THE DONNING

OF GRADUATED COMPRESSION STOCKINGS:

COMPLEX PROCESS BUT EASY ASSESSMENT?

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² Laboratoires Inothera, Arcueil, France
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Compliance with compression therapy remains unsatisfactory.

<table>
<thead>
<tr>
<th>Non compliant</th>
<th>Percentage Range</th>
<th>Description</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>2% to 42%</td>
<td>3 randomized controlled trials (VLU)</td>
<td>MOFFATT C et al.</td>
<td>Int Wound J 2009;6:386-393.</td>
</tr>
<tr>
<td>31.5%</td>
<td>Inquiry in 332 pharmacies (2223 patients) -France-</td>
<td></td>
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</tr>
</tbody>
</table>


INTRODUCTION

Determinants of non compliance

Lack of conviction about the efficacy

Inappropriate choice of garment

Incorrect application

Difficulty in putting on the stockings

Discomfort

Skin irritation

Pain

Unaesthetic device

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C5-C6. Review of literature.
INTRODUCTION

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GILLET JL, ALLAERT FA.
To present a simple and reliable method to assess the difficulty in donning GCS, as experienced by patients.

Results of sensory analysis, will be compared to results of clinical trial
Sensory analysis

aimed at quantifying the sensations
evoked by various activities or external stimuli


**Sensory analysis**

Performed in the IFTH* sensory laboratory

By an expert panel of trained women (n= 12)

* Institut français du textile et de l’habillement
Sensory analysis: 4 phases

1- Preliminary trials by the panel → the best procedure for donning (putting on and putting off the stocking) has been previously finalized.
Introducing the hand into the stocking and returning it

Pulling the edges away

Introducing the forefoot

Pulling up till the instep

Passing the heel

Sliding the textile up on the leg
Sensory analysis: 4 phases

1- Preliminary trials by the panel → the best procedure for donning (putting on and putting off the stocking) has been previously finalized.

2- For each step of the donning process, a sensory descriptor was defined, in a consensual way, by the whole panel.
In this study, 3 sensory descriptors were used:

- the global effort for putting on the stocking
- the effort for passing the heel
- the global effort for putting off the stocking
METHODS

**Sensory analysis: 4 phases**

1- Preliminary trials by the panel → the best procedure for donning (putting on and putting off the stocking) has been previously finalized.

2- Sensory descriptors, corresponding to the different steps of the donning process, were chosen, in a consensual way, by the whole panel.

3- Training of the panel with the set of 3 GCS to be tested:
   - A (15-20 mmHg),
   - B (20-30 mmHg),
   - C (20-36 mmHg)
   → calibration of the quotation of each descriptor using the whole range of the scale (0 → 10), over the complete set of products.

4- Final quotation of sensory descriptors for the 3 stockings → analysis
Clinical trial

- Performed in the CRULL* (Spa research center of La Léchère, France)

- Involved 23 women (65-79 yrs), C1s-C5s

- Stockings were put on according to the same procedure as in sensory analysis, then worn during 3 hours, then put off.

- Subjects quoted (0 → 10) the same three sensory descriptors.

- Each subject tested the 3 stockings (A, B, C), on 3 different days.

- No training with the products before the trial: no calibration of the quotations over the whole range of efforts required by the 3 products.

* Centre de recherches universitaire de La Léchère
**METHODS**

**Sensory analysis**
- Putting ON:
  - A, B, C
  - (random order)

- Putting OFF:
  - A, B, C
  - (random order)

**Clinical trial**
- Putting ON:
  - 3 hours

- Putting OFF:
  - A, B, C

**stockings**

**answers**

Putting ON: Global effort
Effort / heel

Putting OFF: Global effort

Putting ON: Global effort
Effort / heel

Putting OFF: Global effort
RESULTS

Global effort for putting on the stocking

Wilcoxon test for paired values
RESULTS

Global effort for putting on the stocking

<table>
<thead>
<tr>
<th></th>
<th>Sensory A.</th>
<th>Clinical T.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2.13</td>
<td>1.67</td>
</tr>
<tr>
<td></td>
<td>n=12</td>
<td>n=20</td>
</tr>
<tr>
<td>B</td>
<td>2.88</td>
<td>2.55</td>
</tr>
<tr>
<td></td>
<td>n=12</td>
<td>n=19</td>
</tr>
<tr>
<td>C</td>
<td>6.50</td>
<td>3.33</td>
</tr>
<tr>
<td></td>
<td>n=12</td>
<td>n=19</td>
</tr>
</tbody>
</table>

Wilcoxon test for paired values
Mann-Whitney test for unpaired values
RESULTS

Effort for passing the heel

Wilcoxon test for paired values
Effort for passing the heel

- Sensory A: 2.13 (n=12)
- Clinical T: 1.74 (n=20)
- Sensory A: 2.92 (n=12)
- Clinical T: 2.40 (n=19)
- Sensory A: 6.88 (n=12)
- Clinical T: 3.24 (n=19)

Wilcoxon test for paired values
Mann-Whitney test for unpaired values
Global effort for putting off the stocking

Wilcoxon test for paired values
RESULTS

Global effort for putting off the stocking

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<td>n=12</td>
<td>n=20</td>
</tr>
<tr>
<td>B</td>
<td>n=12</td>
<td>n=18</td>
</tr>
<tr>
<td>C</td>
<td>n=12</td>
<td>n=18</td>
</tr>
</tbody>
</table>

- Sensory A. A: 1.79
- Clinical T. A: 1.48
- Sensory A. B: 2.38
- Clinical T. B: 2.44
- Sensory A. C: 6.50
- Clinical T. C: 4.99

*Wilcoxon test for paired values*
*Mann-Whitney test for unpaired values*
**RESULTS**

*Sensory analysis vs Clinical trial:*

Increasing difficulty from A to C:

In both studies:

Effort’s quotations:
don't significantly differ,
except for putting on C

**Global effort for putting on**

**Effort for passing the heel**

**Global effort for putting off**
RESULTS

Correlation global effort / effort heel - Sensory Analysis -

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>r Pearson</td>
<td>0.7561</td>
<td>0.9540</td>
<td>0.9303</td>
</tr>
<tr>
<td>p</td>
<td>0.004</td>
<td>&lt; 0.0001</td>
<td>&lt; 0.0001</td>
</tr>
</tbody>
</table>
RESULTS

Correlation global effort / effort heel - Clinical Trial -

<table>
<thead>
<tr>
<th></th>
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<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>r</td>
<td>0.7362</td>
<td>0.6073</td>
<td>0.8899</td>
</tr>
<tr>
<td>p</td>
<td>&lt; 0.0001</td>
<td>0.005</td>
<td>&lt; 0.0001</td>
</tr>
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</table>
1- Sensory analysis, performed by a small expert panel, is able to predict with a good agreement the difficulty in putting on and putting off stockings experienced by patients.

2- The difficulty for sliding the heel into the GCS is a marker of the overall difficulty in putting on. Questioning patients on this point seems to be the most appropriate simple way to assess the acceptability of different stockings.