


**Compression: Does it Work?
What Data Do You Have to Support?**



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Disclosures

- Sonovascular Consultant
- Intervene Consultant and Research support

What is purpose of compression hose for CVI?


- Supports calf muscle pump
- Can reverse venous hypertension, facilitate return and improve lymphatic drainage
- Effects reduce venous symptoms of aching, heaviness and edema worsening

1. Motylak GD, Caprini JA, Arcelus JL, et al. Evaluation of therapeutic compression stockings in the treatment of CVI. *Dermatol Surg* 1999;25:116-20
2. Moffatt C. Variability of pressure provided by sustained compression. *Int Wound J* 2008;5:259-65

Relationship Between Ambulatory Venous Pressure and the Incidence of Stasis Ulceration

Ambulatory Venous Pressure (mm Hg)	Incidence of Ulcers (%)
< 45	0
45 to 49	5
50 to 59	15
60 to 69	50
70 to 79	75
≥ 80	80

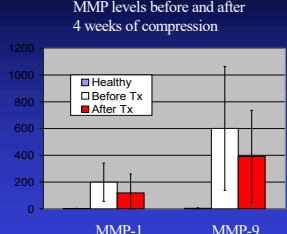
J Vase Surg 1993;17:414-9.



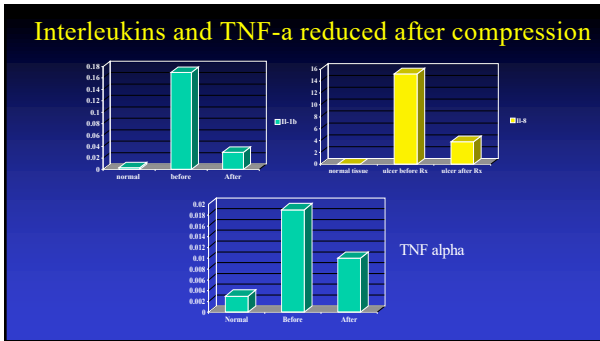
- Compression hose applied to legs of patients with primary venous disease
- Measured venous hemodynamics with APG while walking
- Compression hose improved venous hemodynamics as measured by a reduced residual volume fraction at all walking speeds compared to control

Compression for VLUs: What does it do?

- Profound anti-inflammatory effect
- Occurs within 1-2 weeks of initiating therapy
- Wound biopsies taken before and after 4 weeks of 30-40 mm compression



Beidler et al Wound Rep Regen 2008;16:642

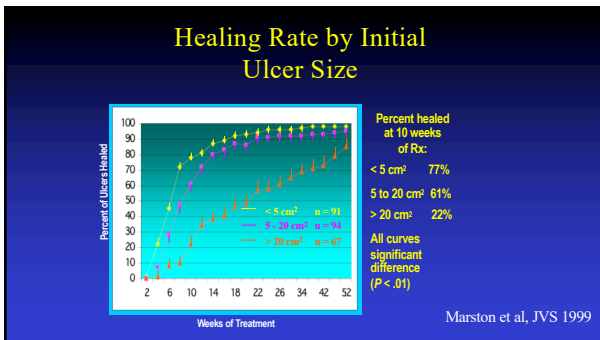


Cochrane review:

Compression bandages or stockings versus no compression for treating venous leg ulcers

- 14 studies identified with 1391 participants
- With use of stockings VLU patients experience wound healing more quickly
- More VLU are completely healed with compression use
- Compression bandages or stockings probably reduce pain for VLU patients
 - And improve QOL

Cochrane Database Syst Rev 2021 Jul 26;7(7):CD013397



THE NEW ENGLAND JOURNAL OF MEDICINE ORIGINAL ARTICLE

A Randomized Trial of Early Endovenous Ablation in Venous Ulceration

Margit S. Cohen, M.D., Francine Heatley, B.Sc., Xinrui Liu, Ph.D., Andrew Bradbury, M.D., Richard Bulbulia, M.D., Nicky Callum, Ph.D., David M. Epstein, Ph.D., Isaac Nyamekye, M.D., Keith R. Paskett, M.D., Sophie Renton, M.S., Jane Wanwick, Ph.D., and Alun H. Davies, D.Sc. for the EVRA Trial Investigators*

Prospective randomized trial to study whether early elimination of superficial venous reflux results in more rapid venous ulcer healing

N Engl J Med 2018;378:2105-2114

Severity and site of venous disease matters

- Superficial venous reflux
 - Easily treated, significant benefit
- Deep venous reflux
 - Rarely correctible, usually responds to compression
- Deep venous obstruction
 - More difficult to treat but major benefit to patient

Where are the sources of venous HTN that are causing the problem?

