CIRC Meeting 2016
Schloss Maretsch , Bozen , Southern Tyrol
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Center of Interdisciplinary Research on Compression

nij smellinghe

Velcro band devices or conventional bandaging? Pro and contra

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Expert document for lower leg compression therapy 2015

Overview of materials

Used in initial / maintenance phase

Elastic properties (PLaCE rule)

Stiffness of materials

NVDV Nederlandse Vereniging voor Dermatologie en Venereologie

WCS Kenniscentrum Wondzorg

Modern compression technology: how to choose ?

- Bandages
- Garments
- Mechanical compression (Intermittent pneumatic compression)
- Pads / padding material
- Point pressure device (PPD)
- Adjustable compression device (ACD – Velcro)

Influence compression on microcirculation (MC)

<u>Lymphatic part of MC</u>

Lymph capillary pressure ↓

Absorption rate ↑

Rhythmic propulsions ↑

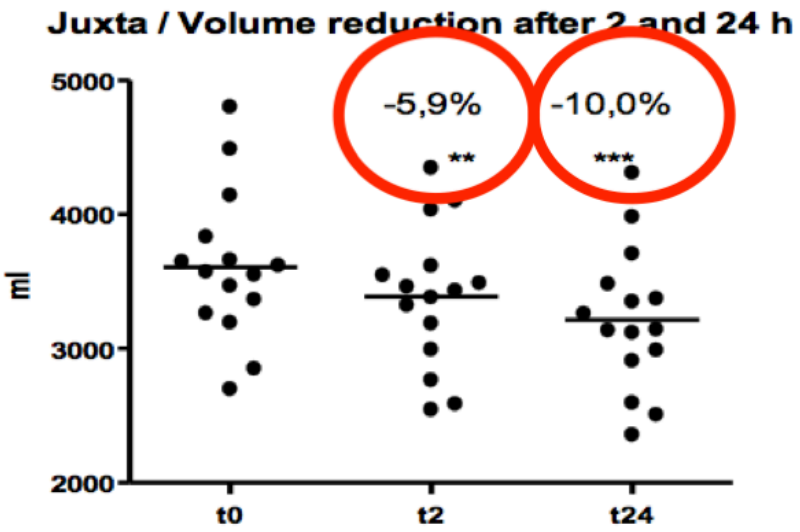
<u>Venous part of MC</u>

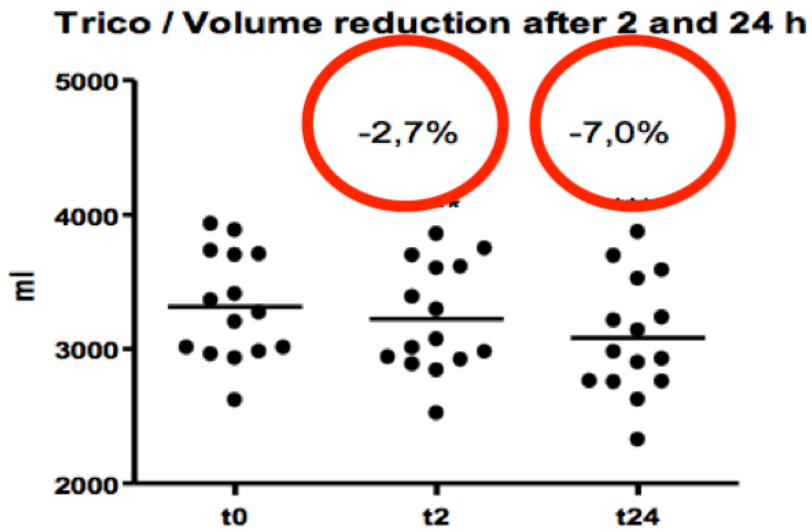
- Venous pressure ↓
- Filtration rate ↓
- Valvular function ↑

↓ Interstitial volume ↓

Valcro device (juxta fit®) original for maintenance phase used in the treatment phase (Adjustable compression Device /ACD)

leg volumes in lymphedema patients (n=36)



