

# Validity, Inter-rater and Intra-rater reliability of an Adjustable Compression Device\* Application

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## Rationale

- Adjustable Compression Wrap\* with VELCRO® is a short stretch compression system
- Wide central reinforced spine with short straps (Fig 1) that overlap and attach to themselves by VELCRO® front fastening straps to form the tubular system (Fig 2)
- Application and placement of the straps using the lock and secure™ technique has been shown to achieve the required pressures on healthy volunteers (data on file)
- Clinical Evidence: Oedema reduction and an aid to venous leg ulcer healing when applied by health care professionals and patients of varying skill levels in several different locations internationally (Ehmann et al 2016, Hampton S 2016)

## Short stretch properties

- Excellent standing and supine pressures at 0hr, 4hr, 8hr, 24hr (Figs 3, 4)
- Excellent SSI of between 16 and 23, similar to short stretch bandage (Fig. 5)
- Similar results by experts in 4 countries
- The garments can be termed “short stretch” and perform well after 24 hours. Demonstrating validity as compression for venous and oedematous conditions
- The reproducibility of the data gives reassurance about the technique

## Validity

The evidence demonstrates validity as compression for venous and oedematous conditions.

**The aim** of the small exercise in this poster was to test application reproducibility (reliability) of the VELCRO® Wrap by different appliers with different skill levels.

## Method

Validity shown to nurses who manage patients with leg ulcers and oedema using compression devices such as bandages, hosiery and wraps.

**Inter-rater reliability** is a validated test for measuring results achieved by different testers on the same subject. Of the 6 appliers, 2 were specialist nurses familiar with Wrap systems, 3 healthcare assistants from a nursing home and 1 non-healthcare professional who had never applied compression.

- Explanation and training for the 4 novices. Application to leg A (small). Timed. Pressures measured using the Picopress\*\* monitor. The monitor was validated by Partsch and Mosti (2008)
- Application on new leg B (large) by 5 appliers (including 1 self-application) (timed and observed) Pressure measurements.

**Intra-rater reliability** tested results of 3 repeated applications by the same applier to the same limb (B). Pressure measurements.

## Results & Discussion

- Following a single training session appliers found the devices easy to apply within 1-3 minutes
- No readjustment of the straps needed
- On the small leg (training session) pressure deviations were 0- 5 from the average for 5/6 appliers and 10 for one applier.
- Deviations on large leg were 3-5 from the average.
- Minimal intra-rater deviation.
- Wearers reported comfort with the devices.

## Conclusion

The reproducibility of the data gives us reassurance that the lock and secure™ technique achieves consistent results in these non-clinical tests after a single training session. This indicates safe, appropriate patient use and supports the clinical results of the device to date with therapeutic pressures with and without readjustment.

(Fig. 6) (Ehmann et al 2016).

## References

- Ehmann S, Whitaker J, Hampton S, Collarte A (2016) Multinational, pilot audit of a Velcro adjustable compression wrap system for venous and lymphatic conditions *Journal of Wound Care*, Vol 25, No.9 September 2016
- Hampton S (2016) The difficulty and the solution of compression therapy in a healed venous leg ulcer, *British Journal of Community Nursing, Community Wound Care* September 2016: 34-38
- Hugo Partsch 1, Giovanni Mosti 2 (2008) Comparison of three portable instruments to measure compression pressure. Presented at the Meeting of the International Compression Club (ICC) in Lucca, Italy, September 13, 2008

