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Measures within the framework of the International Classification of Functioning, Disability and Health (ICF)

Prof dr Patricia De Vriendt & Dominique Van de Velde

Patricia and Dominique

- Teachers: Artevelde University College - AUC
- Researchers:
  - Both:
    - Research Group Health Innovation AUC.
  - Patricia: Vrije Universiteit Brussel.
  - Dominique: Ghent University.

Nowadays healthcare systems are confronted with important challenges

- the emerging problem of chronic conditions, with a growing group of patients with multi-morbidity and
- an increasing older population
- cure should be replaced by care

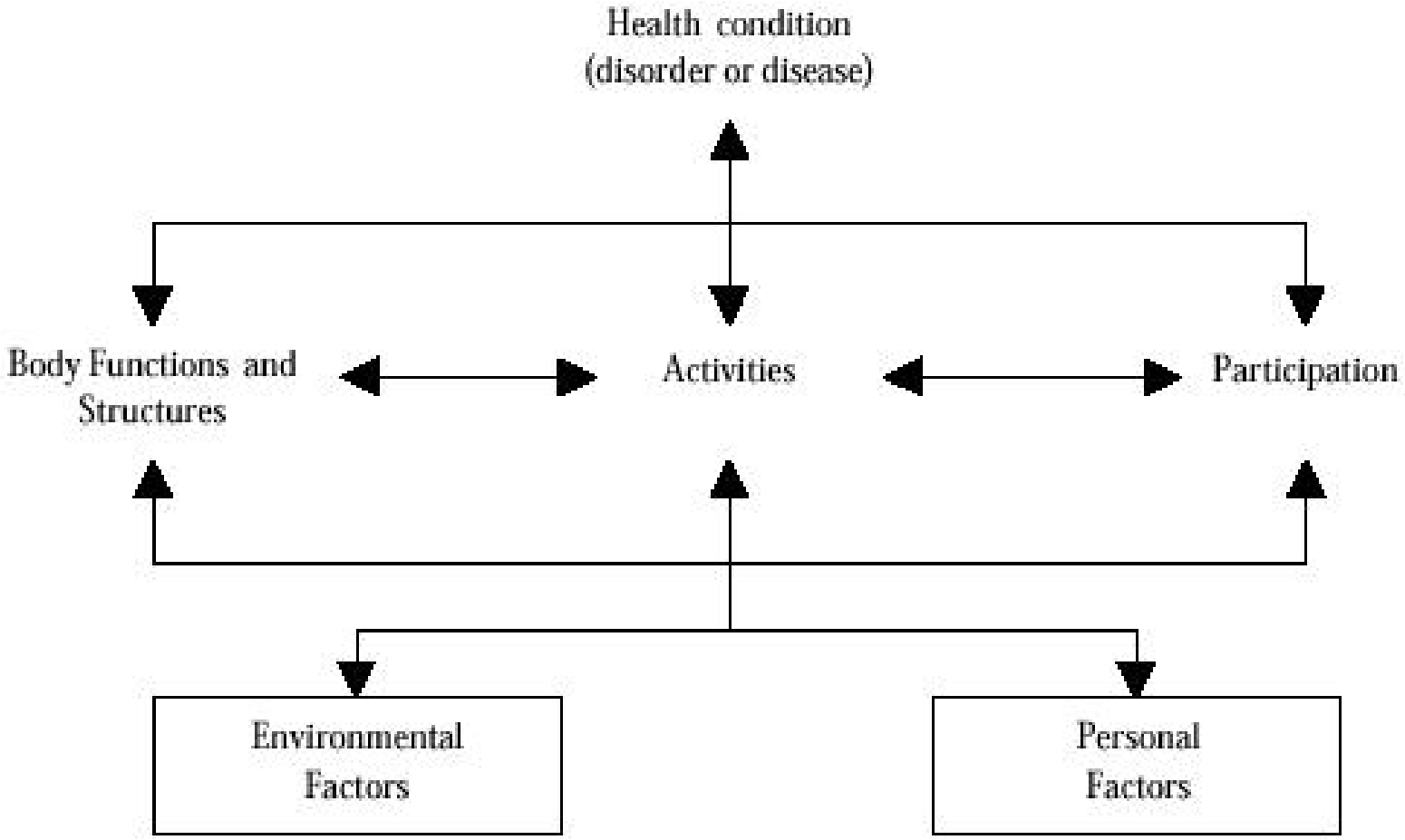
There is a need for an approach to health,

- where health is not seen as merely determined by biomedical,
- but also by a range of economic, psychological, environmental and social factors
- Less etiology and more emphasis on the consequences
- Focus on the ability to adapt and self manage (Huber, 2014)

‘The International Classification of Functioning, disability and Health’

- represents an inclusive approach that contributes to this bio-psycho-social understanding of health
- to rate the magnitude of the level of health or to rate the severity of a health problem
- the advantage to provide
  - a global language for health, illness and disability
  - facilitate communication

The ICF



World Health Organisation (2001). *International Classification of Functioning, Disability and Health. Geneva: WHO.*

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2 examples of working with the ICF

- Measuring performance of activities in the diagnosis of (mild) dementia
- Measuring participation

The advanced Activities of Daily Living tool

a- ADL tool

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Frailty in Ageing (FRIA) research and Gerontology Department

Vrije Universiteit Brussel

www.vub.ac.be/GERO

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Diagnostic differentiation between mild and severe forms of cognitive decline based on ADL

Dementia

- Cognitive and functional decline
- Neuropsychological and behavioural problems
- Loss of independency

MCI

- Cognitive deterioration more than expected for age but not severe enough to warrant diagnosis of dementia
- b-ADL should remain intact, i-ADL minimal impaired
- Growing evidence for subtle performance problems in complex ADL

Criteria Petersen et al.; National Institute of Ageing; DSM V

Evaluation of ADL is problematic …

Table 2
The Frequency of Use of the Included Questionnaires in the Elderly

Abbreviation of Questionnaire	Number of Records
BI	2562
LB-IADL	1787
KI	534
FAI	156
NEADL	72
FSQ	62
LHS	51
PSMS	49
SMAF	37
LLFDI	35
TMIG-IC	31
GARS	27
WHODAS 2.0 (full version)	26
WDRS-2	25
WHODAS 2.0 (short version)	24
BDQ	23
PAT-D	15
OLDQ	13
TDS	11
LDSQ	10
SF-LLFDI	9
RBFHS	7
EARRS	6
SELF	3

BI, Barthel Index; BDQ, brief disability questionnaire; EARRS, Elderly At Risk Rating Scale; FAI, Frenchay Activities Index; FSQ, Functional Status Questionnaire; GARS, Groningen Activity Restriction Scale; KI, Katz Index; LB-IADL, Lawton and Brody Instrumental Activities of Daily Living Scale; LDSQ, Lambeth Disability Screening Questionnaire; LHS, London Handicap Scale; LLFDI, Late Life Function and Disability Instrument; NEADL, Nottingham Extended Activities of Daily Living scale; OLDQ, Organization for Economic Cooperation and Development Long-Term Disability Questionnaire; PAT-D, Pepper Assessment Tool for Disability; PSMS, Physical Self-Maintenance Scale; RBFHS, Rosow-Breslau Functional Health Scale; SELF, Self-evaluation of life function Scale; SF-LLFDI, Short Form of the Late-Life Function and Disability Instrument; SMAF, Functional Autonomy Measurement System; TMIG-IC, Tokyo Metropolitan Institute of Gerontology Index of Competence; TDS, Townsend Disability Scale; WDRS-2, Winchester Disability Rating Scale-2; WHODAS, World Health Organization Disability Assessment Schedule.

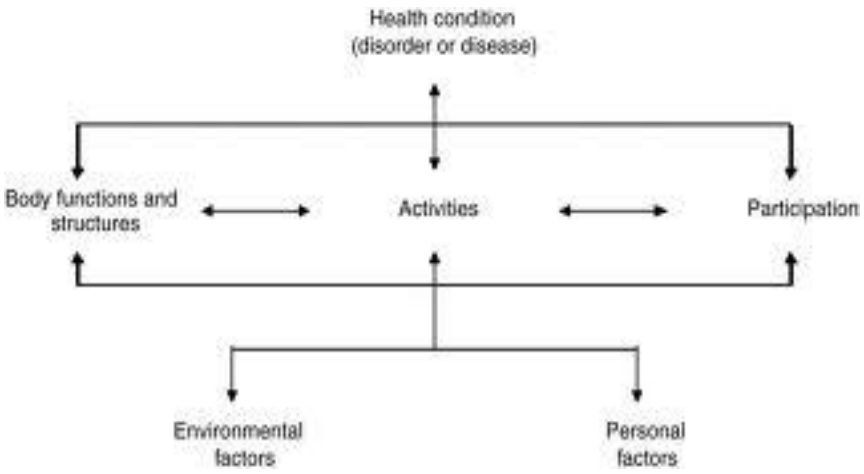
- Variety of tools
- But Barthel Index, Lawton and Brody iADL, Katz Index of ADL most often used
- Shortcomings: no normative data, no concensus level of impairment, poor psychometric properties, no diagnostic accuracy ..
- But ecological validity and feasable

(Sikkes, 2012; Yang, et al. 2014)

a-ADL tool (De Vriendt et al, 2012; 2013; 2014; 2015) Rationale

International Classification of Functioning, Disability and Health (ICF)

- Framework



WHO, 2001

- ADL-triade (b-, i-, a-ADL) stratified according to complexity and cognitive organization (Reuben, 1989)
- Person as his own reference
- Differentiation in underlying reasons of impairments
- Severity of the impairment (ICF-qualifiers 0-4)

Stepwise development of a measurement tool

- Literature study
- Qualitative study to involve target population -> relevant activities -> scoring -> tool 1° draft
- Pilot study for reliability
- More data
  - Discriminative study
  - Convergent validity
- Longitudinal study

Basic ADL needed to stay alive (Reuben, 1989)

