Good bye slippage

– a new fusion to tackle bandage slippage on the foot

Presenters:
Josefin Damm & Andreas Nilsson

Disclaimer/Conflict of Interest

- Josefin Damm: Co-inventor of Lundatex® products, co-founder of PressCise
- Andreas Nilsson: CEO of PressCise

- None of the presenters are nurse or MD

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Background

"In fact, the medical field of compression treatment is maybe the only one where quantitative dosage has almost never been measured, despite outcomes largely depending on it."

Mosti & Partsch,

Eur J Vasc Endovasc Surg (2017)

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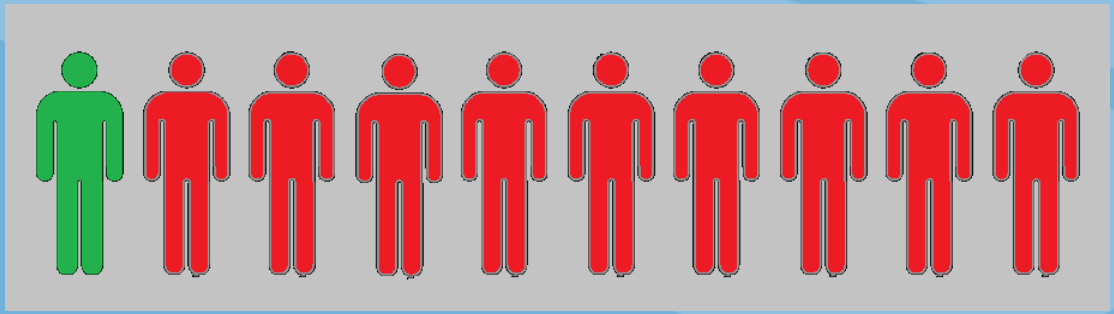
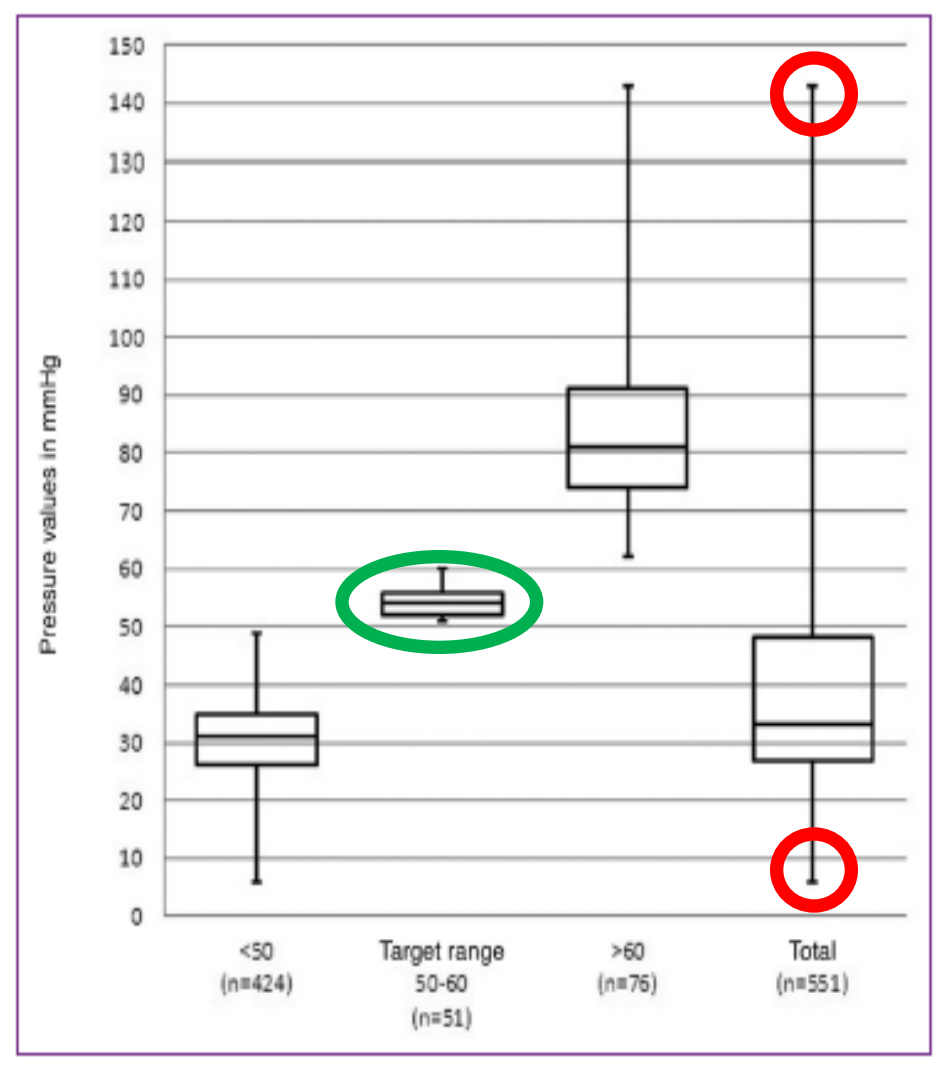
Problem with bandage application – no consistency in pressure