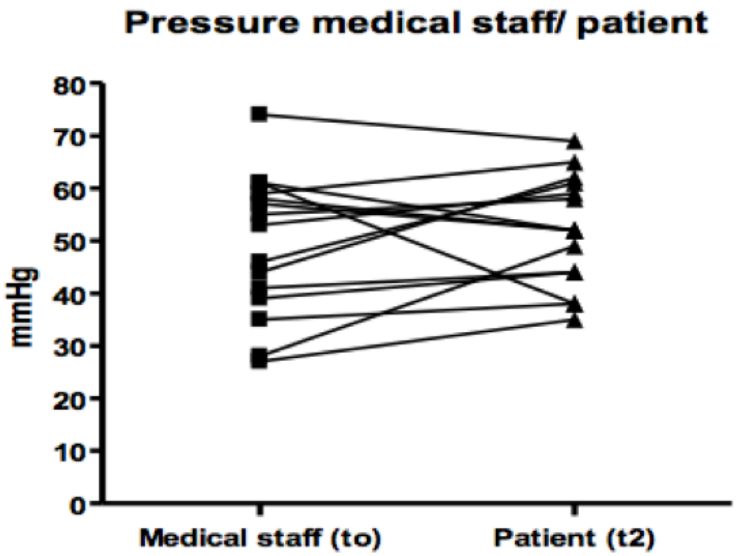


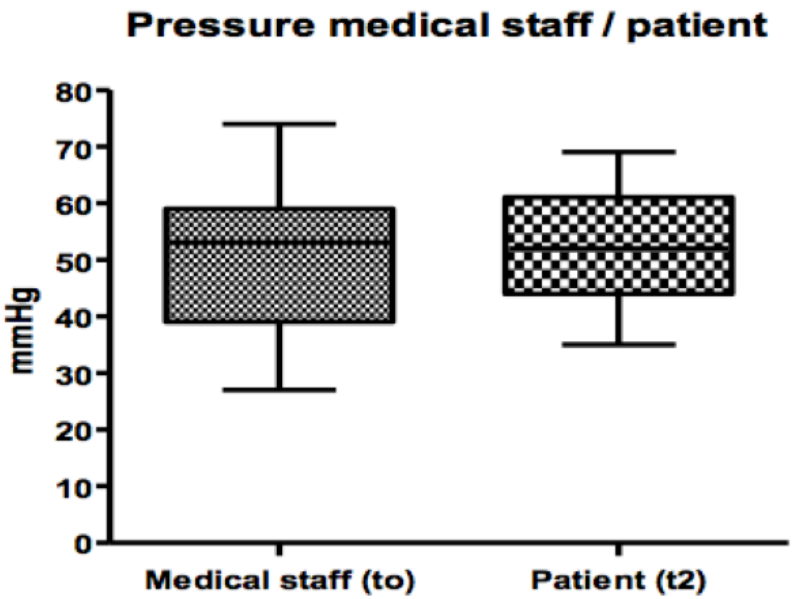
T0 - T24: volume reduction ➔ 2CC: - 7.0% (median 290cc)

T0 - T24: ➔ JF: - 10.0 % (median 429cc)

(P<0.05)

Patient is able to learn applying adequate pressure after one demonstration (selfmanagement)





Total number of adjustments between 2-24 hours: (n=26)

Looser : 12 x

Tighter: 14 x

Damstra, RJ, Partsch H. Prospective, randomized, controlled trial comparing the effectiveness of adjustable Compression Velcro wraps versus inelastic multicomponent compression bandages in the initial treatment of leg lymphedema. Journal of Vascular Surgery,2013: 1(1), 13–9

WOUND CARE

Cost efficacy of using Juxta CURES™ and UCS™ debridement cloths

JCN 2015 May 11:1–4.