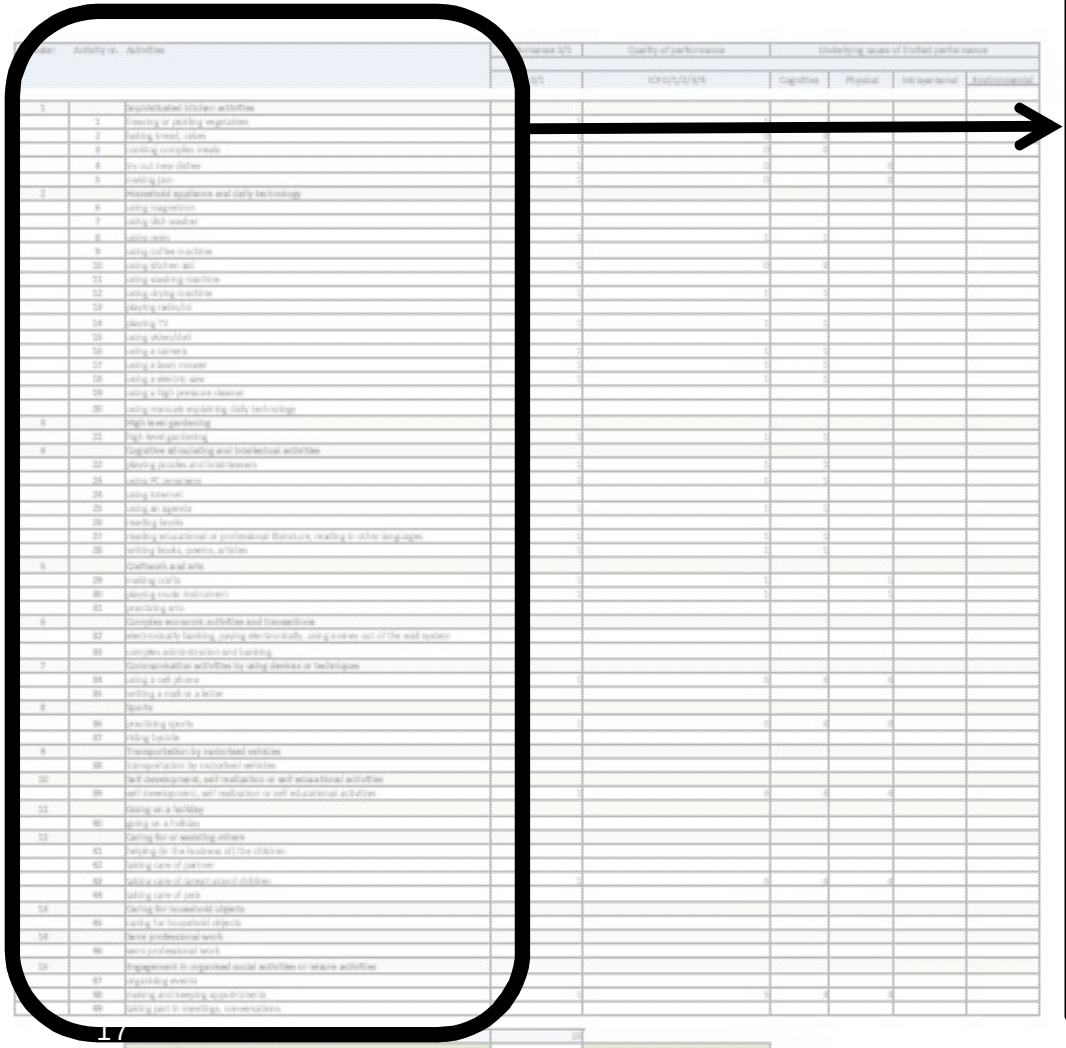
Instrumental ADL needed to stay independent @home (Reuben, 1989)

Advanced ADL the ‘luxury’ items (Reuben, 1989)

Cluster	Activity nr.	Activities	Performance 0/1	Quality of performance	Underlying cause of limited performance			
			0/1	ICF 0/1/2/3/4	Cognitive	Physical	Intrapersonal	Environmental
1		**Sophisticated kitchen activities**						
	1	freezing or pickling vegetables	1	1				
	2	baking bread, cakes	1	0	0			
	3	cooking complex meals	1	0	0			
	4	try out new dishes	1	0		0		
	5	making jam	1	0		0		
2		**Household appliance and daily technology**						
	6	using magnetron						
	7	using dish washer						
	8	using oven	1	1	1			
	9	using coffee machine						
	10	using kitchen aid	1	0	0			
	11	using washing machine						
	12	using drying machine	1	1	1			
	13	playing radio/cd						
	14	playing TV	1	1	1			
	15	using video/dvd						
	16	using a camera	1	1	1			
	17	using a lawn mower	1	1	1			
	18	using a electric saw	1	1	1			
	19	using a high pressure cleaner						
	20	using manuals explaining daily technology						
3		**High level gardening**						
	21	high level gardening	1	1	1			
4		**Cognitive stimulating and intellectual activities**						
	22	playing puzzles and brainteasers	1	1	1			
	23	using PC programs	1	1	1			
	24	using internet						
	25	using an agenda	1	1	1			
	26	reading books						
	27	reading educational or professional literature, reading in other languages	1	1	1			
	28	writing books, poems, articles	1	1	1			
5		**Craftwork and arts**						
	29	making crafts	1	1		1		
	30	playing music instrument	1	1		1		
	31	practicing arts						
6		**Complex economic activities and transactions**						
	32	electronically banking, paying electronically, using money out of the wall system						
	33	complex adminstration and banking						
7		**Communication activities by using devices or techniques**						
	34	using a cell phone	1	4	4	4		
	35	writing a mail or a letter						
8		**Sports**						
	36	practicing sports	1	4	4	4		
	37	riding bycicle						
9		**Transportation by motorised vehicles**						
	38	transportation by motorised vehicles						
10		**Self development, self realization or self educational activities**						
	39	self development, self realization or self educational activities	1	4	4	4		
11		**Going on a holiday**						
	40	going on a holiday						
12		**Caring for or assisting others**						
	41	helping (in the business of) the children						
	42	taking care of partner						
	43	taking care of (great) grand children	1	4	4	4		
	44	taking care of pets						
13		**Caring for household objects**						
	45	caring for household objects						
14		**Semi professional work**						
	46	semi professional work						
15		**Engagement in organised social activities or leisure activities**						
	47	organising events						
	48	making and keeping appointments	1	3	3	3		
	49	taking part in meetings, conversations						

Total number of activities relevant for the person: TNA	25		
a-ADL Disability Index: a-ADL DI		34	
a-ADL Cognitive Disability Index: a-ADL CDI			31
a-ADL Physical Disability Index: a-ADL PDI			21

15 clusters – 49 activities



1 Sophisticated kitchen activities (d6301)
1 Freezing or pickling vegetables
2 Baking bread
3 ….

2 Household appliance and daily technology (d6403)
6 using magnetron
7 using dish washer
8 …
15 Engagement in organised social activities or leisure activities (d910, d9250)
….
49 taking part in meetings, conversations.

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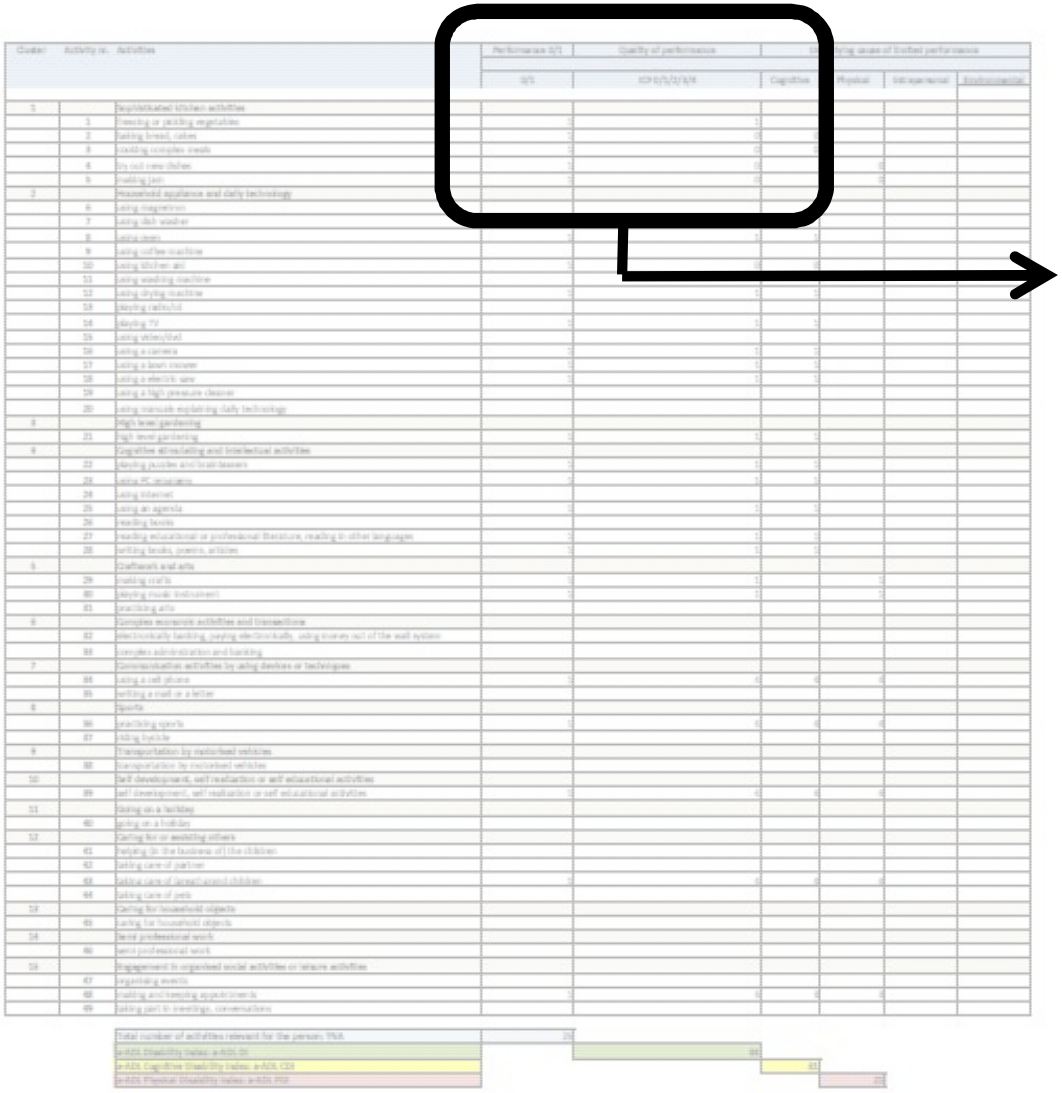
ICF Chapters

d1	Learning and applying knowledge
d2	General tasks and demands
d3	Communication
d4	Mobility
d5	Self-care
d6	Domestic life
d7	Interpersonal interactions and relations
d8	Major life areas
d9	Community and civic life

