

# Compression devices for decongestion therapy

A cross-sectional observational survey of handling, pressure and comfort

Protz K, Reich-Schupke S, Klose K, Augustin M, Heyer K. Kompressionsmittel für die Entstauungstherapie im Vergleich. Hautarzt 2018 Mar; 69(3):232-241.

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## Background

- ▶ With improperly and non-professionally performed compression bandagings the therapy goals may not be achieved
- ▶ Accordingly these may cause side effects and complications

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## Objective

- ▶ Investigation of handling and time effort in the performance of a phlebological compression bandaging with the following materials:
  - Short-stretch bandages with underpadding (SB)
  - Multi-component compression systems (MC)
  - Adaptive compression bandages (AB)

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## Methods and Materials

- ▶ Survey was conducted during independent training courses on compression therapy (May to August 2016)
- ▶ The achievement of the qualification was not touched by participation in this study, which was not mandatory and purely voluntary.

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## Standardized Questionnaire

Was divided into four sections

- ▶ Part 1: sociodemographic details
- ▶ Part 2, 3 and 4:
  - Correctly applied bandaging
  - Achieved pressure values (directly after completion)
  - Time effort to create a phlebological compression bandaging
  - Self-estimation of the difficulty to create an adequate bandaging
  - Possibility to get into own shoes
  - Wearing comfort

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## Used products

| Materials                    | Name of the product                                | Company  |
|------------------------------|--|--|
| Short-stretch bandages       | Pütterbinde  | Paul Hartmann AG, Heidenheim, Germany                    |
|                              | Rosidal K  | Lohmann & Rauscher GmbH Co. KG, Neuwied, Germany         |
| Upholstery                   | Rosidal soft                                       | Lohmann & Rauscher GmbH & Co. KG, Neuwied, Germany       |
|                              | TG Cr. 7   | Lohmann & Rauscher GmbH & Co. KG, Neuwied, Germany       |
| Multi-component systems      | Tricofix Gr. DS                                    | BSN medical GmbH, Hamburg, Germany                       |
|                              | Askina 2-Layer-System*                             | B. Braun Melsungen AG, Melsungen, Germany                |
|                              | Coban 2 Layer                                      | 3M Deutschland GmbH, Neuss, Germany                      |
|                              | Jobst Compriz                                      | BSN medical GmbH, Hamburg, Germany                       |
|                              | Prolife  | Smith & Nephew GmbH, Hamburg, Germany                    |
|                              | PütterPro 2  | PAUL HARTMANN AG, Heidenheim, Germany                    |
|                              | ROGG duo*  | ROGG Verbandstoffe GmbH & Co. KG, Fahrenshausen, Germany |
| Rosidal TCS                  | Lohmann & Rauscher GmbH & Co. KG, Neuwied, Germany |  |
| Adaptive compression bandage | Urgok2   | URGO GmbH, Sulzbach, Germany                             |
|                              | circaid juxtacures                                 | medi GmbH & Co. KG, Bayreuth, Germany                    |

\*Since Askina 2-Layer-System and ROGG duo system are identical and sold under different names by two different suppliers, only the Askina 2-Layer-System was used in this study.

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## Practical performance

- ▶ Every two participants formed a team and received randomly 1 up to 3 options: **SB, MC, AB**
- ▶ The method of appliance was mandatory:
  - **SB**: modified Sigg-technique with underpadding; target pressure range: **50–60 mmHg**
  - **MC**: technique according to manufacturer's instructions; target pressure range: **40–50 mmHg**
  - **AB**: after measurement of leg length, ankle and calf circumference for adjustment of the bandage, application according to manufacturer's specifications; target pressure range: **35–45 mmHg**

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## Results – general information

- ▶ 159 people took the training courses. Of these, 86.2 % (n = 137) took part in this study.
- ▶ Reasons for non-participation: e. g. trousers too tight to expose the leg for bandaging; no control of personal skills desired
- ▶ Average age: 41.8 years

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## Participating professions ( n = 137)

- ▶ 5.7 % physicians (n=8)
- ▶ 11.0 % doctor`s assistants (n= 15)
- ▶ 83.2 % nurses (n=114)