Sue Elvin

Effective in woundhealing and ulcer treatment

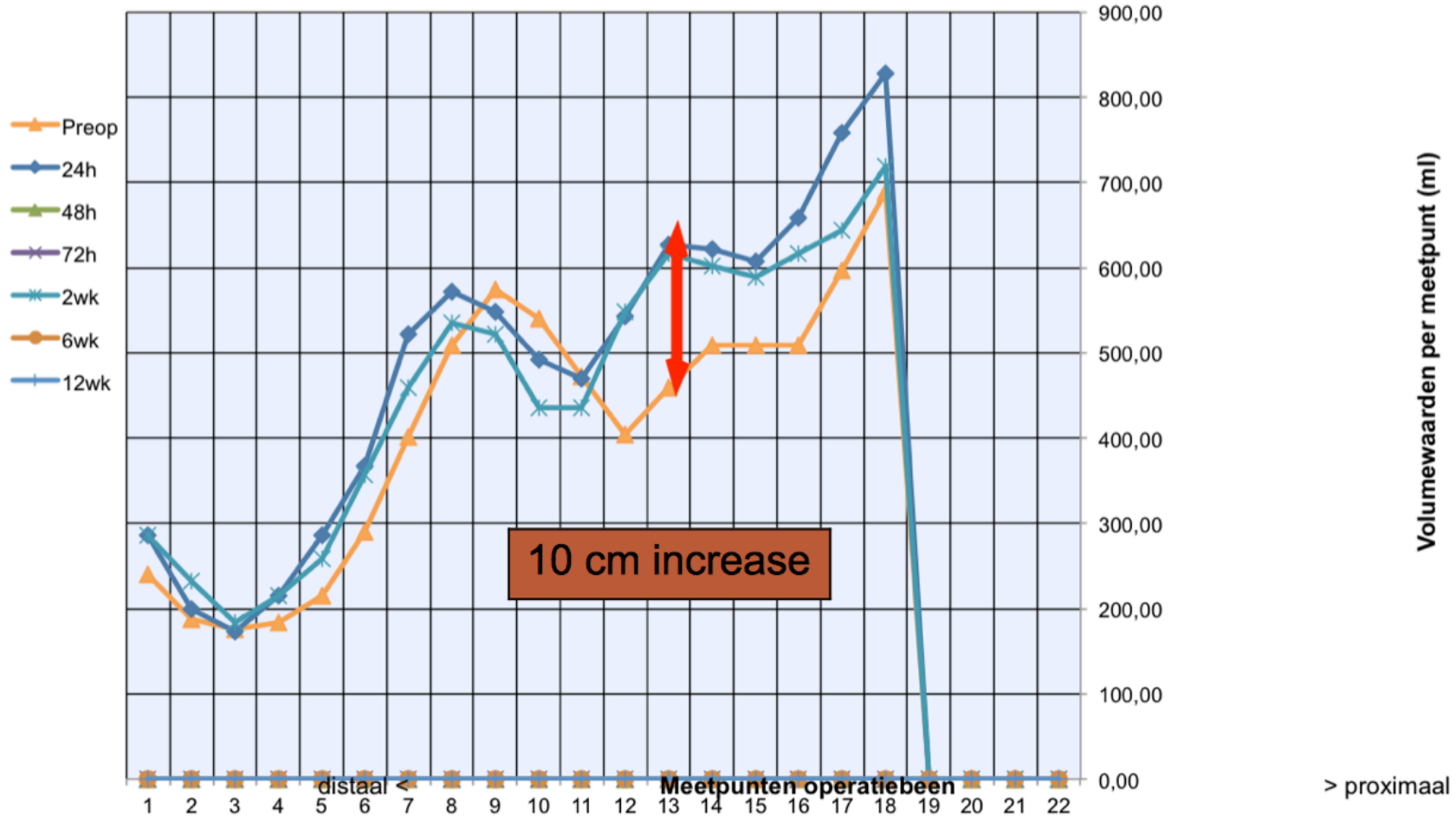
Study Valcro device in Knee displacement

Usual Care	Pilot study
• Immediately after OK - 24u post OP	• Compression fitting preoperatively
• Bandages Elastomull Haft ®	• Immediately after OP untill 6 weeks post OP
• 24h untill 6 weeks post OP	• Struva anti-trombosis stocking (class 2)
• Anti-thrombosis stockings	• Juxta Reduction Kit
• CPM	• CPM
• Rapid Recovery / fast track	• Rapid Recovery / fast track