Protz et.al. 2014

- 551 healthcare personnel
- Target pressure: 50-60 mmHg





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Our solution – to control the pressure

Precise pressure over the entire leg:

- Invariant of different appliers
- Different sizes
- Different shapes

(Oedema – swelling/deswelling)

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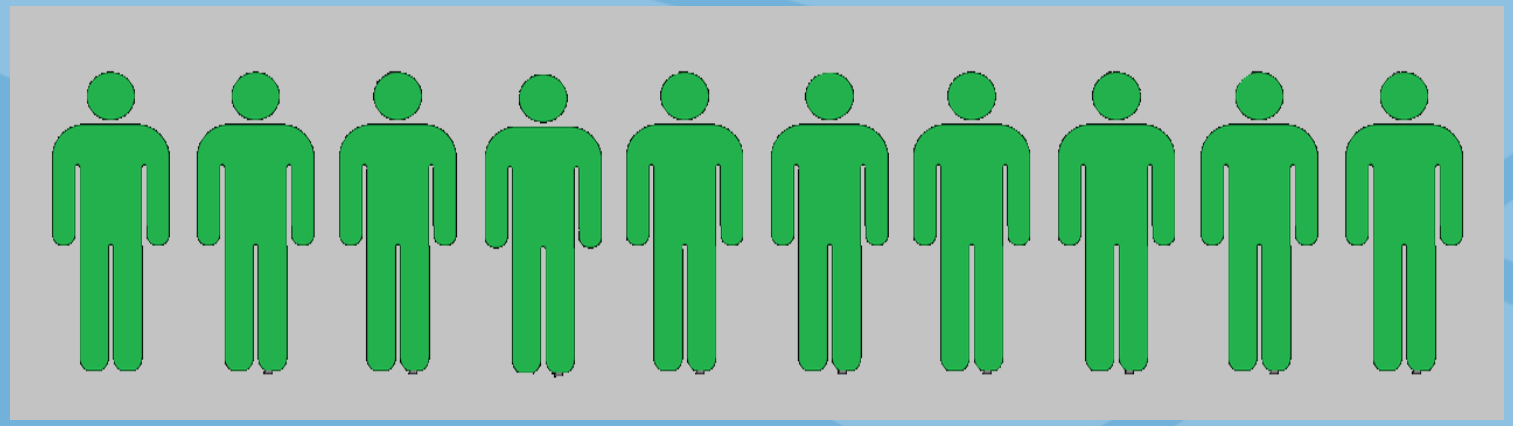
Study by Wiklander et.al. (2015)

International Wound Journal ISSN 1742-4801

ORIGINAL ARTICLE

An investigation of the ability to produce a defined 'target pressure' using the PressCise compression bandage

Kerstin Wiklander[1], Annette Erichsen Andersson[2] & Ulrika Källman[3,4]



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Study by G.Mosti &H.Partsch (2017)

Eur J Vasc Endovasc Surg (2017) ■, 1—6

A New Two Component Compression System Turning an Elastic Bandage into an Inelastic Compression Device: Interface Pressure, Stiffness, and Haemodynamic Effectiveness

Giovanni Mosti [a,*], **Hugo Partsch** [b]

[a] Department of Angiology, MD Barbantini Clinic, Lucca, Italy
[b] Professor Emeritus Medical University of Vienna, Vienna, Austria

- 25 legs from 25 patients
- Venus insufficiency

"…all affected by clinically significant reflux in the great saphenous vein (GSV), with clinical stage C2-C5"

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A New Two Component Compression System Turning an Elastic Bandage into an Inelastic Compression Device: Interface Pressure, Stiffness, and Haemodynamic Effectiveness