The ICF Scores



Performance: 0/1

0 No Problem
Completely independently, no help, adequate, flexible, inventive, creative

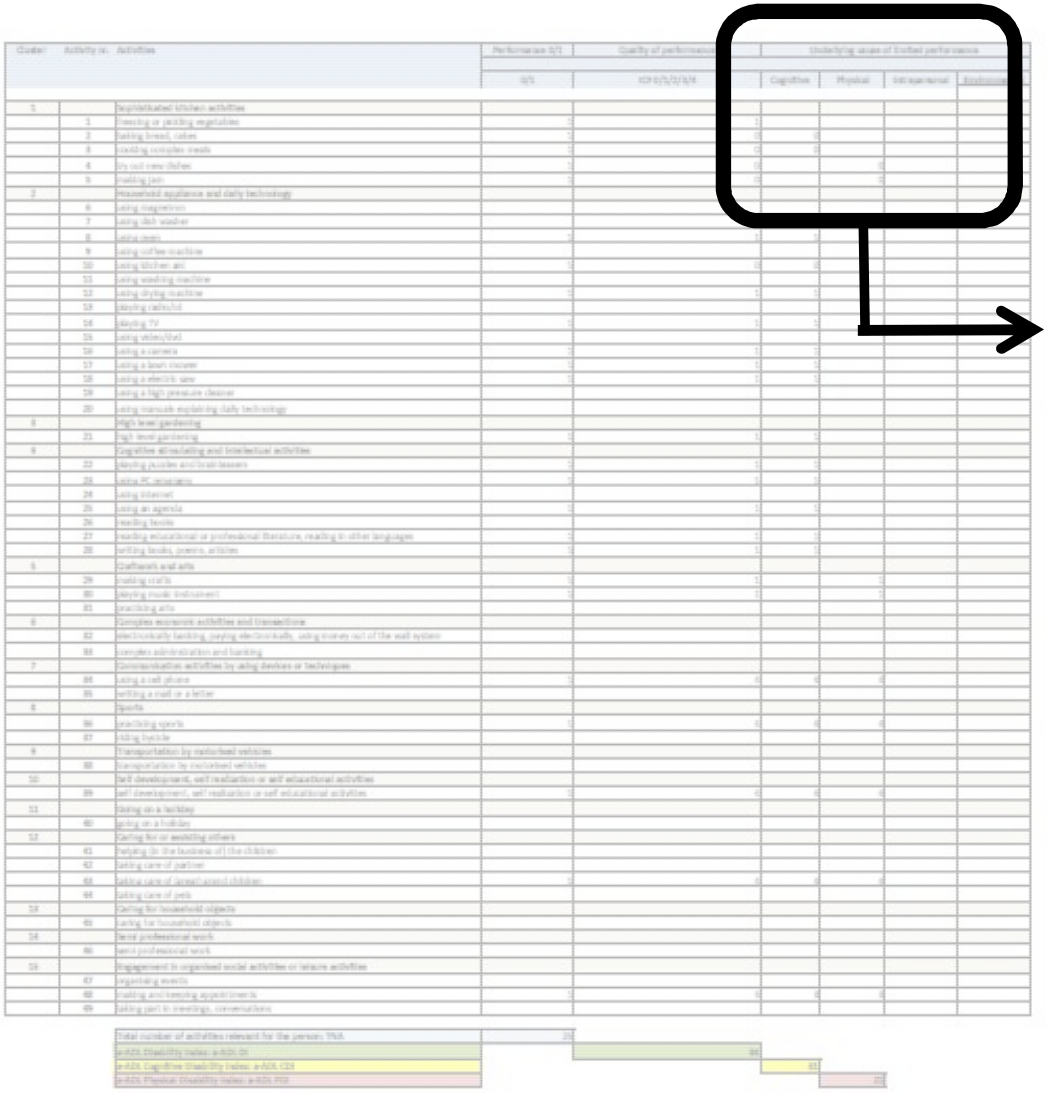
1 Mild Problem
Completely independently, no help, mild limitations: less frequent, more simplified

2 Moderate Problem
Independently, sometimes help, less adequate, less result oriented, faults in performance

3 Severe Problem
Completely dependent, continuous help (guiding, support, effective help)

4 Complete Problem
No active performance at all

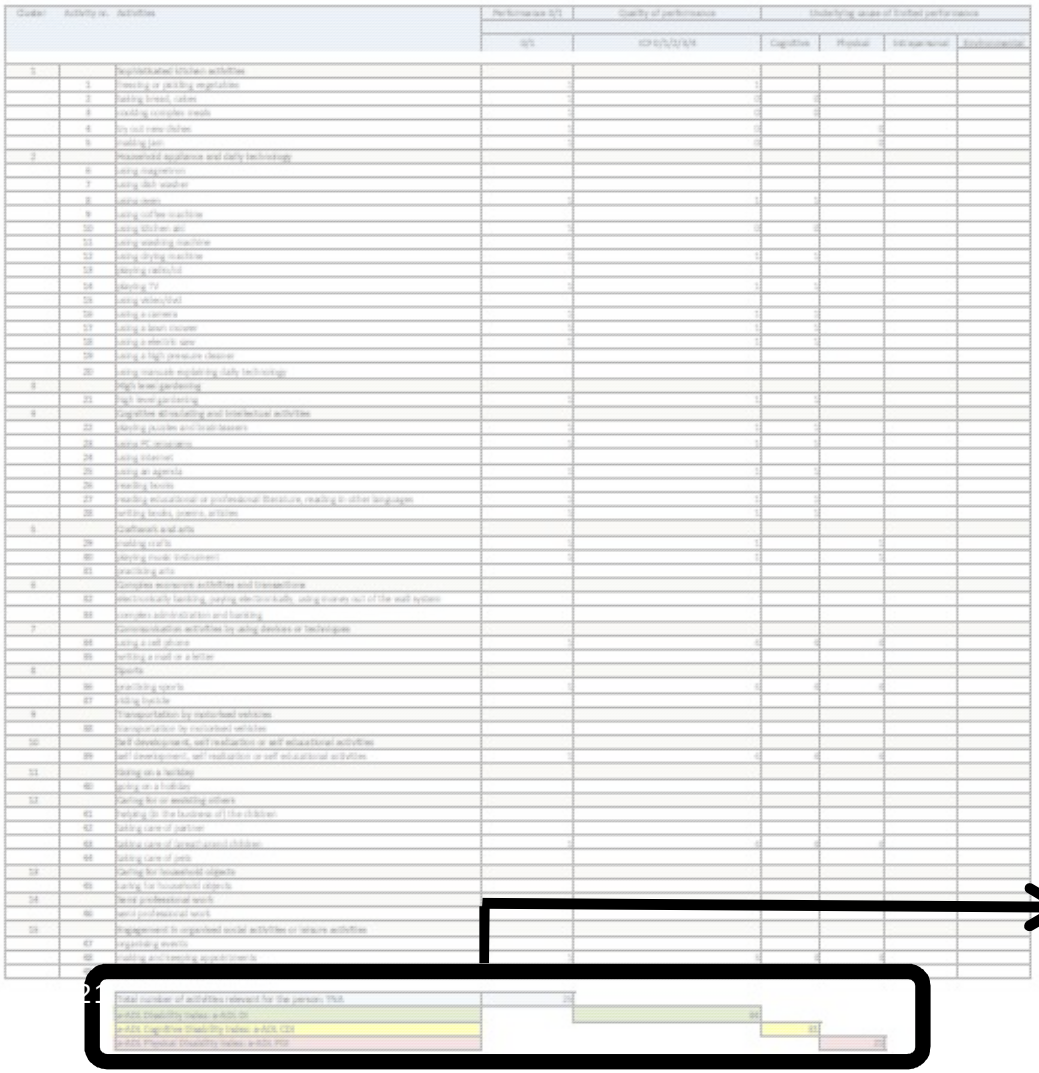
Underlying causes of limitation



Intrinsic causes
- *cognitive reason*
- *intra personal reason*
- *physical reason*

Extrinsic causes
- *social reason*
- *material reason*

The a-ADL indices expressed as %



TNA
Total Number of Activities
a-ADL-DI
Advanced Activities of Daily Living
Disability Index
a-ADL-CDI
Advanced Activities of Daily Living
Cognitive Disability Index
a-ADL-PDI
Advanced Activities of Daily Living
Physical Disability Index