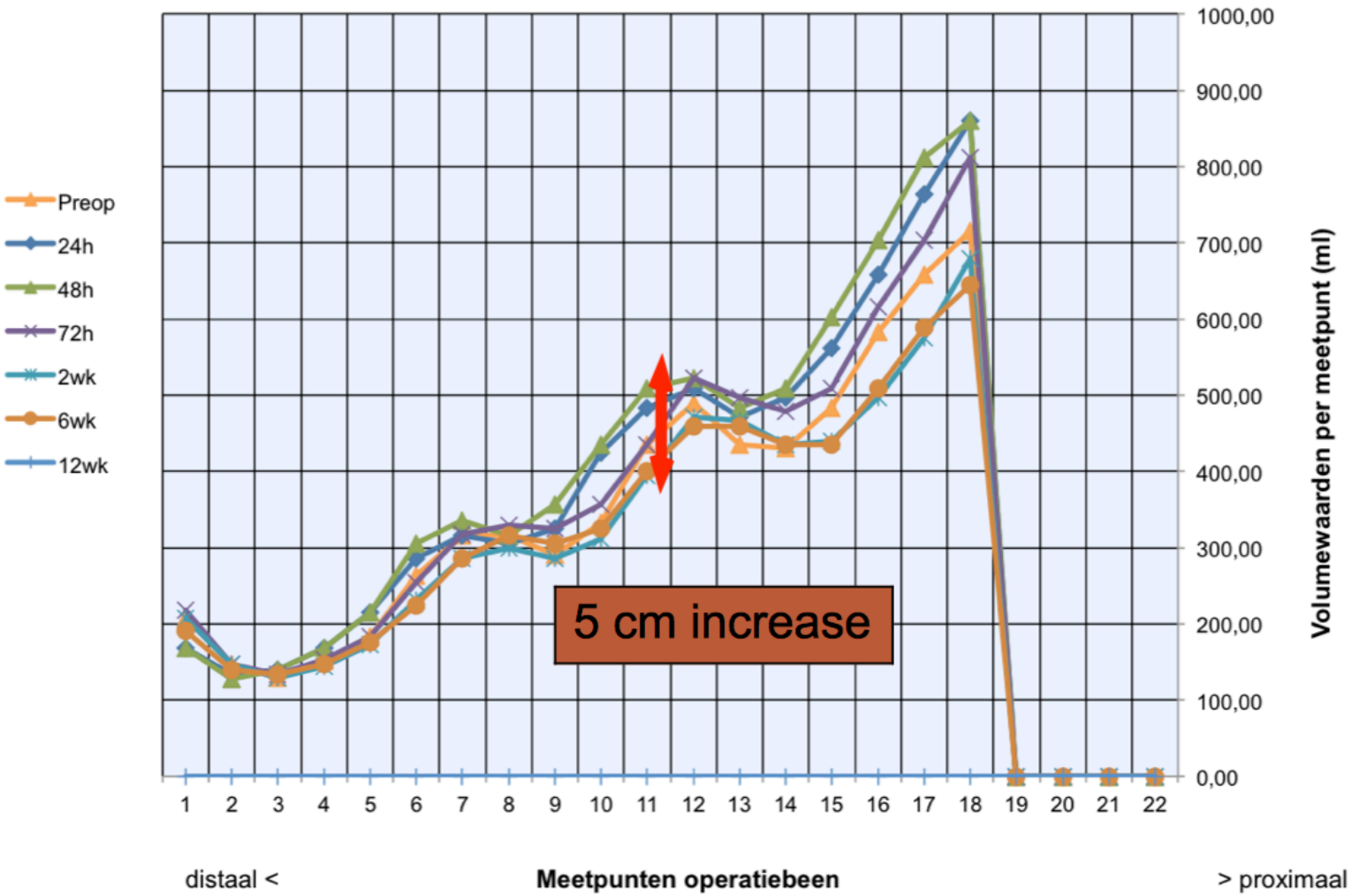
Pilot study in 20 patients / 4 controls
VAS / circumference measurements