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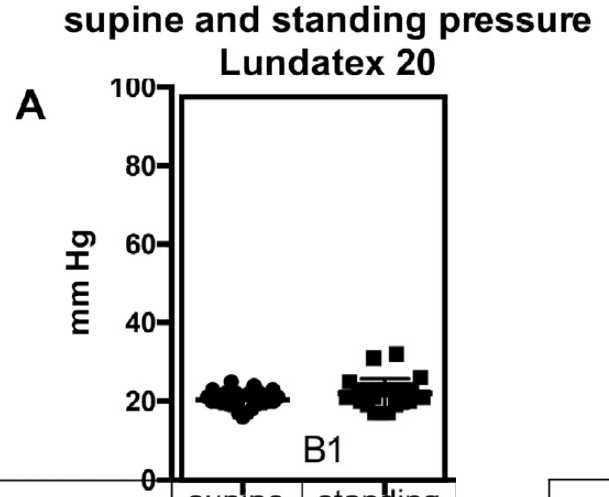
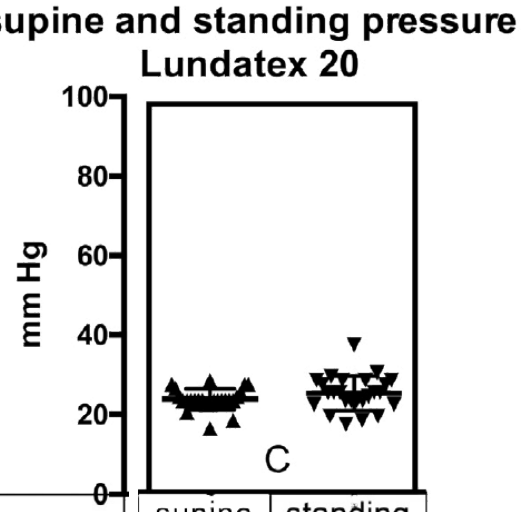
Interface pressure

B1-point: Medial side gastrocnemius muscle turns into the tendinous part

C-point: at maximum calf circumference



	supine	standing
Minimum	16.00	17.00
Median	20.00	21.00
Maximum	25.00	32.00
Mean	20.40	22.00
Std. Deviation	2.179	3.674



	supine	standing
Minimum	16.00	17.00
Median	23.00	25.00
Maximum	28.00	37.00
Mean	23.28	24.80
Std. Deviation	2.670	4.320

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Uniform & constant pressure

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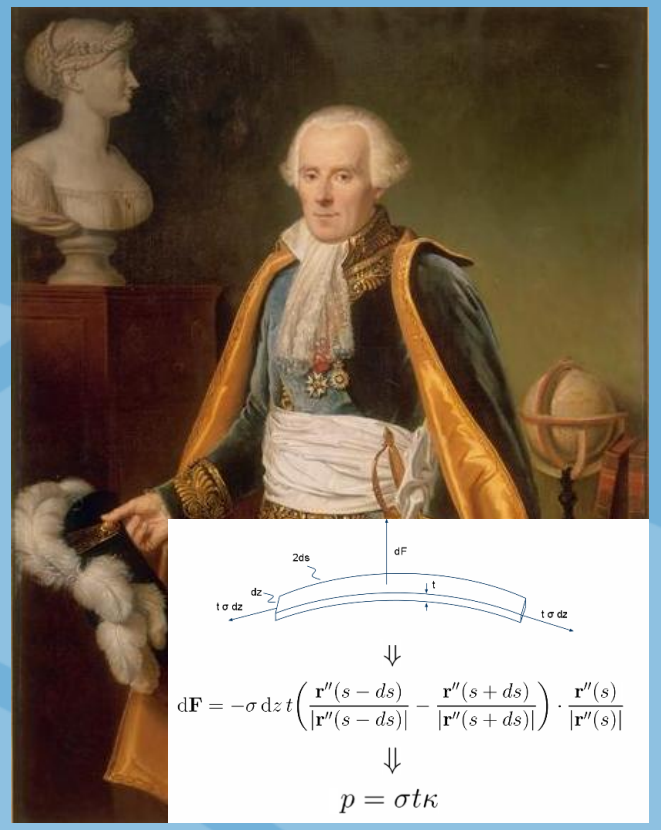
How does it work?
- Lundatex medical is based on Laplace's law