Interpretation results a- ADL

a-ADL-DI: 68%

a-ADL-CDI: 66,66%

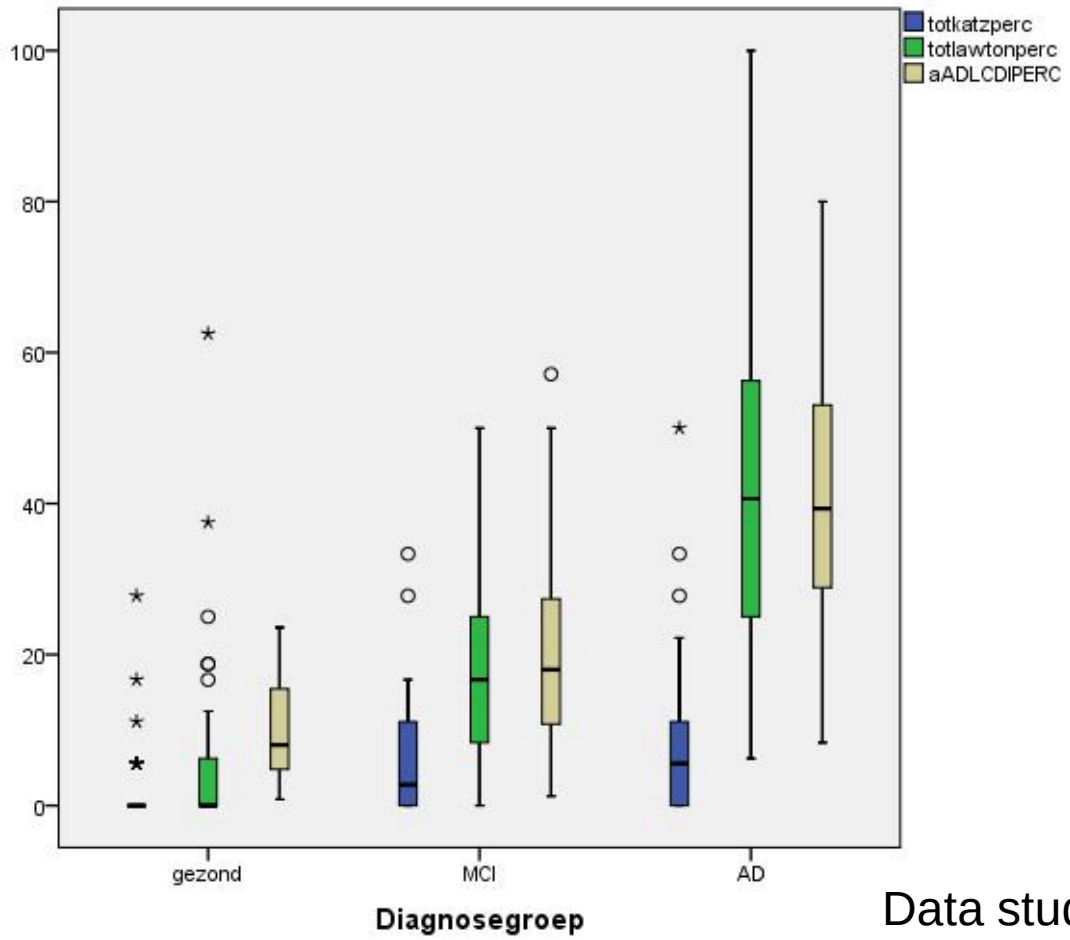
a-ADL-PDI: 9,27%

- the a-ADL-CDI showes clearly functional impairment due to cognitive causes
- No physical causes of impairment as shown by the Physical Disability Index

Table 2. Discriminative validity of the a-ADL indices between controls, patients with MCI and AD

	GROUPS	OPTIMAL CUT-OFF	SENSITIVITY	SPECIFICITY	AUC	PPV	NPV
Indices							
a-ADL-DI	C vs. MCI	27.2	75%	80.0%	0.814	79.3%	75.7%
	MCI vs. AD	47.9	71.2%	70.8%	0.802	72.4%	62.6%
	C vs. AD	36.2	94.2%	90.0%	0.949	90.4%	94.2%
a-ADL-CDI	C vs. MCI	14.1	75%	70.0%	0.791	69.4%	75.7%
	MCI vs. AD	27.4	80.8%	70.8%	0.804	72.4%	79.6%
	C vs. AD	22.5	86.5%	94.0%	0.960	94.2%	86.0%
a-ADL-PDI	C vs. MCI	6.1	60.4%	6.0%	0.600	54.5%	61.3%
	MCI vs. AD	9.3	61.5%	64.2%	0.580	65.2%	59.6%
	C vs. AD	7.1	67.3%	72.0%	0.666	72.8%	66.4%

Hypothesis of functional continuum



Data studie De Vriendt et al.

Clinimetric properties: methods & results

Psychometric properties		
Feasibility	Time use (n=30) Comprehensibility (n=30)	ü
Face validity	Qualitative study, involvement of patients (n=38)	
Content validity	Prevalence of the a-ADL items (n=68)	ü
Reliability of the scoring system	Distribution of the scores among groups (n=68) Inter rater agreement/reliability (n=28) Agreement patient/proxy (n=24)	ü
Construct validity	Hypothesis correlations with other measures (n=68) Expected differences between groups (n=68)	ü
Discriminative validity	ROC's & Sensitivity and specificity (n=157) Positive and negative predicative values (n=157)	ü
Convergent validity	Compared with Natural Action Test (n=30)	ü

Predictive value a-ADL-tool

Group	Indices	Overall hit ratio	Sens	Spec	Neg pred value	Pos pred value	AUC
HC/ MCI	TNA a-ADL-CDI	80%	77.5%	82%	82%	77.5%	.877
MCI/ AD	a-ADL-CDI	79.3%	82.7%	75%	77%	81%	.836
HC/A D	TNA a-ADL-CDI	92.2%	92.3%	92%	92%	96%	.982

Logistic regression (n=150)

De Vriendt et al., a-ADL schaal

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Measuring participation as defined by the WHO in the ICF

Dominique Van de Velde, Phd.

Helsinki – international Week – April 2016

Introduction
Defining Participation?

- The WHO's definition of Participation
  - Involvement in a life situation (WHO, 2001, p10)

Domains of participation	
d1	Learning and applying knowledge
d2	General tasks and demands
d3	Communication
d4	Mobility
d5	Self-care
d6	Domestic life
d7	Interpersonal interactions and rel
d8	Major life areas
d9	Community and civic life

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World Health Organisation (2001). *International Classification of Functioning, Disability and Health. Geneva: WHO.*

Research questions

- Optimal participation is considered as the ultimate goal of a rehabilitation process (Stucki, 2003).
- Research questions:
  - How is participation measured?
  - How is it operationalized?
  - Are the measurement instruments psychometrically sound?

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Stucki, G., Ewert, T., & Cieza, A. (2003). Value and application of the ICF in rehabilitation and medicine. *Disability and Rehabilitation, 25, 628-634. ...*

Results:
10 Measurement Instruments

- Community Integration Measure – CIM (McColl et al, 2001)
- The Keel Assessment of Participation – KAP (Wilkie et al, 2005)
- Community Integration Questionnaire 2 – CIQ2 (Johnston et al, 2005)
- Impact on Participation and Autonomy – IPA(Q) (Cardol et al, 1999)
- Late Life Function and Disability Instrument – LLFDI (Haley et al, 2002)
- Measure of home and community participation – PAR-PRO (Ostir et al, 2006)
- Participation Measure for Post Acute Care – PM-PAC (Gandek et al, 2007)
- Participation Objective, Participation Subjective – POPS (Brown et al, 2004)
- PARTicipation Survey/Mobility – PARTS/M (Gay et al, 2006)
- Participation Scale – P-Scale (Van Brakel et al, 2006).
- Utrecht Scale for Evaluation of rehabilitation –Participation (Post et al, 2012)

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Results:
How is Participation Operationalized?

Instrument	Aspects measured	Domains of the ICF covered
CIM	Performance	Not based on the ICF domains
KAP	Frequency	5 domains (4.6.7.8.9)
CIQ2	Performance, Satisfaction and Importance	Not based on the ICF domains
IPA	Autonomy, Limitations	Not based on the ICF domains
LLFDI	Frequency, limitations	Not based on the ICF domains
PAR-PRO	Frequency	5 domains (4.6.7.8.9)
PM-PAC	Limitations, duration, satisfaction	8 domains (1.3.4.5.6.7.8.9)
POPS	Frequency, satisfaction and importance	5 domains (4.6.7.8.9)
PARTS/M	Frequency	6 domains (4.5.6.7.8.9)
P-Scale	Limitation	8 domains (1.3.4.5.6.7.8.9)
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LLFDI	Frequency, limitations	Not based on the ICF domains
PAR-PRO	Frequency	5 domains (4.6.7.8.9)
PM-PAC	Limitations, duration, satisfaction	8 domains (1.3.4.5.6.7.8.9)
POPS	Frequency, satisfaction and importance	5 domains (4.6.7.8.9)
PARTS/M	Frequency	6 domains (4.5.6.7.8.9)
P-Scale	Limitation	8 domains (1.3.4.5.6.7.8.9)
USER	Frequency, satisfaction, restrictions	Not based in the ICF domains

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Results:
How is Participation Operationalized?