Prelimenary results / circumference leg control

Control group



Prelimenary results: Valcro-wrap treatment

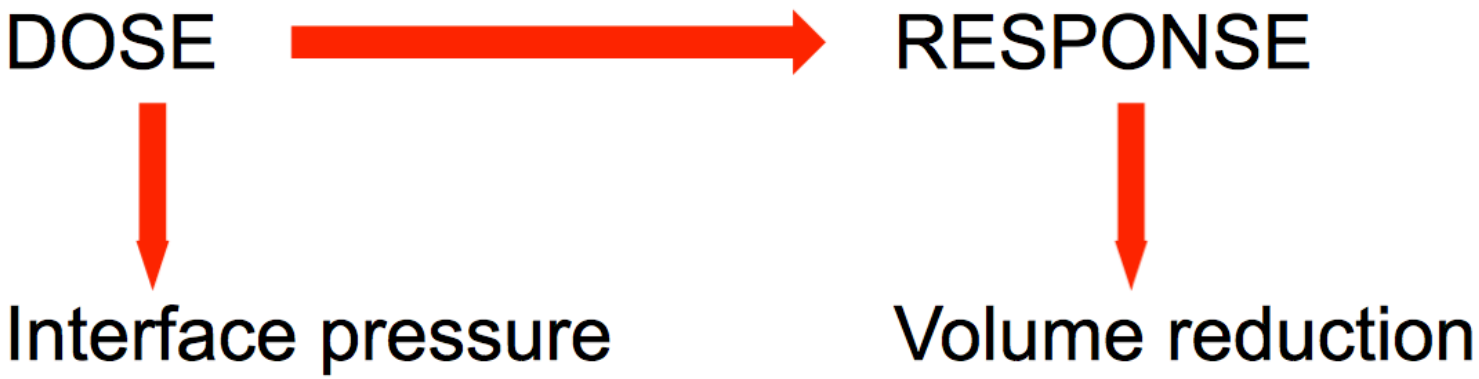


„Optimal“ initial pressure of inelastic material immediately after application

- ARM: ~30 mmHg
- LEG: 40-60 mmHg

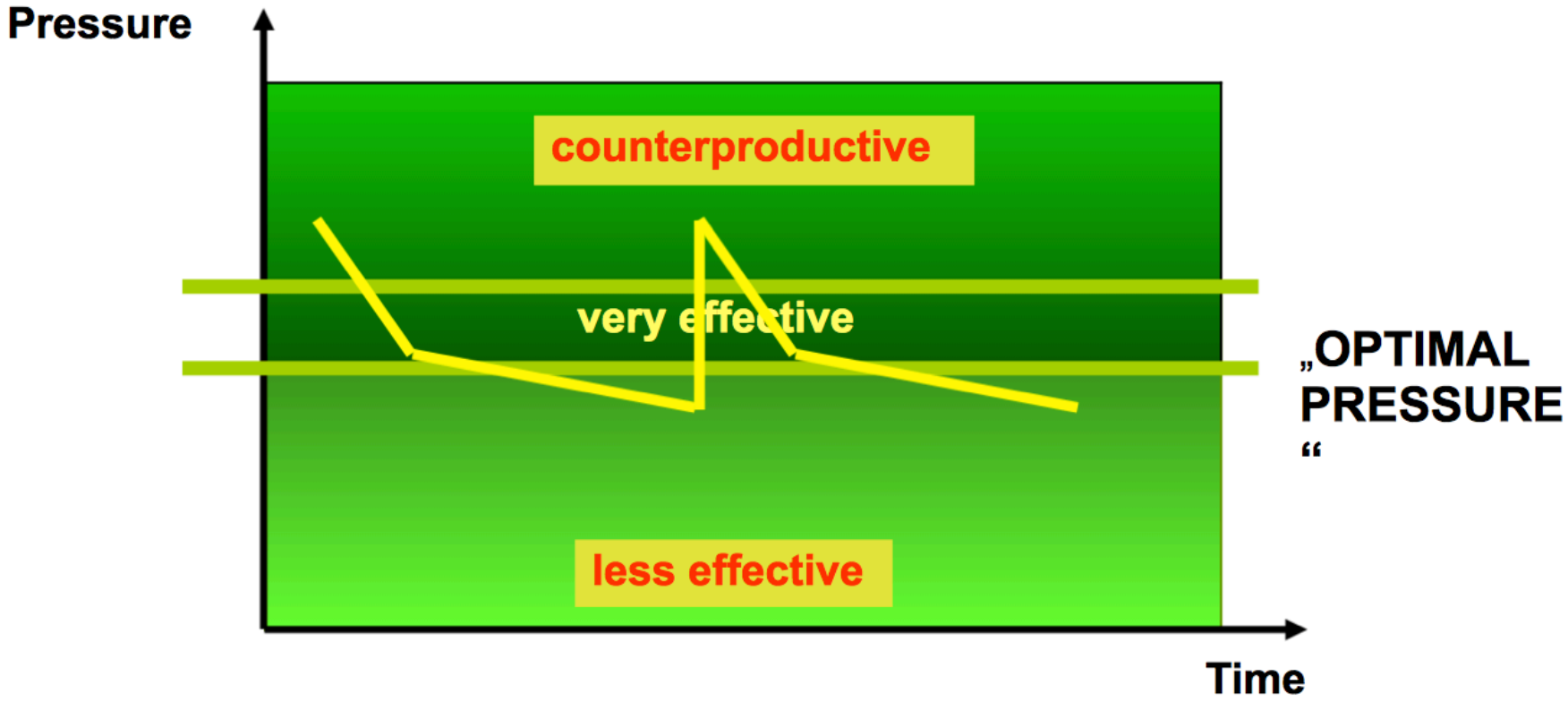
Vanscheidt W et al. J Vasc Surg 2009;49:395-402
Damstra R et al Dermatol Surg 2008; 34:773-8
Damstra R et al. J Vasc Surg 2009;49(5):1256-63
Mosti G, Picerni, Partsch. Plebology 2012;27(6):289-96