Pressure = force × overlap × curvature



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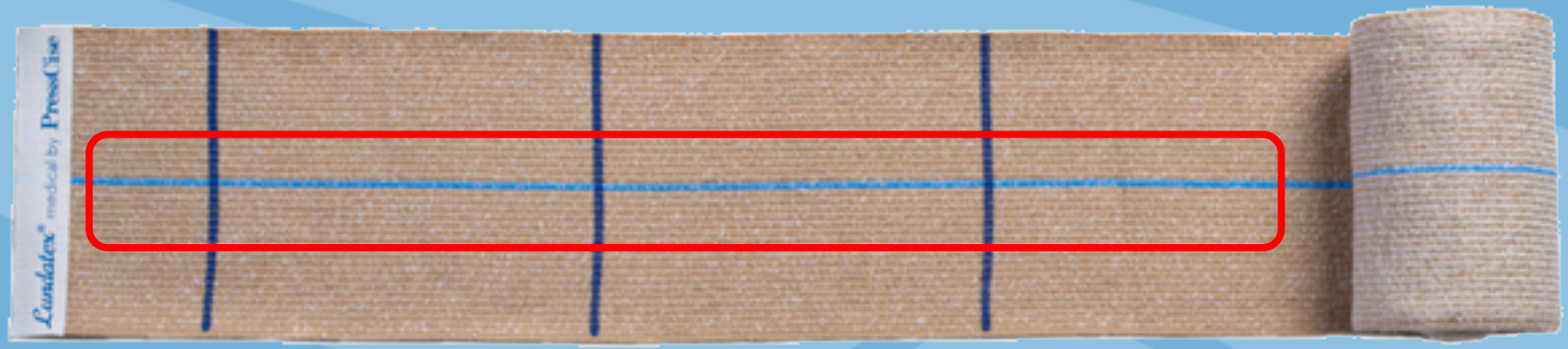

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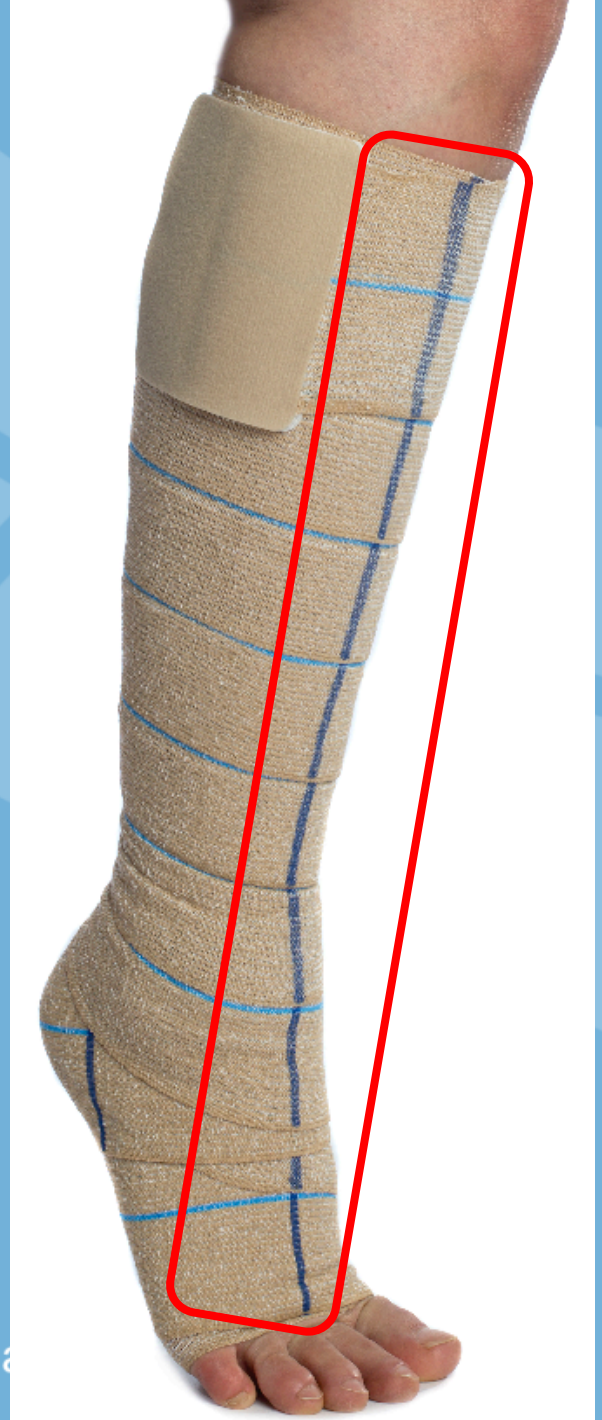

