Thonic Bandage: A new application technique as a first step towards controlled compression?

ICC Meeting, Paris – 09/12/2017

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The pressure produced by a compression bandage can be predicted according to Laplace’s Law *

\[ P = \frac{T \times N \times 4630}{C \times W} \]

- \( P \) = sub-bandage pressure (mmHg)
- \( T \) = bandage tension (kgf)
- \( N \) = number of layers
- \( C \) = limb circumference (cm)
- \( W \) = limb circumference (cm)

Conclusion:

The force of a compression bandage is not in the bandage itself but in the hands of the person applying it.

Dosage?
Short stretch vs Long stretch (theory)

- **Short stretch**
  - 25\%
  - 30\%

- **Long stretch**
  - 3\%
  - 0\%
Application techniques - Torque

« Pre-stretched »

« Relax »
The ReproComp study

<table>
<thead>
<tr>
<th>Bandages (8cm)</th>
<th>4 Groups of applicators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First-timers</td>
</tr>
<tr>
<td>Long stretch</td>
<td></td>
</tr>
<tr>
<td>LS1</td>
<td>3 applications (Force 2)</td>
</tr>
<tr>
<td>LS2</td>
<td>3 applications (Force 2)</td>
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<tr>
<td>Short stretch</td>
<td></td>
</tr>
<tr>
<td>SS1</td>
<td>3 applications pre-stretched</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Force 1</th>
<th>Force 2</th>
</tr>
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<tbody>
<tr>
<td>Bandages</td>
<td>Stretch</td>
</tr>
<tr>
<td>LS1</td>
<td>40%</td>
</tr>
<tr>
<td>LS2</td>
<td>30%</td>
</tr>
</tbody>
</table>
1. The pressures are taken on a hard plastic leg which means the pressures measured:
   - Have no clinical relevance
   - Can only be compared with those achieved in this study.
   - Are static

2. Our main criteria is the capacity for an operator to reproduce the same level of pressure with the same bandage. The term **Dispersion** will be used as the difference between the highest and lowest pressure of the 3 measurements.

3. The preliminary results presented hereafter are based on the applications by:
   - 15 First-timers (FT)
   - 12 Secondary Care Trained Staff (TS)

4. Additional First-timers and Secondary Care staff as well as Patients and Primary care staff will be included in the next months.
Average pressures – Inter-operator

Average pressures (mmHg) (All bandages included - 18 applications)

FT

TS

63,8

53,6

48,9

42,9

88,3

57,9

49,4

39,7

61,8

85,1
Average pressures – Inter-operator

Average Pressures Long stretch vs Short stretch - TS
Average pressures – Inter-operator

Average Pressures Long stretch vs Short stretch - FT

- LS1 FT
- LS2 FT
- SS1 relax FT
- SS1 pre-stretched FT
- SS2 relax FT
- SS2 pre-stretched FT
Dispersion – Intra-operator

Average Dispersion (mmHg) (All bandages included - 18 applications)
Dispersion – Intra-operator

Dispersion Long stretch vs Short stretch - TS

<table>
<thead>
<tr>
<th>Condition</th>
<th>Value 1</th>
<th>Value 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS1 TS</td>
<td>12,5</td>
<td>7,0</td>
</tr>
<tr>
<td>LS2 TS</td>
<td>14,3</td>
<td>8,5</td>
</tr>
<tr>
<td>SS1 relax TS</td>
<td>15,5</td>
<td>11,0</td>
</tr>
<tr>
<td>SS1 pre-stretched TS</td>
<td>10,3</td>
<td>7,5</td>
</tr>
<tr>
<td>SS2 relax TS</td>
<td>24,5</td>
<td>19,0</td>
</tr>
<tr>
<td>SS2 pre-stretched TS</td>
<td>19,0</td>
<td>9,0</td>
</tr>
</tbody>
</table>
Dispersion – Intra-operator

Dispersion Long stretch vs Short stretch - FT

- LS1 FT
- LS2 FT
- SS1 relax FT
- SS1 pre-stretched FT
- SS2 relax FT
- SS2 pre-stretched FT

11/12/2017
Dispersion – SS1
Thonic Bandage

To combine the respective benefits of elastic and inelastic materials while getting rid of their respective inconveniences to design a:

- short-stretch
- single-layer
- multi-component

bandaging system that is simple and safe to apply!

Standard long stretch elastic bandage

Standard inelastic cotton bandage
Discussions and Conclusions

• Influence and importance of practice/habits (?)
• Influence and importance of training (?)
• More data needed but the transfer of the compression from the hands of the person applying it to the bandage itself for a more controlled compression seems to be possible
Final conclusion

May the 
FORCE 
be with 
YOU
Thonic Innovation in 2018

Products

- Thonic bandage 2.0 early 2018
- New patent filed last week

Studies

- ReproComp study
- Bandocele study
- Study for Reimbursement in France
- Bariatric patients study

Projects

- Measure
- Dosage

SEE YOU AT THE NEXT ICC MEETING
Thank you very much for your attention!

Please do not hesitate to contact me

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