices. Randomized controlled trials were classified in accordance with the recommendations of the GRADE group to categorize their scientific reliability. The review included papers on compression stockings, bandages and intermittent pneumatic compression devices used for prevention and treatment of acute and chronic venous and lymphatic disease.

RESULTS
A wide range of compression levels was reported to be effective. Low levels of compression (10–30 mmHg) applied by stockings are effective in the management of telangiectases after sclerotherapy, subjective symptoms of varicose veins, also during pregnancy, the prevention of oedema and deep vein thrombosis. High levels of compression produced by bandaging and strong compression stockings (30–40 mmHg) are effective at healing venous ulcers and preventing progression of post-thrombotic syndrome as well as in the management of lymphedema. Areas in which no reliable evidence was available to permit recommendations concerning the level of compression or duration of treatment included: management of varicose veins to prevent progression, following surgical treatment or sclerotherapy for varicose veins, and the level of compression required to treat acute phlebitis and thrombosis. Extensive tables listing experimental data on compression therapy and summarizing the results of randomized controlled trials are added.

CONCLUSION
This review shows that whilst good evidence for the use of compression is available in some clinical indications, there is much still to be discovered. Little is known at what level compression should be applied. The differing effects of elastic and short-stretch compression are also little understood.

Lit.: 174/25; Publ. Consensus, Lan.: En; Abstr.: En; Chap.: 10

Int Angiol 2008;27(3):193-219.



Aschwanden M, Jeanneret Ch, Koller MT, Thalhammer Ch, Bucher HC, Jäger KA.

Effect of prolonged treatment with compression stockings to prevent post-thrombotic sequelae: A randomized controlled trial.

AIM
of the study was to assess the effect of continuing compression therapy after a standard treatment of proximal deep vein thrombosis for 6 months, consisting of initially heparin followed by oral anticoagulation and compression stockings.

METHODS
169 patients with a first or recurrent proximal deep vein thrombosis were randomly allocated to wear compression stockings or not after receiving 6 months of standard treatment. Ready-to-wear, flat-knitted, below knee stockings with an ankle-pressure between 26,3 and 36,1 mmHg were prescribed. Primary end point was the occurrence of skin changes on the leg (C4–C6 according to the CEAP classification). Patients presenting with more than C3 at the time of the acute thrombosis were excluded. Subjective symptoms (pain, heaviness, sensation of heat, tension, tiredness) were taken as a secondary endpoint.

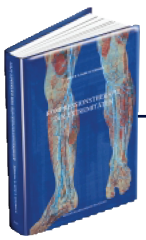
RESULTS
After a mean follow up of 3.2 years and 2.9 years, respectively the primary end point occurred in 11 patients (13.1%) in the treatment group compared with 17 (20.0%) in the control group (hazard ratio [HR], 0.60; 95% confidence interval [CI], 0.28–1.28; P = .19). No venous ulceration was observed in either group. There was a large sex-specific difference between women who had much more benefit from wearing the stockings than men, probably mainly due to their better compliance. The relief of subjective symptoms was more pronounced in the stocking group during the first year but not thereafter.

CONCLUSION
The use of compression stockings for longer than 6 months after proximal deep vein thrombosis significantly reduces symptoms and may prevent post-thrombotic skin changes.

COMMENT
This is a very important study underlining the importance of long-term compression after proximal deep vein thrombosis. For the first time the CEAP-classification in its basis form was used to describe post-thrombotic changes. It is demonstrated that 3 years after a proximal thrombosis the occurrence of post-thrombotic skin changes on the affected leg (CEAP C4) is a rare event (13%) when stockings are worn. The persistence of leg-swelling which is likely a more frequent condition was not assessed.

Lit.: 26/0; Publ. Randomized controlled trial, Lan.: En; Abstr.: En; Chap.: 9

J Vasc Surg 2008; 47: 1015–21



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Van der Wegen-Franken, CPM, Mulder P, Tank B, Neumann HAM

Variation in the dynamic stiffness index of different types of medical elastic compression stockings

AIM
To calculate the dynamic stiffness index (DSI) of 18 different brands of medical elastic stockings (MECS).

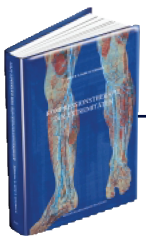
METHODS
In all, 18 different brands of MECS that were devided into five categories (class II round-knitted, class II flat-knitted, class III round-knitted, class III flat-knitted and class IV flat-knitted MECS) were tested. The static pressure and dynamic pressure pulsations at the B1 level were measured with a newly developed dynamic pressure-determining device. The DSI, defined as the increase in pressure when the variation of circumference equals to 1 cm at a frequency of 1 Hz [1 Hz = 1 gait cycle/s] (mmHg/cm measured at 1 Hz), was calculated.

RESULTS
The DSI of 18 brands of MECS showed higher values compared with the static stiffness. A wide range of dynamic stiffness indices was observed not only between all brands of MECS, but also within the five categories. The DSI of MECS is independent of the compression class and the type of knit. The variation in the DSIs between MECS is not because of any measurement error and would indicate that different therapeutic effectiveness may be expected within one compression class. Therefore, a refinement in the current classification system for MECS with other characteristics such as the DSI is warranted.

COMMENT
The compression class of medical compression stockings is defined by the resting pressure in the ankle region. This resting pressure can be achieved by different materials with different elastic properties. Relatively stiff material can produce the same resting pressure as easy stretchable knittings. In consequence these different materials, although in the same compression class, should produce different compression pressures on the skin during movements of the leg for instance during walking. The dynamic stiffness index is a good tool to show these dynamic differences. In this study it could be shown that different DSI can appear in one compression class indicating different therapeutic effectiveness. Such parameters could be used in further studies with clinical endpoints to show the impact of different elastic properties on a clinical outcome.

Lit.: 19/1; Publ. Experimentel, Lan.: En; Abstr: En; Chap: 9

Phlebology 2008; 23: 77–84



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