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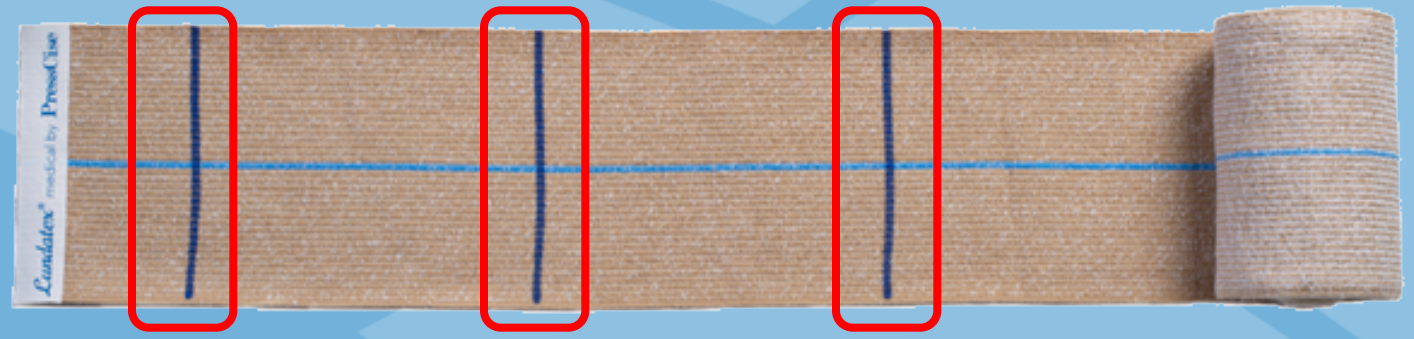

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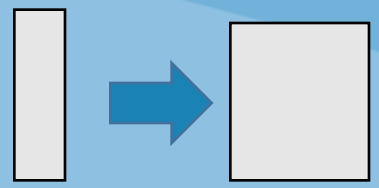
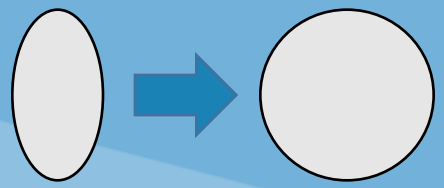
Bandages with markings – same same but different?





Pressure = force × overlap × curvature

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Why we need innovation in stockings

- Fitting / Custom made stockings
  - Pressure?
- Oedema – swelling/deswelling
  - Pressure?
- Comfort
  - patient compliance
- Donning problems
  - varies with compression class and elasticity of the material used

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A new Smart Textile Stocking

Lundatex® stocking

New properties allows for:

- Well-defined pressure (20 mmHg)
- Uniform pressure
- Ensured pressure regardless of leg shape
- Easier donning

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Two limited pilot studies – methods

1. 1st study: 10 healthy subjects (5 women and 3 men)
2. 2nd study: 8 healthy subjects (5 women and 5 men)

Interface pressure was measured with a Picopress

At B1-level gastrocnemius muscle turns into the tendinous part:

B1 – medial

B2 – lateral

At C level - point at maximum leg-circumference:

C1 – medial

C2 – posterior

C3 – lateral

Lundatex® stocking

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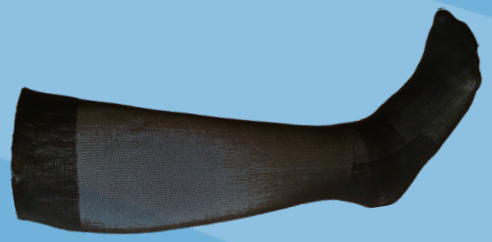
Results – 1st pilot study

- **Leg circumference**
- **range 20.7 – 29.3 cm**



- **range 30.3 – 51.0 cm**

Lundatex® stocking

	10 subjects - Supine	
Sensor Position	Interface pressure Mean (mmHg)	SD
B1	**20.7**	1.6
B2	**21.1**	1.7
C1	**20.9**	1.7
C2	**21.9**	1.7
C3	**21.8**	2.2