Instrument	Aspects measured	Domains of the ICF covered
CIM	Performance	Not based on the ICF domains
KAP	Frequency	5 domains (4.6.7.8.9)
CIQ2	Performance, Satisfaction and Importance	Not based on the ICF domains
IPA	Autonomy, Limitations	Not based on the ICF domains
LLFDI	Frequency, limitations	Not based on the ICF domains
PAR-PRO	Frequency	5 domains (4.6.7.8.9)
PM-PAC	Limitations, duration, satisfaction	8 domains (1.3.4.5.6.7.8.9)
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P-Scale	Limitation	8 domains (1.3.4.5.6.7.8.9)
USER	Frequency, satisfaction, restrictions	Not based in the ICF domains

Results: Psychometric Properties

	Content Validity	Internal Consisteny	Criterion Validity	Construct Vaidity	Reproducibility Agreement	Reproducibility reliability	Responsiveness	Floor-Ceiling effects	Interpretability	Overall score
CIM	+	+	-	-	+	0	-	+	+	4
KAP	?	na	+	na	-	-	0	-	+	2
CIQ2	+	+	-	-	+	+	0	+	+	6
IPA	+	+	-	+	+	+	+	-	+	7
LLFDI	+	+	-	0	-	+	-	-	+	4
PAR-PRO	-	+	0	-	0	-	0	+	-	2
PM-PAC	?	+	-	+	+	+	+	-	+	6
POPS	+	0	0	0	0	0	0	0	+	1
PARTS/M	+	+	?	-	?	?	0	0	-	2
P-scale	?	+	0	+	+	+	+	-	+	6

Results: Psychometric Properties

	Content Validity	Internal Consisteny	Criterion Validity	Construct Vaidity	Reproducibility Agreement	Reproducibility reliability	Responsiveness	Floor-Ceiling effects	Interpretability	Overall score
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KAP	?	na	+	na	-	-	0	-	+	2
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IPA	+	+	-	+	+	+	+	-	+	7
LLFDI	+	+	-	0	-	+	-	-	+	4
PAR-PRO	-	+	0	-	0	-	0	+	-	2
PM-PAC	?	+	-	+	+	+	+	-	+	6
POPS	+	0	0	0	0	0	0	0	+	1
PARTS/M	+	+	?	-	?	?	0	0	-	2
P-scale	?	+	0	+	+	+	+	-	+	6

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IPA	+	+	-	+	+	+	+	-	+	7
LLFDI	+	+	-	0	-	+	-	-	+	4
PAR-PRO	-	+	0	-	0	-	0	+	-	2
PM-PAC	?	+	-	+	+	+	+	-	+	6
POPS	+	0	0	0	0	0	0	0	+	1
PARTS/M	+	+	?	-	?	?	0	0	-	2
P-scale	?	+	0	+	+	+	+	-	+	6

Results: Psychometric Properties

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IPA	+	+	-	+	+	+	+	-	+	7
LLFDI	+	+	-	0	-	+	-	-	+	4
PAR-PRO	-	+	0	-	0	-	0	+	-	2
PM-PAC	?	+	-	+	+	+	+	-	+	6
POPS	+	0	0	0	0	0	0	0	+	1
PARTS/M	+	+	?	-	?	?	0	0	-	2
P-scale	?	+	0	+	+	+	+	-	+	6

Results: Psychometric Properties

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IPA	+	+	-	+	+	+	+	-	+	7
LLFDI	+	+	-	0	-	+	-	-	+	4
PAR-PRO	-	+	0	-	0	-	0	+	-	2
PM-PAC	?	+	-	+	+	+	+	-	+	6
POPS	+	0	0	0	0	0	0	0	+	1
PARTS/M	+	+	?	-	?	?	0	0	-	2
P-scale	?	+	0	+	+	+	+	-	+	6

Results: Psychometric Properties

	Content Validity	Internal Consisteny	Criterion Validity	Construct Vaidity	Reproducibility Agreement	Reproducibility reliability	Responsiveness	Floor-Ceiling effects	Interpretability	Overall score
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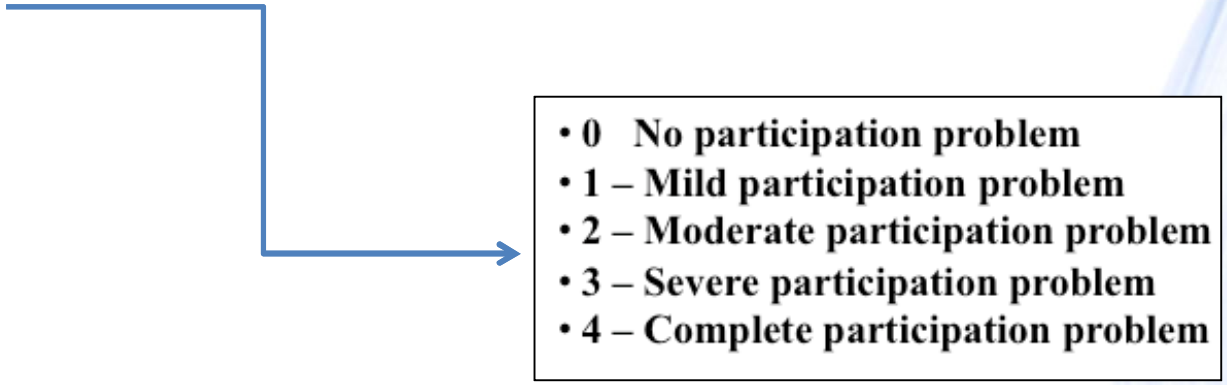
IPA	+	+	-	+	+	+	+	-	+	7
LLFDI	+	+	-	0	-	+	-	-	+	4
PAR-PRO	-	+	0	-	0	-	0	+	-	2
PM-PAC	?	+	-	+	+	+	+	-	+	6
POPS	+	0	0	0	0	0	0	0	+	1
PARTS/M	+	+	?	-	?	?	0	0	-	2
P-scale	?	+	0	+	+	+	+	-	+	6
USER	+	?	+	?	+	+	0	+	+	6

Challenge?

To develop a participation measurement-instrument that

- includes both subjective and objective variables,
- covers all the domains of participation
- is based on the ICF qualifier scale leading to 1 participation score.



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Step 1: Item derivation.

- Qualitative research
- How is participation perceived by individuals?

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Results: the determinants

1. The ability to choose a seemingly meaningless occupation
2. The fact that there are other options
3. Being able to perform activities in line with previous experiences
4. Being able to perform activities related to one's own identity
5. Being able to perform activities in order to enhance personal growth
6. Having a feeling or trust in the familiar community
7. The fact that people unconditionally take over necessary tasks
8. The feeling that relatives and other important persons are doing well
9. Experiencing a sense of control by acting
10. Feeling endorsed or valuated by acting
11. Experiencing a sense of importance by acting
12. Experiencing the appeal of one's capacities
13. Finding equal identities through acting
14. ...
15. ...

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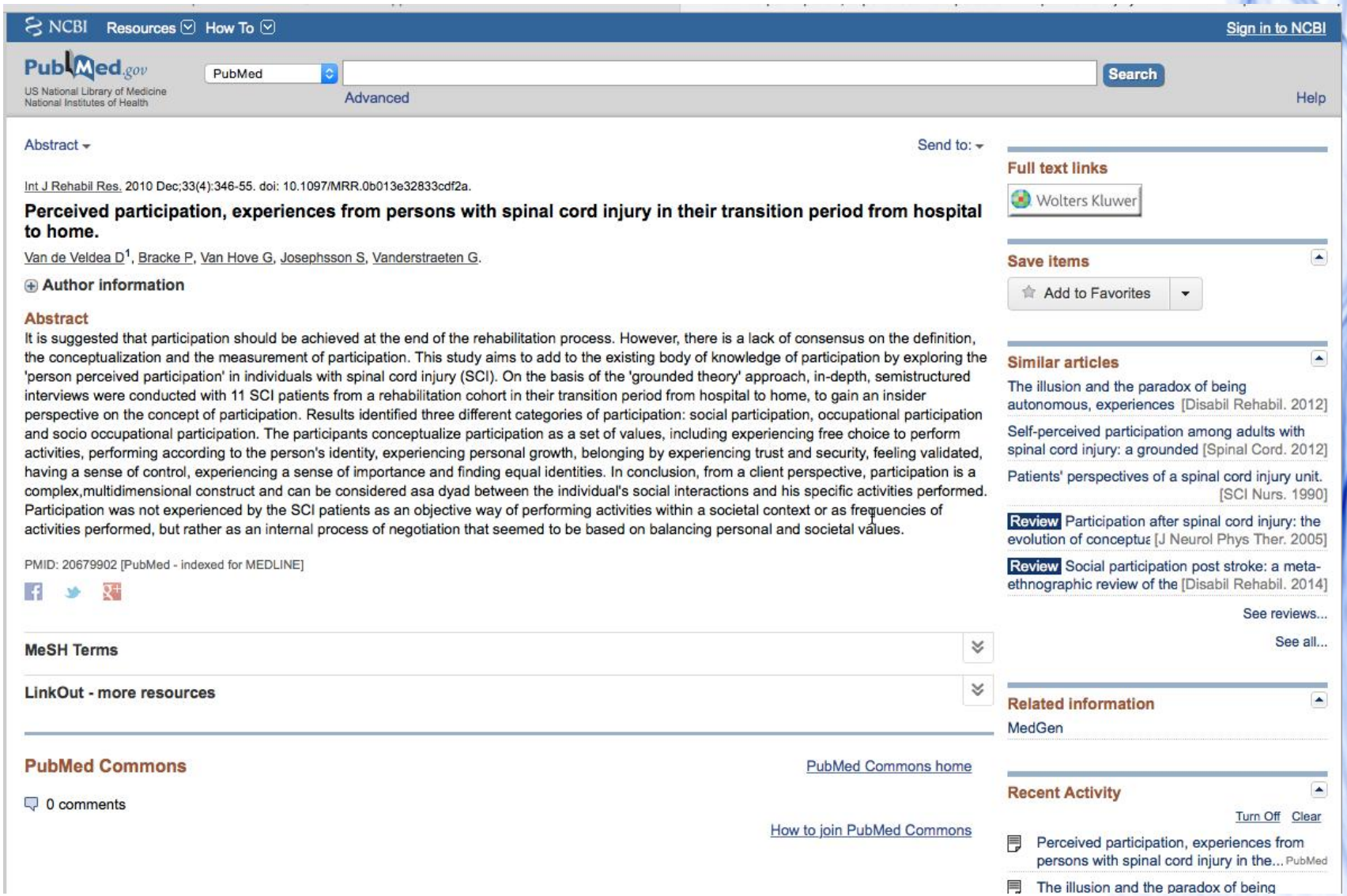

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Int J Rehabil Res. 2010 Dec;33(4):346-55. doi: 10.1097/MRR.0b013e32833cdf2a.

Perceived participation, experiences from persons with spinal cord injury in their transition period from hospital to home.

Van de Veldea D[1], Bracke P, Van Hove G, Josephsson S, Vanderstraeten G.