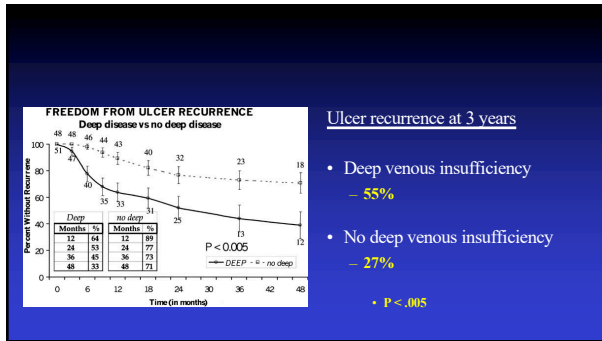
Journal of Vascular Surgery Volume 35, Issue 4, April 2002, Pages 1213-1228

Recurrence of chronic venous ulcers on the basis of clinical, etiologic, anatomic, and pathophysiologic criteria and air plethysmography ☆, ☆☆, ☆☆☆

Haley B. McDaniel MD, William A. Marston MD, Mark A. Farber MD, Robert B. Mendes MD, Lewis V. Owens MD, Mary L. Young MS, Patty F. Daniel RN, RVT, Blair A. Keagy MD

- 99 CEAP class 5 patients
- Compression after ulcer healing in prospective protocol
- Incidence of recurrence studied to 5 years

Ulcer recurrence signif higher in patients with deep venous reflux and higher VFI



Ulcer recurrence at 3 years

- Deep venous insufficiency – 55%
- No deep venous insufficiency – 27%
- P < .005

Compression resistance in obstruction patients

- 62 patients with Ilio-caval obstruction and VLU
- 48 had successful stenting with patent iliac outflow maintained at 1 year
- 14 had no intervention (6) or failed stenting (8)

WOUND REPAIR AND REGENERATION
THE OFFICIAL JOURNAL OF THE SOCIETY OF WOUND HEALING AND REGENERATION

ORIGINAL ARTICLE - CLINICAL SCIENCE
Iliac vein recanalisation and stenting accelerate healing of venous leg ulcers associated with severe venous outflow obstruction

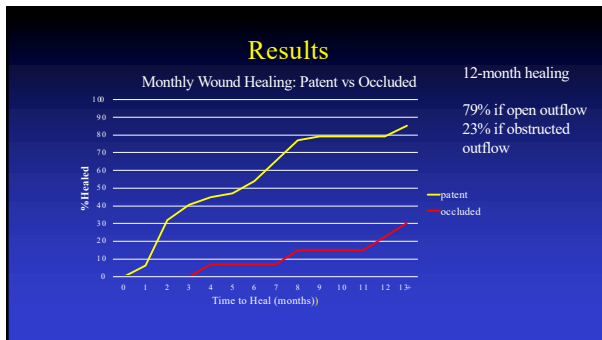
Colby S. Ruiz MD, Melissa F. Herricks BS, Katherine L. McGinagle MD, MPH, William A. Marston MD

First published: 21 December 2022 | <https://doi.org/10.1111/wrr.13065>

Find at UNC

This study was presented at the 35th Annual Congress of the American Venous and Lymphatic Society, Denver, CO, on 8 October 2021.

Ruiz et al, Wound Rep Regen 2022; <https://doi.org/10.1111/wrr.13065>



Conclusions: Compression for C5-6

- Compression methods provide baseline treatment modality
 - Will achieve eventual healing in most patients
- Assess progress at 4-6 weeks
- For slow responders consider potential reasons
 - Inadequate compression, poor compliance, poor understanding
 - Consider alternate method
 - Is venous insufficiency too severe for compression to correct?
 - Intervention to decrease venous pressure to improve compression control