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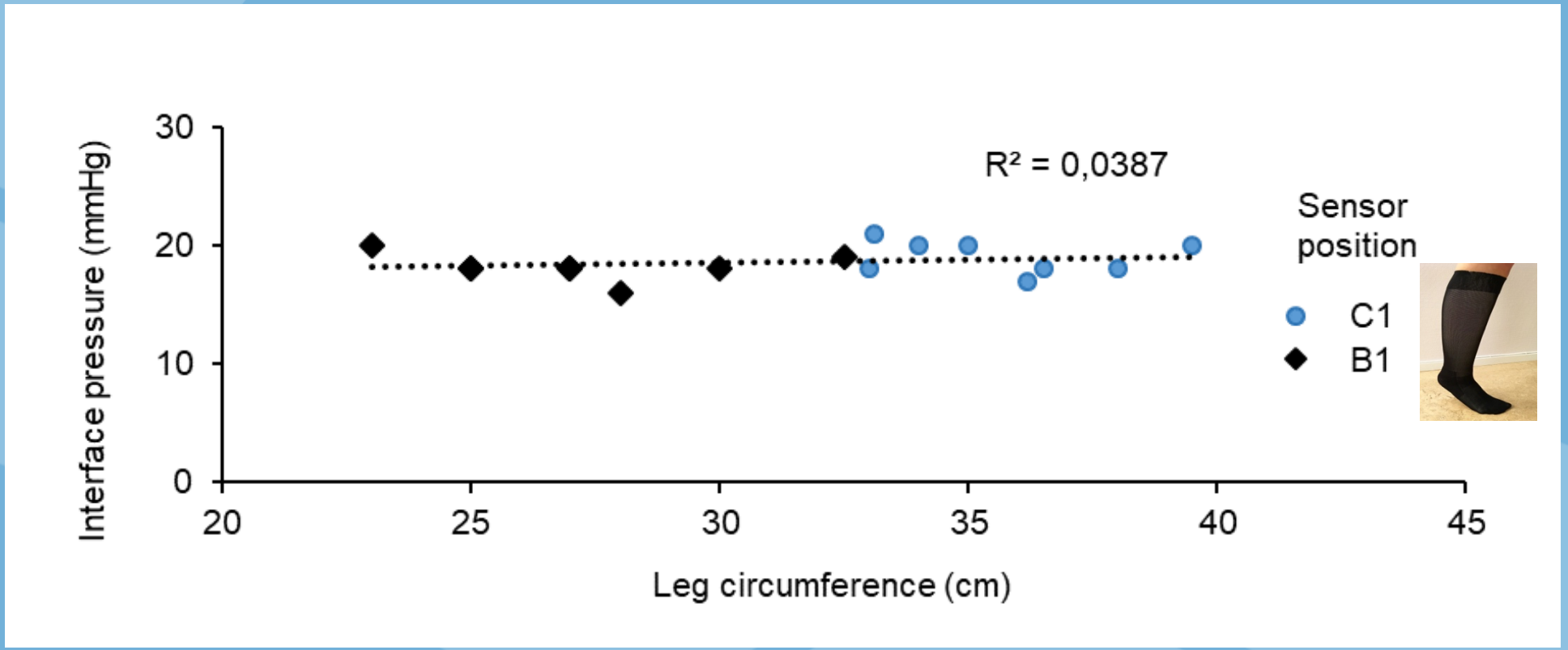
Results – 2nd pilot study

Same stocking used on all 8 subjects!



Lundatex® stocking

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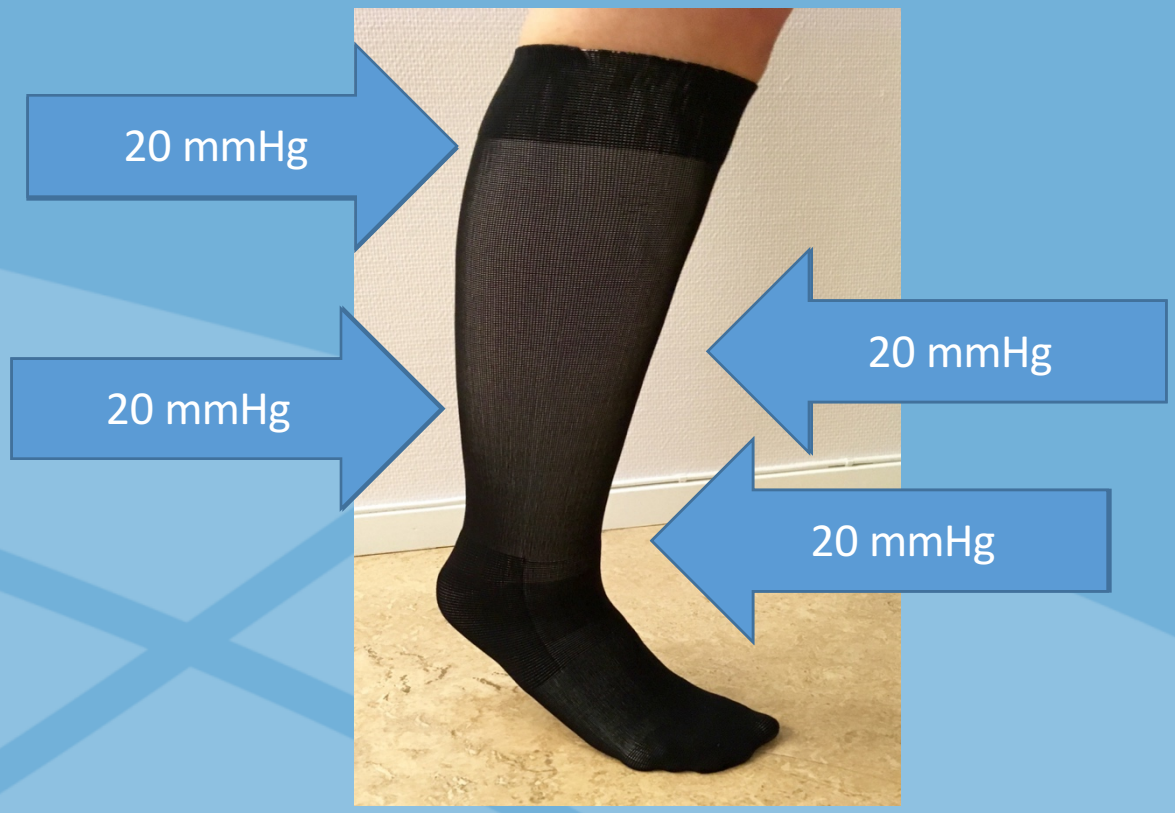
Uniform & constant pressure