Author information

Abstract

It is suggested that participation should be achieved at the end of the rehabilitation process. However, there is a lack of consensus on the definition, the conceptualization and the measurement of participation. This study aims to add to the existing body of knowledge of participation by exploring the 'person perceived participation' in individuals with spinal cord injury (SCI). On the basis of the 'grounded theory' approach, in-depth, semistructured interviews were conducted with 11 SCI patients from a rehabilitation cohort in their transition period from hospital to home, to gain an insider perspective on the concept of participation. Results identified three different categories of participation: social participation, occupational participation and socio occupational participation. The participants conceptualize participation as a set of values, including experiencing free choice to perform activities, performing according to the person's identity, experiencing personal growth, belonging by experiencing trust and security, feeling validated, having a sense of control, experiencing a sense of importance and finding equal identities. In conclusion, from a client perspective, participation is a complex,multidimensional construct and can be considered asa dyad between the individual's social interactions and his specific activities performed. Participation was not experienced by the SCI patients as an objective way of performing activities within a societal context or as frequencies of activities performed, but rather as an internal process of negotiation that seemed to be based on balancing personal and societal values.

PMID: 20679902 [PubMed - indexed for MEDLINE]

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The illusion and the paradox of being

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Step 2: Development of the scale.

- Survey: 350 individuals

1. What are the five most important activities that you have performed during the last week?
2. How many time did you spent in each of these activities?
3. Give an appreciation from 1 to 5 for the following statements
   (from 1 totally agree to 5 totally disagree)

S_1: it was completely my choice to engage in this activity.
S_2: I performed this activity (or I was part of it) completely as I wished.
S_3: during this activity I was completely able to be myself.
S_4: this activity was completely self-fulfilling.
S_5: during this activity, I experienced a feeling of complete control
S_6: …

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Step 3: Structure of the scale.

- Exploratory Factor Analysis
  - 3 subscales:
    - Activities leading social appreciation
    - Activities according to choices and wishes
    - Delegated activities
- Internal consistency:
  - Cronbach's Alpha: α: 0,79 – 0,83
  - Item total correlation: 0,57 – 0,80

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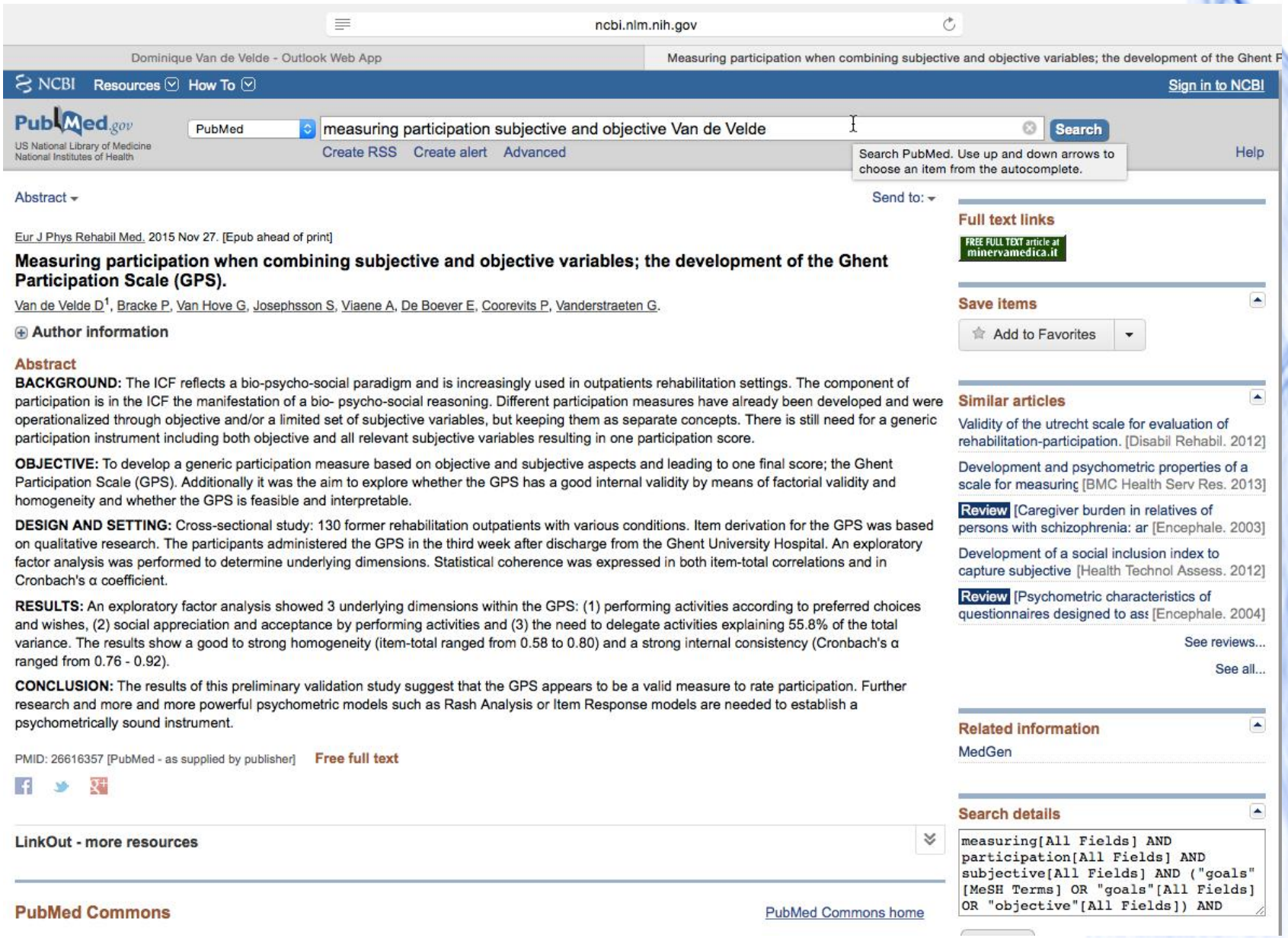

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Step 4: testing the Psychometrics

Participants: 365 individuals from 6 rehab centers, with different health conditions

- Test-retest reliability
- Construct validity
- Discriminative validity
- Responsiveness
- Interpretability

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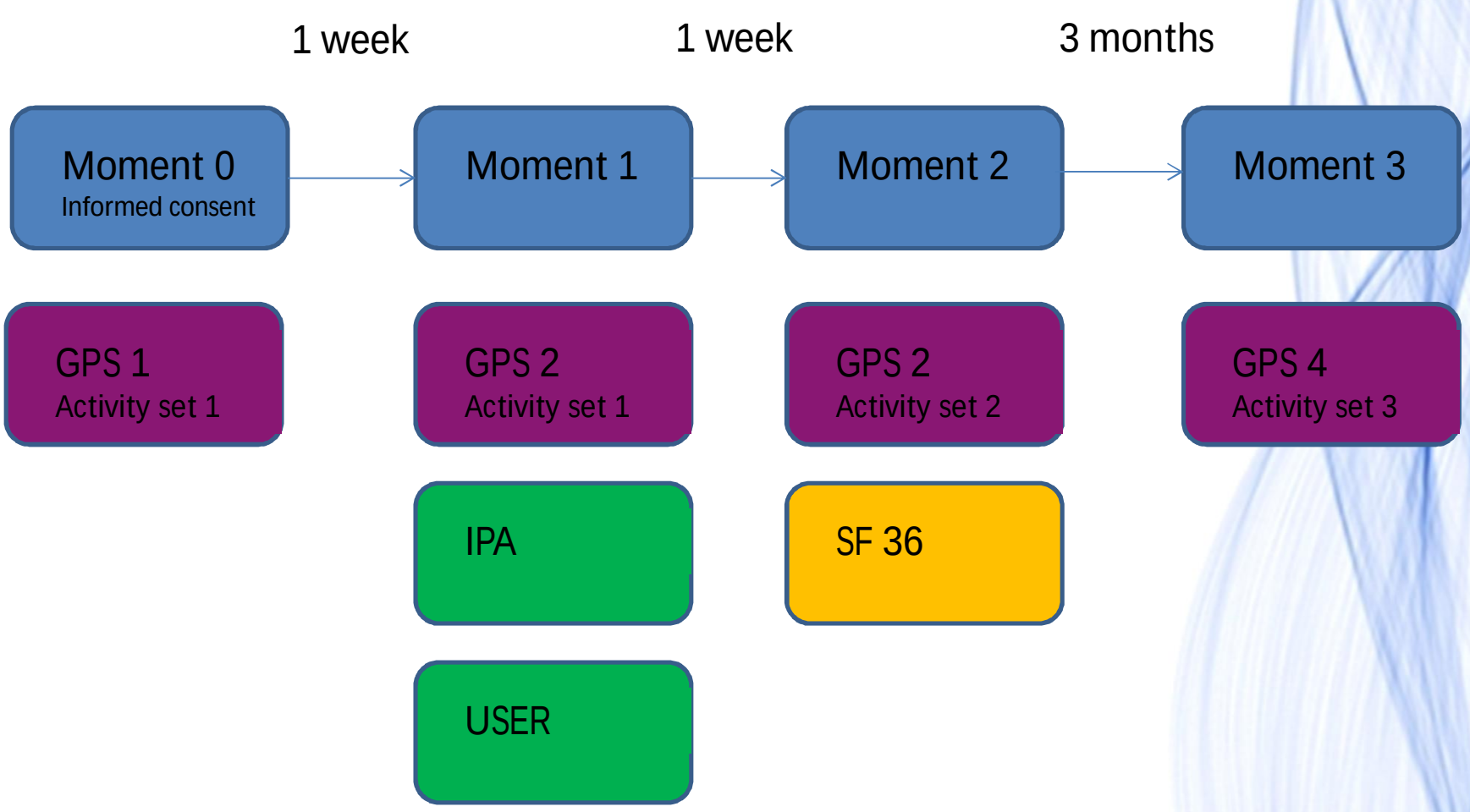
Protocol?