Dose - response relationship



ARM-study: Damstra RJ, Partsch H. J Vasc Surg. 2009 May;49(5):1256-63.
LEG-study: Mosti G, Picerni P, Partsch H. Plebology 2012;27(6):289-96

Twice per week

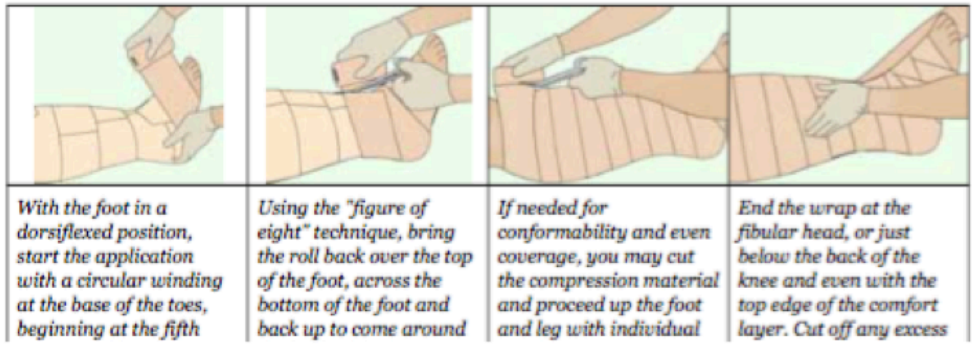


How effective are we ?

(How) Do we measure ?

How do we evaluate the results ?

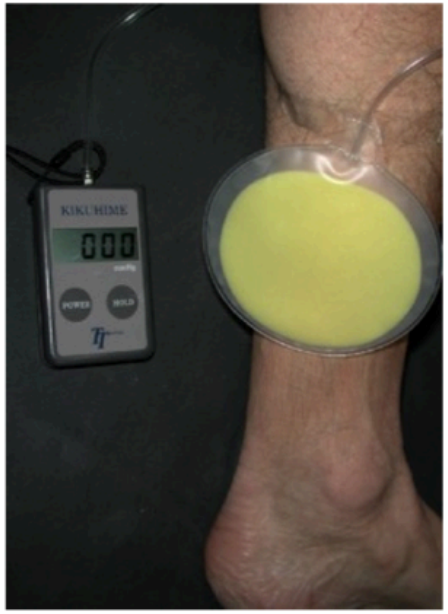
What are results: volume reduction ? Pain ? Wound healing ?