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Problem with bandage application on the foot

Source: www.worlwidewounds.com

"Bandage slippage can create local high-pressure areas that may cause tissue damage and even necrosis."

S. Thomas, "Compression Bandaging in the Treatment of Venous Leg Ulcers," *World Wide Wounds*, 1998.

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What if we take the best from two worlds and combine into one solution?

Potential dangerous zone!
- Too low pressure
- Too high pressure

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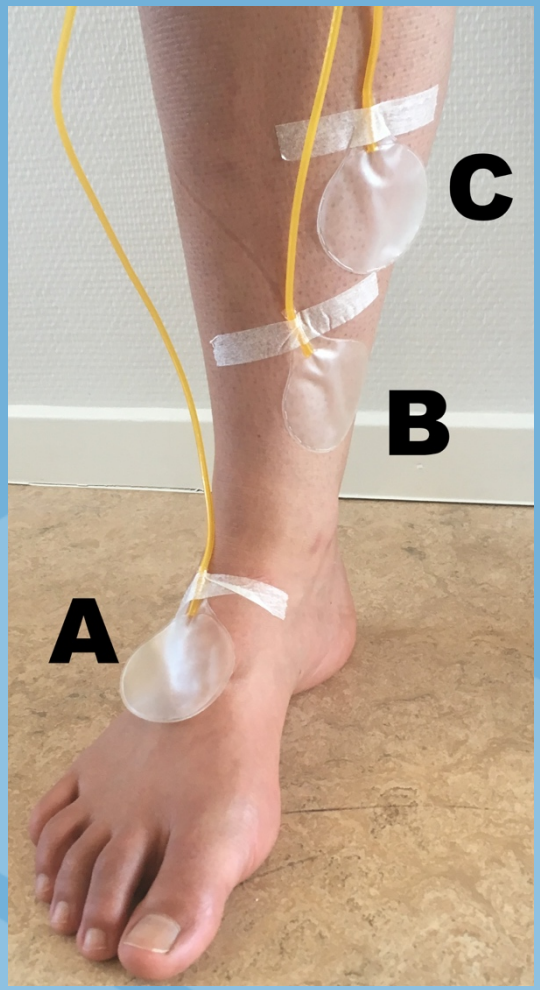
Pilot study, method – sock-bandage fusion

- Thirteen healthy subjects (six females, seven males)
- Three pressure sensors were placed unilaterally:
  (A) on the foot, (B) at the ankle and (C) on the calf



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Pilot study, method – sock-bandage fusion

1. Sock (20 mmHg) covering sensor A
2. 5 cm cuff of the sock (10 mmHg) covering sensor B
3. 5 cm first bandage turn (10 mmHg) covering sensor B
4. Bandage (20 mmHg) covering sensor C
5. The interface pressure was measured with a Picopress® in supine and standing

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Results – sock-bandage fusion

Same sock used on all 13 subjects!