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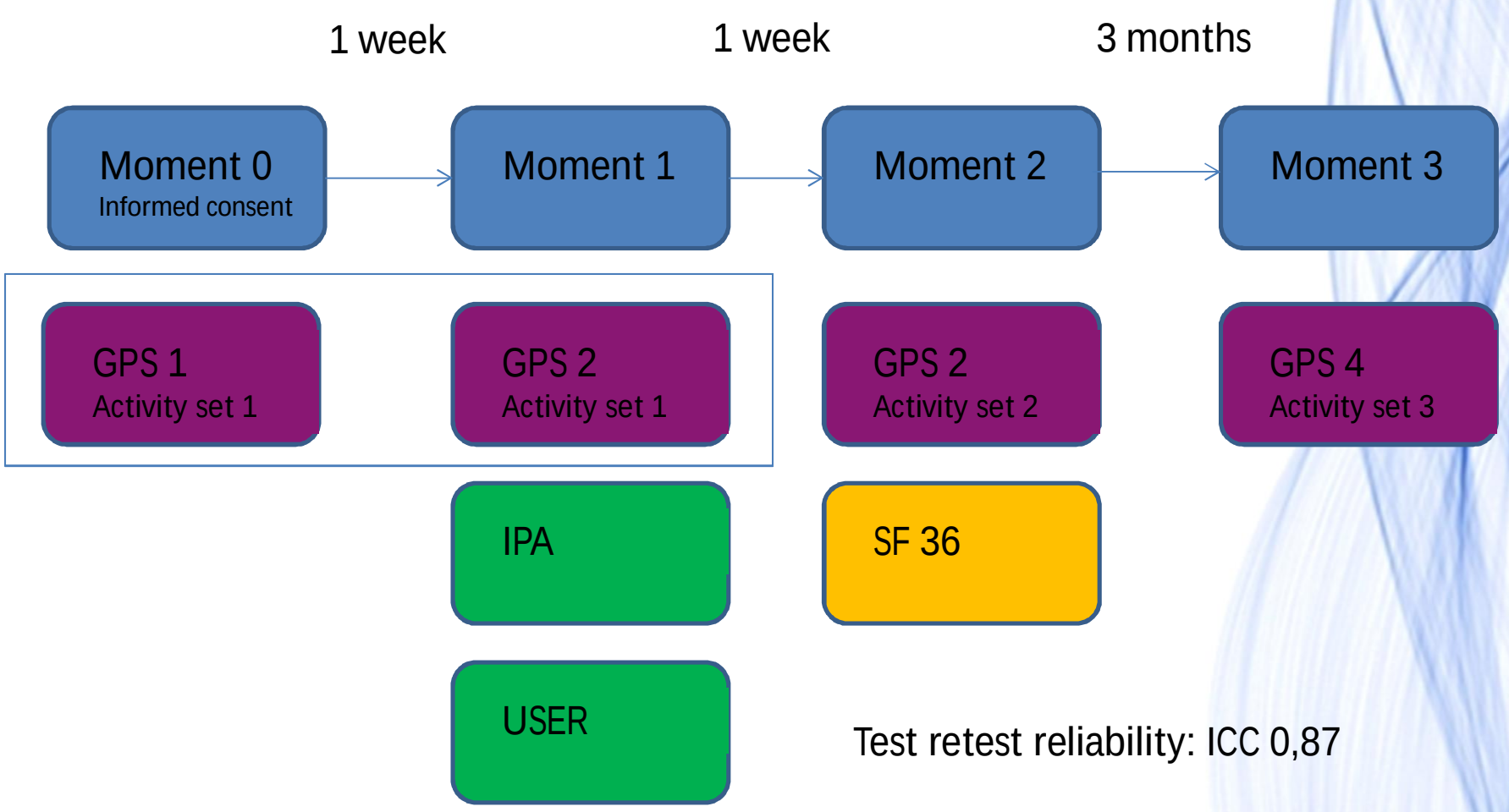

Test retest reliability: ICC 0,87

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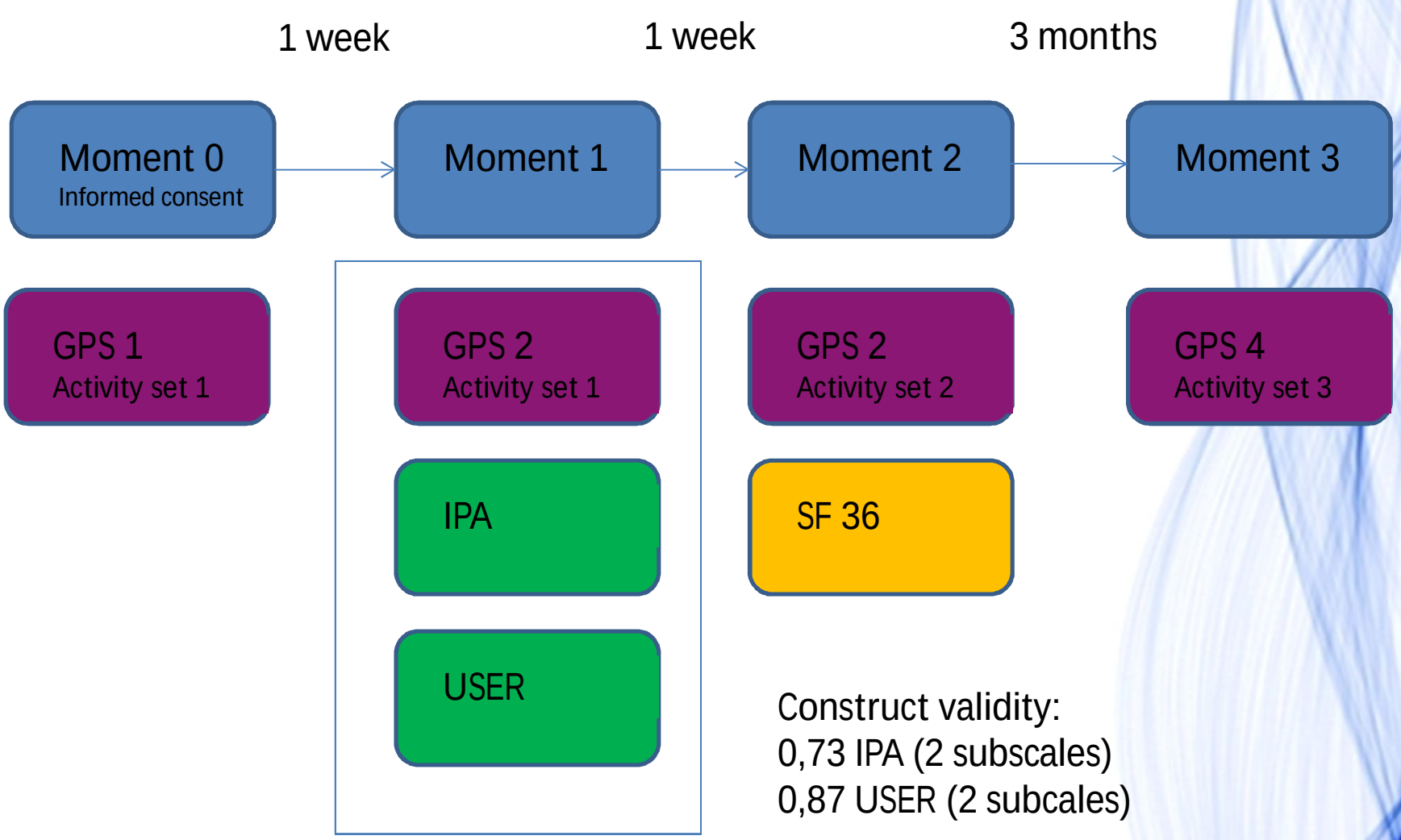
Protocol?



Construct validity:
0,73 IPA (2 subscales)
0,87 USER (2 subcales)

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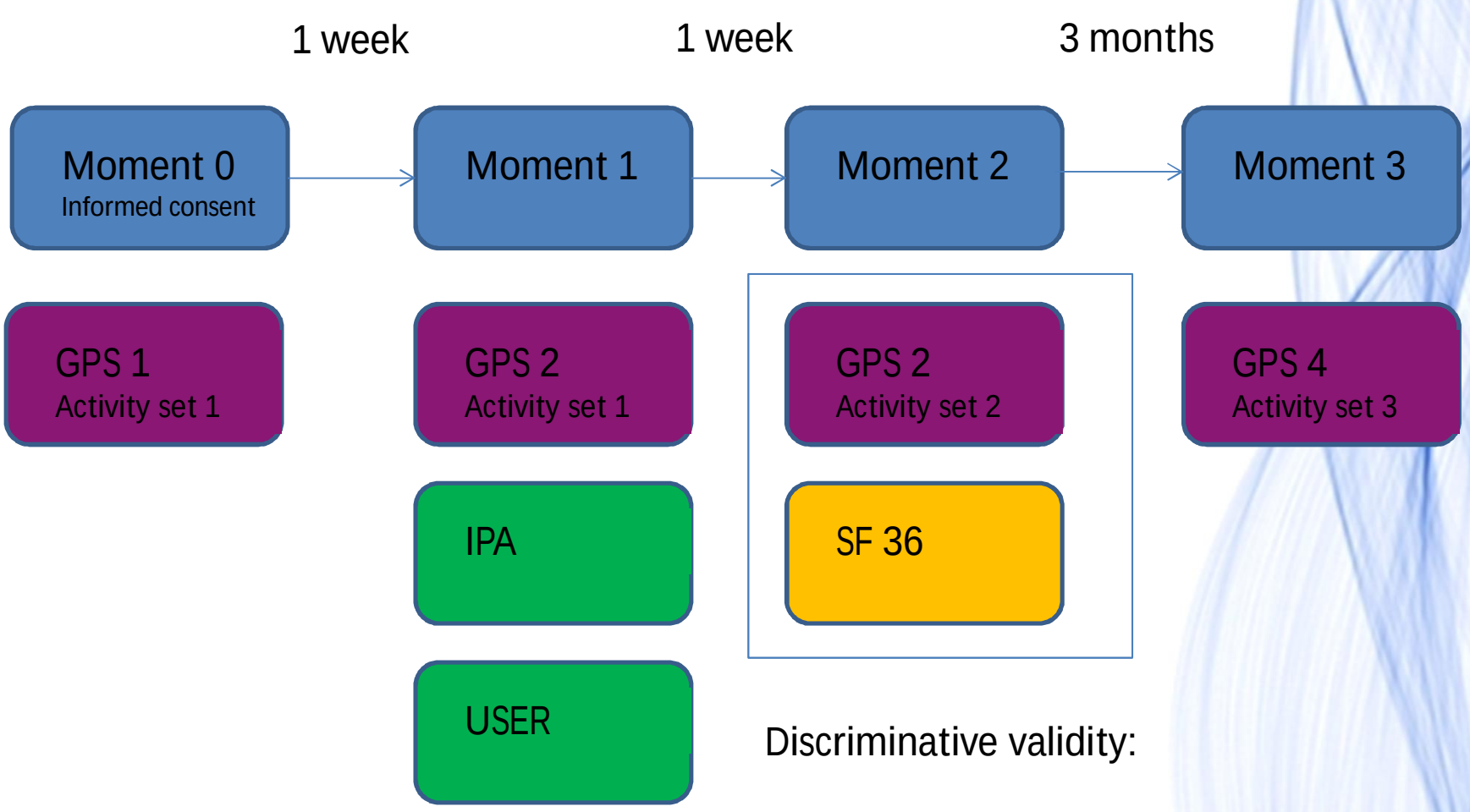
Protocol?