With the foot in a dorsiflexed position, start the application with a circular winding at the base of the toes, beginning at the fifth	*Using the "figure of eight" technique, bring the roll back over the top of the foot, across the bottom of the foot and back up to come around*	*If needed for conformability and even coverage, you may cut the compression material and proceed up the foot and leg with individual*	*End the wrap at the fibular head, or just below the back of the knee and even with the top edge of the comfort layer. Cut off any excess*

How well is compression applied ?

- " I am trained!"
- " I have a lot of experience!"
- "I know exactly what I am doing!"
- "Patients are very satisfied!!"
- **<u>The numbers tell the tale!</u>**



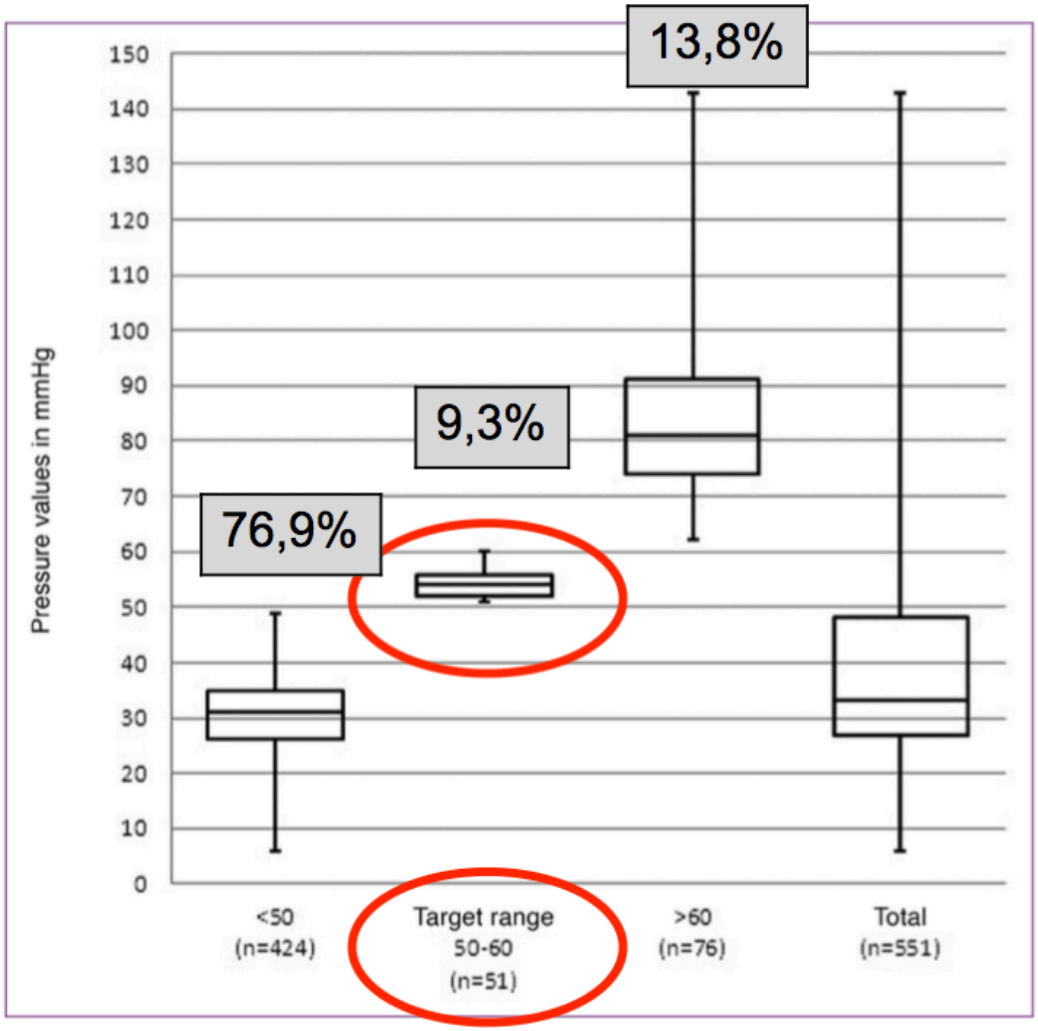
Compression by 68 nurses / 3 types: 30-50 mmHg

Table 2. Subbandage Pressures Obtained by the 3 Compression Bandages[a]