	Foot (A)		Ankle (B)		Leg (C)	
	Mean	SD	**Mean**	SD	**Mean**	SD
Supine	**20**	2.9	**20**	2.4	**21**	1.6
Standing	**20**	3.9	**21**	3.2	**22**	2.0
	Sock		Transition area		Bandage	

The sock-bandage fusion method applied a well-defined pressure at the foot, ankle and leg

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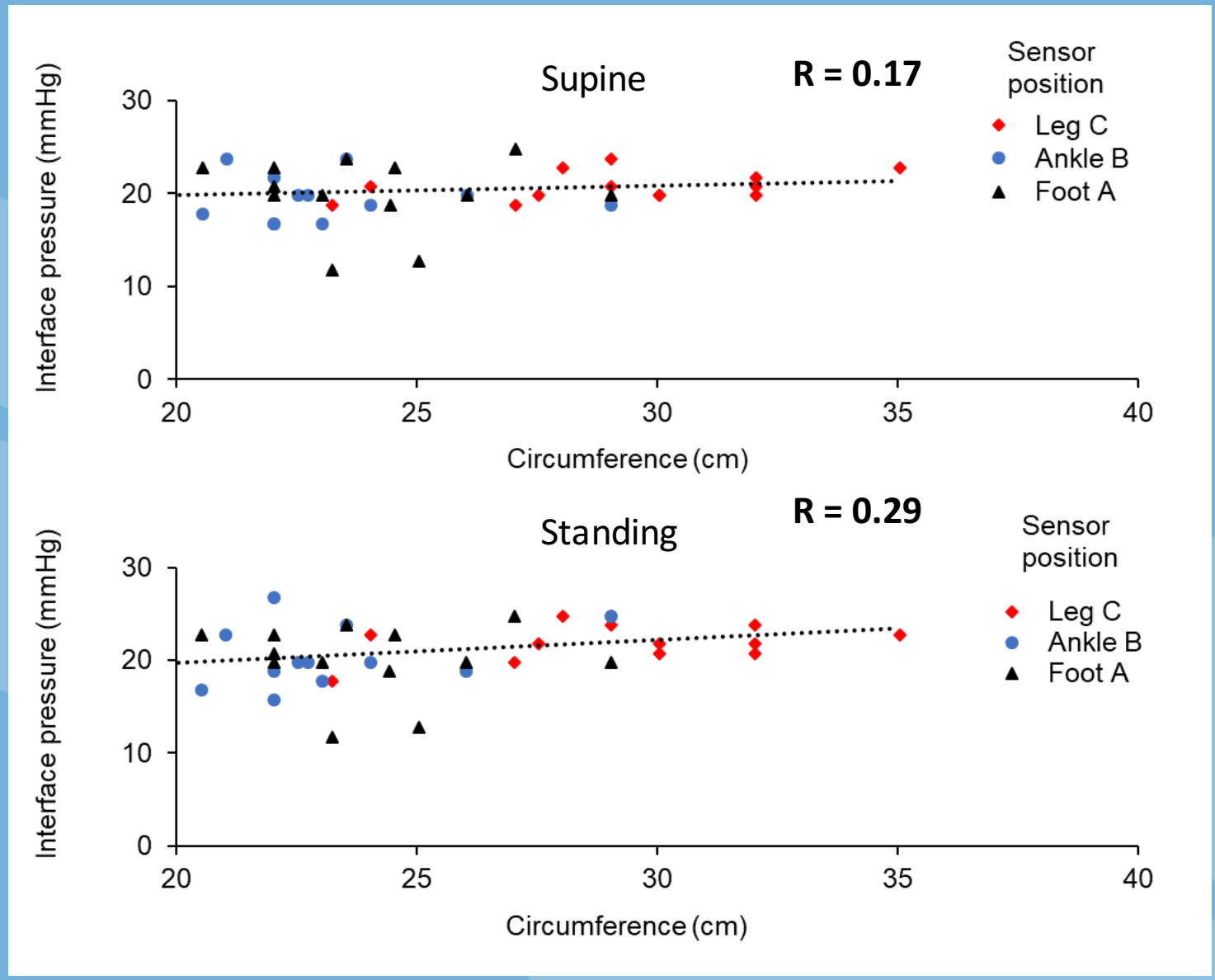
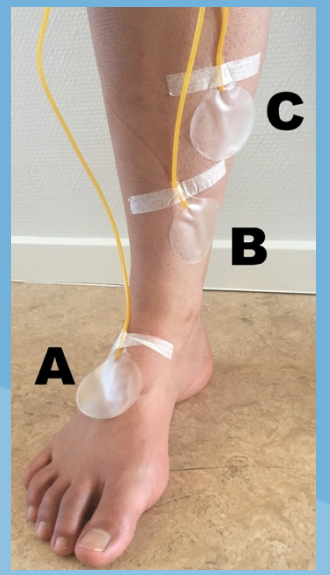
Results – sock-bandage fusion





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Conclusion – sock-bandage fusion

- Well defined pressure – on foot, ankle and leg
- Easy donning – on the foot and leg
- Comfortable – even pressure, no slippage
- Preserves normal ankle range-of-motion
- Ability to wear normal footwear – no bulky material

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Good bye slippage!

Thank You!

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