

# ICC compression questionnaire

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## You want to perform RCT

*For example:*

- Patients: with lymphoedema of lower limb
- Intervention: velcro bandaging
- Comparison: traditional bandaging
- Outcomes:
  - Change of lymphoedema volume
  - Ease of application and removing of the bandages and comfort, complications and functioning associated with bandaging
  - Change of symptoms associated with development of lymphoedema

?



## Current studies about effect of compression

- General questionnaires
  - SF36, NHP, EQ-5D
- Disease-specific questionnaires
  - Lymphoedema: Lymph-ICF, LyQLI, FLQA-L, LYMQOL, ULL27
  - DVT: Veines-QOL/ Sym
  - CVI: CIVIQ, TLQ-CVI
  - Ulcer: VLU-Qol, Wound-Qol



## Problem

- No questionnaire available to assess:
  - Ease to put on/ remove compression
  - Comfort associated with compression
  - Complications
  - Functioning
  - Disease-related symptoms



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**Purpose study**

- Development of questionnaire to assess effect of compression therapy

**ICC Compression Questionnaire**

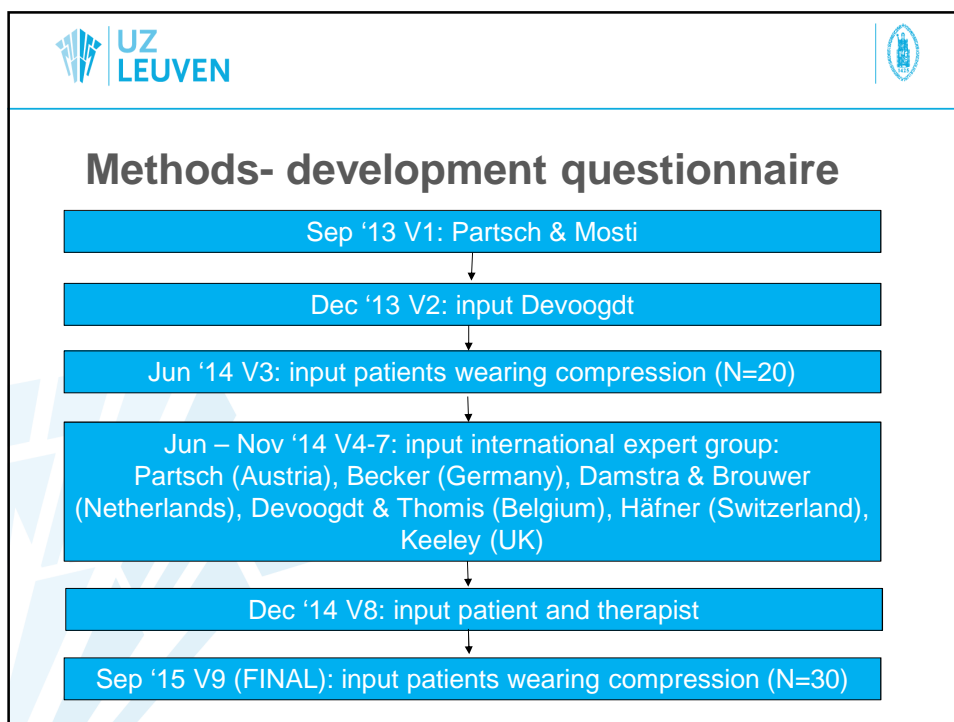
- Investigate reliability and validity

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**Methods - development questionnaire**

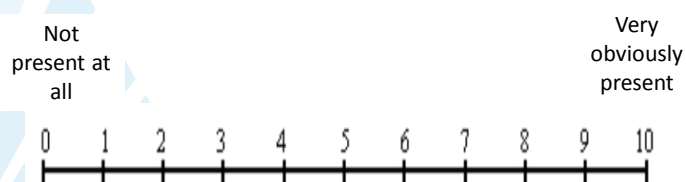
According to COSMIN rules

**QUALITY of a HR-PRO**



## ICC Compression Questionnaire (version 9)

- Original language: English
- Questionnaire for patients
- Questionnaire for health care providers



## To study reliability and validity

- Translation questionnaire in Dutch
- Included: 47 subjects with lymphoedema and wearing compression
  - 40 subjects from University Hospitals Leuven, Belgium
  - 7 subjects from Nij Smellinghe Hospital, the Netherlands

## Subjects

- N=37 women, N=10 men
- Age 60 ( $\pm$ 11) y
- BMI 28 ( $\pm$ 7)
- N=27 stockings, N=20 bandages
- N=19 upper limb, N=27 lower limb, N=1 face
- Using compression 1M – 55y

## Items of COSMIN

- Reliability
  - Test-retest reliability – questionnaire for patients
  - Interrater reliability – questionnaire for health care providers
    - Measurement error
  - Internal consistency
- Validity
  - Content validity
  - Construct validity
    - Hypotheses testing

## ICC Compression Questionnaire – for patients

- General questions (5)

### DOMAINS

- Dosage of compression (3)
- Application of compression (3)
- Removing of compression (3)
- Compression comfort (6)
- Complications of compression (13)
- Functioning in relation to compression (10)
- Disease-related symptoms (7)