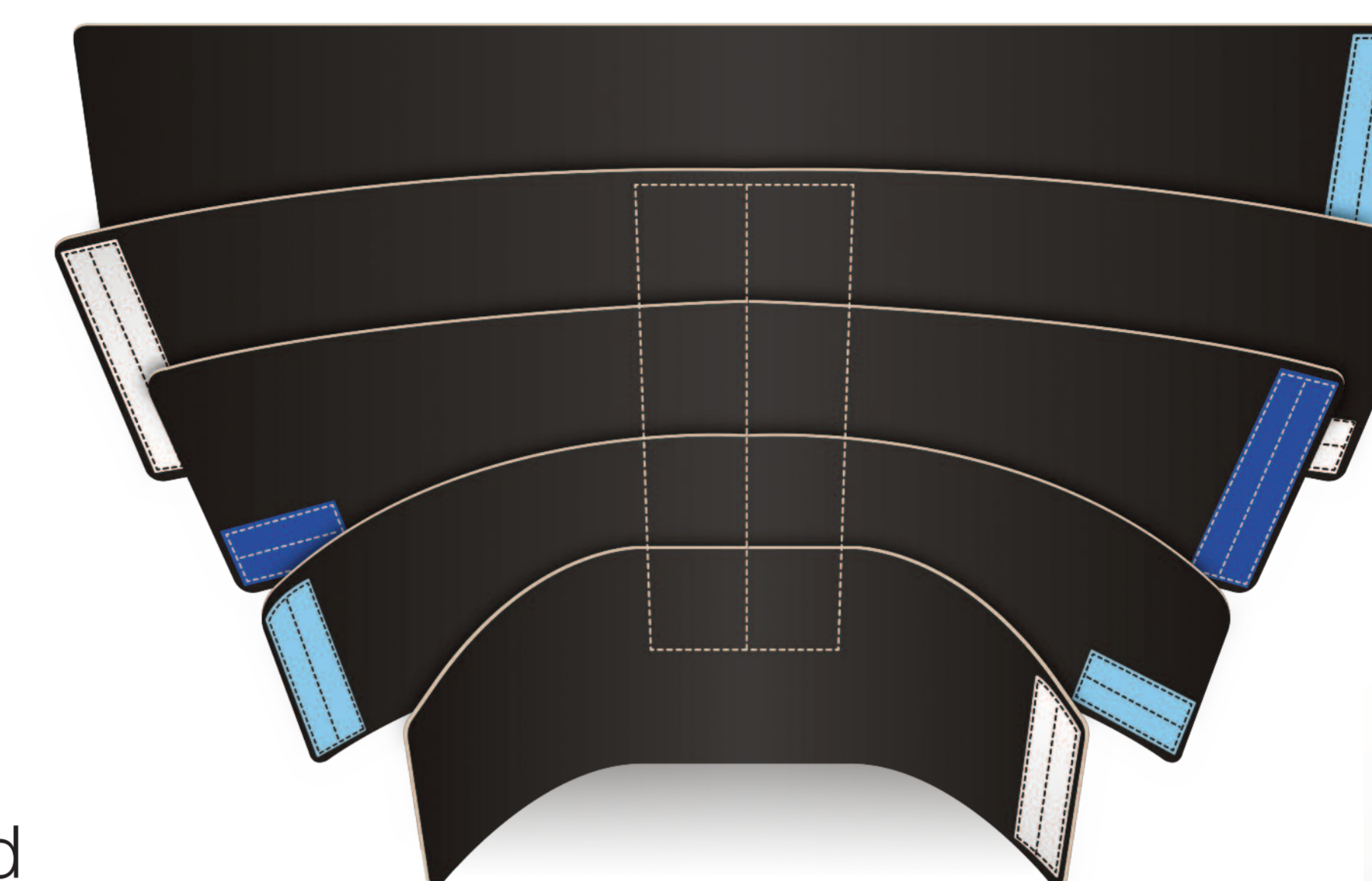


Fig 1. a wide blocked spine and colour-coded short straps



Fig 2. Straps fastened in the front of the limb enabling them to be seen clearly

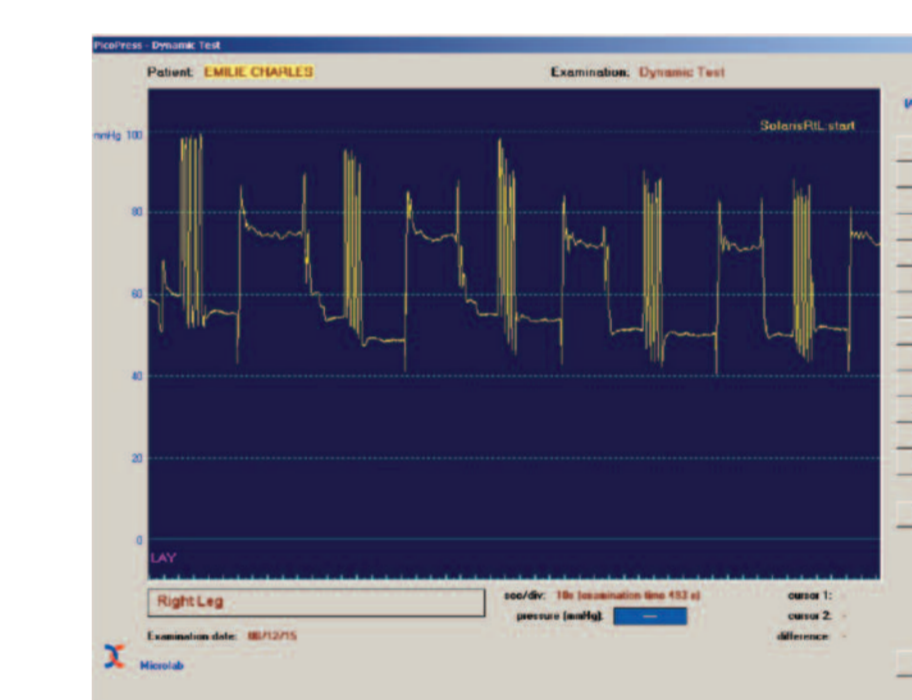


Fig 3. ReadyWrap™ measurements on application

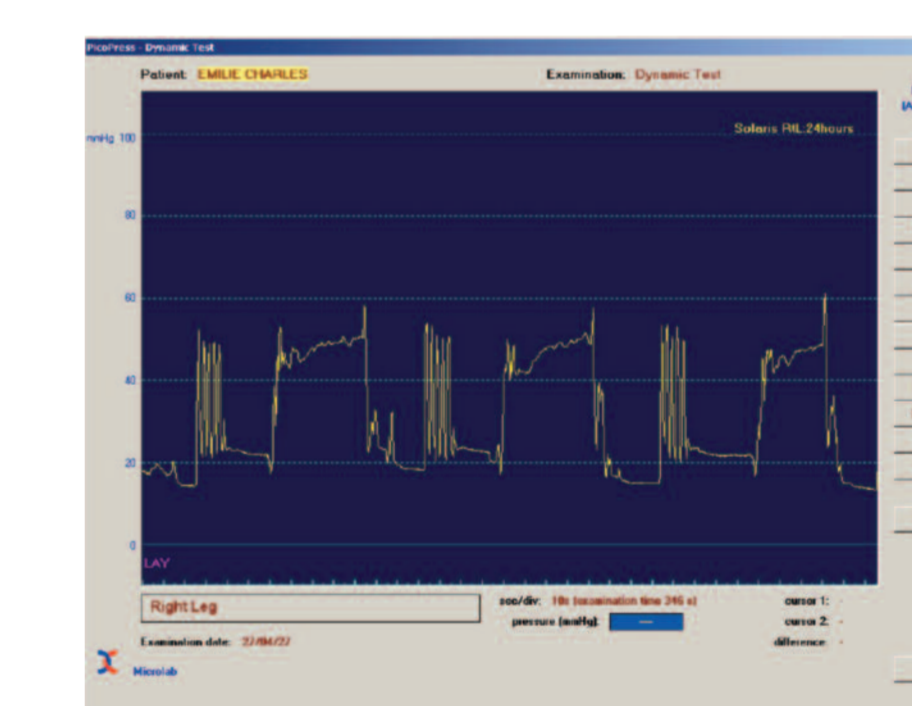


Fig 4. ReadyWrap™ measurements after 24 hours



Fig 5. Short stretch bandage measurements



Fig 6. Overlapping straps with no gapping leaving no area on the limb uncovered (clinical use with kind permission from Suzie Ehmann, poster presented at NLN conference USA)

\* ReadyWrap™, Lohmann and Rauscher, Germany. \*\* Picopress® Microlab, Italy