INEFFECTIVE PERIPHERAL TISSUE PERFUSION: CONSTRUCT VALIDATION USING RASCH ANALYSIS

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INTRODUCTION

- Construct validity of a nursing diagnosis refers to the ability of the diagnostic elements (i.e., defining characteristics) to measure a concept (i.e., nursing diagnosis)
- It allows the identification of diagnostic elements which are able to measure what they are intended to measure. Moreover, it is useful to explain the nature of the nursing diagnosis
- Although Ineffective Peripheral Tissue Perfusion (IPTP) has been clinically validated, there are no studies in which the construct validation of this concept was performed

OBJECTIVE

To verify the IPTP construct validity in patients with intermittent claudication using Rasch Analysis

METHOD

- It is a reanalysis of a previous study database that included 65 adult patients with intermittent claudication and was approved by Ethical Committee
- The reanalysis included data from physical examination, arterial stiffness (carotid-femoral pulse wave velocity – CF-PWV) and functional capacity (six minute walk test)
- The construct validation was carried out through Rasch Analysis performed by Winsteps®.

RESULTS

All defining characteristics (n=14) had appropriate Infit values (between 0.7 and 1.3 logit) . They are well adjusted to the model. The Outfit values of altered left femoral pulse (FE) and CF-PWV were 2.33 and 1.63 logit, respectively . FE and CF-PWV seemed to not properly identify outlier patients.

The biserial correlation of FE was -0.2 → it was excluded of the analysis → alteration in the adjustment of altered right femoral pulse which, in turn, was excluded of analysis → 12 items remained and had good adjustment to the model (Table 1)

Table 1. Adjustment of defining characteristics to the Rasch Model

ENTRY NUMBER	TOTAL SCORE	COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PT-MEASURE CORR.	PT-MEASURE EXP.	EXACT MATCH OBS%	EXACT MATCH EXP%	ITEM	G
13	39	65	-.14	.29	1.23	2.1	1.81	3.2	A .23	.44	65.6	69.6	ALTERED PWV	0
9	11	65	2.53	.39	.95	-.1	1.53	1.2	B .46	.49	89.1	86.1	ALTERED TEMPERATURE	0
11	20	65	1.46	.31	1.25	1.5	1.42	1.6	C .33	.51	70.3	77.5	ALTERED TURGORO	0
4	42	65	-.39	.29	1.04	.4	1.18	.8	D .37	.43	70.3	70.5	LEFT POPLITEAL	0
3	41	65	-.31	.29	1.10	1.0	1.01	.1	E .37	.43	62.5	70.2	RIGHT POPLITEAL	0
12	24	65	1.09	.30	.99	.0	1.10	.5	F .50	.51	76.6	74.7	ALTERED CAP REFILL TIME	0
14	39	65	-.14	.29	1.07	.7	.97	-.1	f .41	.44	65.6	69.6	ALTERED WALKING DISTANCE	0
10	61	65	-2.82	.53	1.02	.2	.76	.0	e .20	.20	93.8	93.7	COLOR	0
5	32	65	.42	.28	.88	-1.0	.81	-1.1	d .57	.48	73.4	70.3	RIGHT PEDAL PULSE	0
6	41	65	-.31	.29	.82	-1.7	.69	-1.4	c .56	.43	75.0	70.2	LEFT PEDAL PULSE	0
7	44	65	-.56	.29	.78	-2.0	.64	-1.5	b .57	.41	81.3	72.0	RIGHT POST TIBIAL PULSE	0
8	47	65	-.83	.30	.73	-2.2	.56	-1.6	a .58	.39	85.9	74.6	LEFT POST TIBIAL PULSE	0
MEAN	36.8	65.0	.00	.32	.99	-.1	1.04	.1			75.8	74.9		
S.D.	12.7	.0	1.27	.07	.16	1.3	.37	1.4			9.5	7.3		

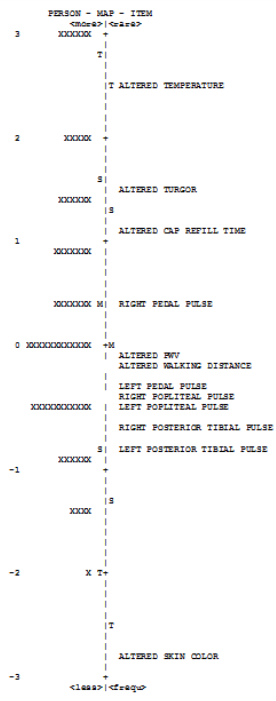

Figure 1. Rasch analysis of IPTP defining characteristics

CONCLUSION

- The items with the highest and lowest response probabilities were skin color alteration and skin temperature alteration
- The probabilities of altered CF-PWV and walking distances were -0.14 logit and both seemed to contribute to IPTP construct, whereas femoral pulses do not. Furthermore, altered walking distances had better adjustment to the model