## Test-retest reliability

Filled out twice with interval of 24-48h

ICC < 0,4 is weak 0,4-0,74 is moderate  $\geq 0,75$  is strong

|   | ICC |
|---|-----|
| Dosage of compression (0-168 h/ week)               | 0,9 |
| Application of compression (0-10)                   | 0,9 |
| 22 items strong reliability                         |     |
| 22 items moderate reliability                       |     |
| 1 item weak reliability (symptoms: swollen feeling) |     |
| Complications of compression (0-10)                 | 0,8 |
| Functioning in relation to compression (0-10)       | 0,8 |
| Disease-related symptoms (0-10)                     | 0,8 |

## Standard Error of Measurement

Error of patient's score that is not contributed to true changes

|  | SEM               |
|--|-------------------|
| Dosage of compression (0-168 h/ week)          | 14                |
| Application and removing of compression (0-10) | ICC 0,93<br>SEM 1 |
| Compression comfort (0-10)                     | <1                |
| Complications of compression (0-10)            | <1                |
| Functioning in relation to compression (0-10)  | 1                 |
| Disease-related symptoms (0-10)                | 1                 |

## Internal consistency

Degree of interrelatedness among items in domain

Cronbach  $\alpha$  > 0,75 is strong

|   | Cronbach $\alpha$ |
|---|-------------------|
| Dosage or compression (0-168 h/ week)         | 0,95              |
| Application of compression (0-10)             | 0,94              |
| Removing of compression (0-10)                | 0,80              |
| Compression comfort (0-10)                    | 0,90              |
| Complications of compression (0-10)           | 0,91              |
| Functioning in relation to compression (0-10) | 0,91              |
| Disease-related symptoms (0-10)               | 0,88              |



## Validity – content validity

Degree to which it represents the universe of concepts or domains

Depending on domain:



- Understandable: 92-100%
- Complete: 83-96%
- Range of scores: 0-10 in exception of:
  - Complications: 0-7
  - Symptoms: 0-8

## Validity – construct validity

Degree to which it correlates with variables in a manner consistent with theory

$r < 0,4$  is weak; 0,4-0,74 is moderate;  $\geq 0,75$  is strong

| Domain ICC compression questionnaire   | Domain Lymph-ICF questionnaire | Correlation coefficient |
|--|--------------------------------|-------------------------|
| Complications of compression           | Physical function              | 0,60                    |
| Functioning in relation to compression | Household activities           | -0,56                   |
|  | Mobility activities            | -0,49                   |
|  | Life and social activities     | -0,42                   |
| Disease-related symptoms               | Physical function              | 0,58                    |



 



## ICC Compression Questionnaire – for health care providers

- Compression
  - to be tested (7)
  - history of compression (11)

**DOMAINS**

- Covering limb (3)
- Skin condition (10)
  - 0= absent
  - 1= doubtfully present
  - 2= clearly present


 

## Interrater reliability

Filled out twice by 2 different assessors on same day

ICC < 0,4 is weak; 0,4-0,74 is moderate ≥0,75 is strong

|                       | ICC |
|-----------------------|-----|
| Covering limb (0-10)  | 0,7 |
| Skin condition (0-10) | 0,7 |


**9 items moderate reliability**  
**4 items weak reliability** (dryness, local swelling, local redness, strangulation)

## Standard Error of Measurement

Error of score that is not contributed to true changes

|                       | SEM |
|-----------------------|-----|
| Covering limb (0-10)  | <1  |
| Skin condition (0-10) | <1  |

## Internal consistency

Degree of interrelatedness among items in domain  
Cronbach  $\alpha > 0,75$  is strong

|                       | Cronbach $\alpha$ |
|-----------------------|-------------------|
| Covering limb (0-10)  | 0,83              |
| Skin condition (0-10) | 0,85              |

## Validity – content validity

Degree to which it represents the universe of concepts

- Understandable: ?
- Complete: ?
- Range of scores:
  - Covering limb: 5-10
  - Skin condition: 1-3

## Validity – construct validity

Degree to which it correlates with variables in a manner consistent with theory

- Not possible to examine
- Since development based on input from experts and patients: assume good construct validity

## Conclusion

### ICC Compression Questionnaire – for patients

- Good reliability
- Low SEM
- Good internal consistency
- Good content validity
- Good construct validity



## Conclusion

### ICC Compression Questionnaire – for health care providers

- Moderate interrater reliability; intrarater?
- Low SEM
- Good internal consistency
- Moderate content validity
- Good construct validity



Before use ICC compression questionnaire - for health care providers:  
Good training of different assessors

## Practical ...

- On website International Compression Club
  - ICC compression questionnaire – for patients and health care providers
  - Manual
- Dutch, English and Polish version

## Thanks to ...

- Patients
- Expert group
  - Hugo Partsch (Austria)
  - Giovanni Mosti (Italy)
  - Anja Becker (Germany)
  - Robert Damstra & Els Brouwer (Netherlands)
  - Sarah Thomis (Belgium)
  - Jurg Häfner (Switzerland)
  - Vaughen Keeley (UK)



**Thank you for your attention!!**



Source from: <http://glasnevinmldclinic.com/lymphoedema/>