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## Results – treatment options

|   | n          | %            |
|---|------------|--------------|
| <b>Number of used treatment options<sup>1</sup></b> |            |              |
| Short-stretch bandages with underpadding            | 134        | 44.4         |
| Multi-component systems                             | 128        | 42.4         |
| Adaptive compression bandages                       | 40         | 13.3         |
| <b>Total</b>  | <b>302</b> | <b>100.0</b> |
| <b>Used multi-component systems</b>                 |            |              |
| Askina 2 Layer                                      | 13         | 10.2         |
| Coban 2 Layer                                       | 13         | 10.2         |
| Jobst Compri 2                                      | 19         | 14.8         |
| Profore   | 15         | 11.7         |
| Pütter Pro 2  | 14         | 10.9         |
| Rosidal TCS   | 32         | 25.0         |
| Urigo K2  | 22         | 17.2         |
| <b>Total</b>  | <b>128</b> | <b>100.0</b> |

<sup>1</sup>Some participants tested more than one option

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## Results – Time effort

- ▶ **Time effort SB**: on average 234 seconds
- ▶ **Time effort MC**: on average **141 seconds**
- ▶ **Time effort AB**: on average 174 seconds

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## Results – achieved pressure values

- ▶ **SB** (n = 134): **11.2%** lay within the target pressure range of 50–60 mmHg; 61.2 % were below
- ▶ **MC** (n = 128): **35.2%** lay within the target pressure range of 40–50 mmHg; 40.6 % were above
- ▶ **AB** (n = 40): **85.0%** lay within the target pressure range of 35–45 mmHg

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## Estimation of application

- ▶ **SB:** 38.8 % (n = 52) rated the application as „difficult“ und 25.4 % (n = 34) as „simple“.
- ▶ **MC:** 53.1 % (n = 68) rated the application as „simple“.
- ▶ **AB:** 50.0 % (n = 20) rated the application as „neither simple nor difficult“.

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## Results – wearing comfort

- ▶ **SB:** 70.9 % (n = 95) no longer fit into their shoes. At 4.5 % (n = 6), the compression bandagings slipped when trying to put on the shoes.
- ▶ **MC:** 62.5 % (n = 80) no longer fit into their shoes. 35.2 % (n = 45) succeeded in putting on the shoes without the compression bandaging slipping.
- ▶ **AB:** all participants got into their shoes without slipping of the bandage.

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## Results – wearing comfort

- ▶ **Wearing comfort SB:** 38.0 % (n = 60) comfortable
- ▶ **Wearing comfort MC:** 65.0 % (n = 89) comfortable
- ▶ **Wearing comfort AB:** 95.0 % (n = 34) comfortable

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## Conclusions

- ▶ The efficiency of compression bandaging depends on professional knowledge, practical skills and experience of the users.
- ▶ A large number of phlebological compression bandagings is not adequately applied. In a practical test, 1476 participants applied bandagings with short-stretch bandages using the Sigg-technique. Only 12.3 % reached the target pressure range of 50–60 mmHg.
- ▶ In this study, the number of participants who reached the target pressure range of 50–60 mmHg is with 11.2 % even slightly lower.
- ▶ From this it can be deduced that only a few compression bandagings with short-stretch bandages are applied properly in everyday practice.

Heyer K, Protz K, Augustin M: Compression therapy – cross-sectional observational survey about knowledge and practical treatment of specialised and non-specialised nurses and therapists, Int Wound Journal 2017; Dec; 14(6): 1148-1153.

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## Conclusions

- ▶ It is easier to create a pressure relevant to therapy with MC and AB.
- ▶ The better results at MC may be partly due to the fact that some of these systems, similar to the tested AB, have visual markings that give an indication of the pressure value below the bandaging.

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## Conclusions

- ▶ The wearing comfort influences the patient`s adherence and his will to wear the compression treatment according to therapy guidelines.
- ▶ The present study shows that MC and AB may offer better wearing comfort for patients in the initial decongestion phase, as these are perceived as more comfortable and cause fewer or no shoe problems.

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## Conclusions

- ▶ Personnel costs are a significant portion of treatment costs.
- ▶ Therefore treatment options are needed that can be fitted correctly in a short period of time.
- ▶ The study has shown that applying MC takes the least amount of time.

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## Conclusions

- ▶ The adaptive compression bandage examined could be an alternative treatment option.
- ▶ It eases self-treatment or treatment with the help of relatives. In contrast to SB and MC it includes the option of re-adaptation.

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Thank you very much for your  
attention!

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