Characteristic	Inelastic Bandage (n = 68)	Elastic Bandage (n = 68)	Two-Component Bandage (n = 62)
Bandage pressure, mean (range), mm Hg	30.4 (11-57)	31.8 (18-78)	41.9 (19-80)
Exerted subbandage pressure, mm Hg			
0-19	10 (15)	5 (7)	1 (2)
20-29	28 (41)	31 (46)	10 (16)
30-50	27 (40)	28 (41)	39 (63)
>50	3 (4)	4 (6)	12 (19)
Achieved the desired subbandage pressure range			
Yes	14 (21)	17 (25)	17 (27)
No	54 (79)	51 (75)	45 (73)

Zarchi K, Jemec GBE. Delivery of Compression Therapy for Venous Leg Ulcers. JAMA Dermatol. 2014 Jul 1;150(7):730.

Is a bandage always effectively applied ?



N=551 trained professionals

Picopress at B1

Optimal: 50-60 mmHg

Short stretch bandaging

Figure 1 Pressure at rest upon bandaging with short stretch bandages in accord with Sigg (n = 551).

Protz K, Heyer K, Dörler M, Stücker M, Hampel-Kalthoff C, Augustin M. Compression therapy: scientific background and practical applications. JDDG: Journal der Deutschen Dermatologischen Gesellschaft. 2014 Aug 18;12(9):794–801.

Reasons to use valcro wraps: good bandaging is hard

selfmanagement tools in both initial and maintenance phase

More easy to apply by less skilled professionals and by trained patients

Very disfigured sizes

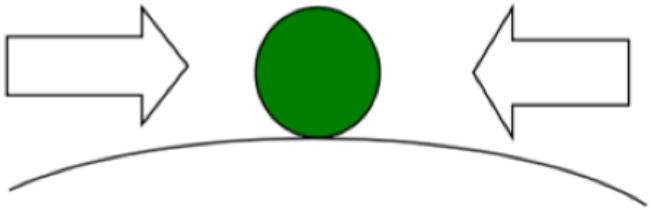
BUT:

4. Necessity for training the therapist to educate the patient and or professional

New model with postive health

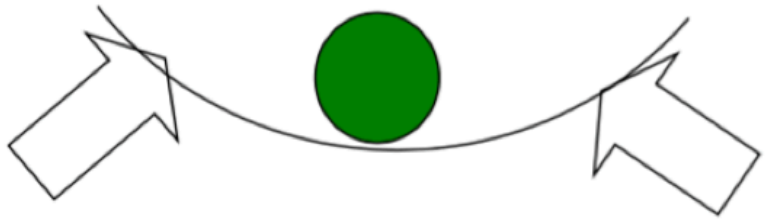
Ten Napel et al. 2006; WUR/LBI

Control model



- Focus on problem
- Continuous monitoring
- Direct stimulation
- Static equilibrium

Adaptive model



- Focus on system
- Stimulate self-regulation
- Indirect stimulation
- Dynamic equilibrium

= patient

J Wound Care. 2016 Sep;25(9):513-20. doi: 10.12968/jowc.2016.25.9.513.

Multinational, pilot audit of a Velcro adjustable compression wrap system for venous and lymphatic conditions.

Ehmann S[1], Whitaker JC[2], Hampton S[3], Collarte A[4].

N= 17 (venous legs ulcer, lymphedema, venous edema

4 weeks period:
- improvement open wounds (?)
- 100% circumference reduction

- 94% by patient (59%) or carer (35%)
- just 6% by healthcare professional

Conclusion:
The device can potential reduce costs and healthcare burden

Velcro wraps

PRO	CONS
Selfmanagement	• More expensive (especially in the initial phase)
More easy to apply	• More bulky
Adjustable	• Window edema / strangulation
Proven effective	• Concordant patient
Modern, hands-off therapist (new concept of healthcare)	• Paradigm shift needed

Conclusion

- ACD (Velcro) is effective for edema reduction and circumference maintenance
- **Efficiency** when more selfmanagement by patient or carer and less by HCP. Or: more easy for HCP
- ACD fits perfectly in new concepts of chronic care
- In complex indications effective (eg lumps, morbid obesity) when bandaging not possible
- For re-use in operation patients ?