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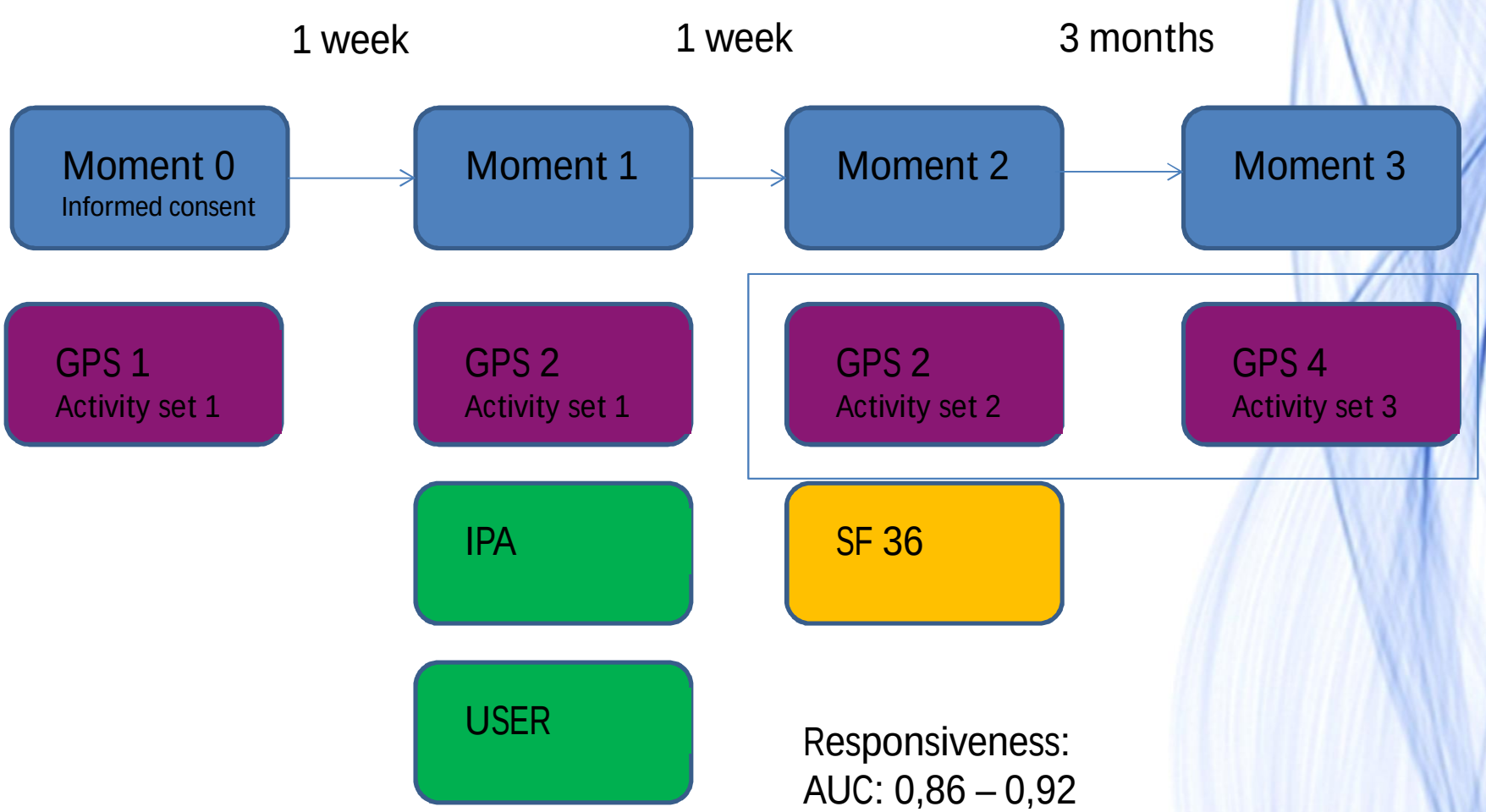
Protocol?



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Interpretability:

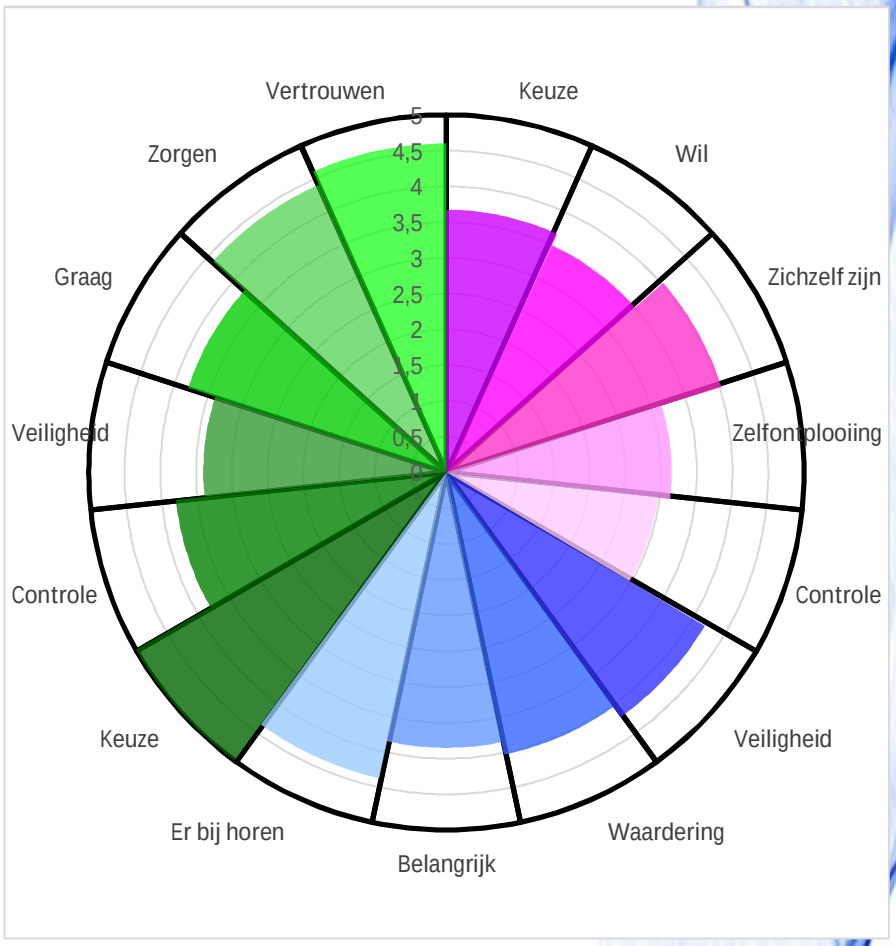
One Participation score: 65,50%

According to the ICF Qualifier: 2

- Moderate participation problem.

Conclusion:

The study resulted in a **generic participation measure**, the GPS. The GPS has **strong psychometric properties** and is **easy to interpret**. The GPS enhances the ability for practitioners to **evaluate the effectiveness of their interventions** regarding participation.



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Artcile Accepted : Clinical Rehabilitation February 2016.

To conclude

- It is possible
  - To measure within the ICF:
    - Wit less emphasis on the etiology but more emphasis on the consequences
    - On both levels of activities and participation.
- It depends on the way you operationalize the concepts.

Imrie, R. (2004). Demystifying disability: a review of the International Classification of Functioning, Disability and Health. *Sociol.Health.Illn., 26, 287-305.*
Wade, D. T. & Halligan, P. W. (2004). Do biomedical models of illness make for good healthcare systems? *Brit.Med.J., 329, 1398-1401.*
Williams, S. J. (2001). Sociological imperialism and the profession of medicine revisited: where are we now? *Sociol.Health.Illn., 23, 135-158.*

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LID VAN DE ASSOCIATIE UNIVERSITEIT GENT

Who wants to join us in our scientific work?

Process of translation and adaptation of instruments

- WHO guidelines: focus on cross-cultural and conceptual, rather than on linguistic/literal equivalence
- Following steps:
  - Forward translation
  - Expert panel Back-translation
  - Pre-testing and cognitive interviewing
  - Final version
  - Documentation

Questions?

- Patricia.devriendt@arteveldehs.be
- Dominique.vandevelde@arteveldehs.be