

Section 3: Technology acceptance

Suitability Evaluation Questionnaire

The suitability evaluation questionnaire has been previously published¹ and is oriented especially to evaluate VR systems. Thirteen questions follow a 5-point Likert scale and question 14 is a yes/no question. Questions 1-7 measure levels of enjoyment, sense of presence, success, control and understanding of VR tasks and overall discomfort. Questions 8-11 measure any adverse events such as dizziness or visual discomfort and asks about the perception of rehabilitation progress through VR. Then, questions 12-13 refer to the easiness/difficulty in completing the tasks in the VR systems. Finally, question 14 asks whether the participant had any feeling of discomfort during the training, and to specify the reasons in case of a positive response.

The questionnaire was translated into Hebrew using a systematic back-translation method, which is essential for instrument validation². Recently, we started to include it during the treatments. Twenty-nine patients responded to the questionnaire after completing a VR treatment (**Table e3**).

Table e3. Suitability evaluation questionnaire (SEQ).

Condition	Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Patient														
PD	1	4	5	4	4	5	4	1	1	1	1	4	2	1	NO
	2	5	5	3	3	4	5	1	1	1	1	4	2	1	NO
	3	4	4	3	3	4	3	2	1	1	1	5	3	1	YES ^a
	4	5	5	3	3	3	5	1	1	1	1	4	3	1	NO
	5	5	5	4	5	2	5	1	1	1	1	4	3	1	NO
PS	6	4	4	4	4	4	4	1	1	1	1	4	4	1	NO
MS	7	5	5	4	3	5	5	1	1	1	1	5	2	1	NO
TBI	8	5	5	5	4	5	5	1	1	1	1	5	4	1	NO
SCI	9	5	5	5	2	5	5	3	3	1	1	5	3	1	NO
CP	10	5	5	4	4	5	5	1	1	1	1	5	4	1	NO
Recurrent Falls	11	5	5	4	4	4	5	1	1	1	1	5	4	1	NO
	12	5	5	3	3	2	5	3	1	1	5	5	3	1	YES ^b
	13	4	5	3	4	3	3	1	1	1	2	3	4	1	NO
	14	5	5	2	4	4	5	1	1	1	2	4	3	1	NO
	15	4	3	2	1	1	5	5	2	1	1	1	2	3	YES ^c
Non-neurological gait abnormality	16	2	5	3	4	2	2	4	4	5	4	3	4	3	YES ^d
	17	5	5	3	3	5	5	1	1	1	1	5	1	1	YES ^e
	18	5	2	4	5	1	5	1	1	1	1	5	3	1	NO

Lower limb injury	19	5	4	3	3	3	3	1	1	1	1	4	3	1	NO
BPPV	20	5	5	5	4	2	5	3	3	5	1	5	4	2	YES ^f
Vertigo	21	4	5	4	3	3	3	2	4	4	3	5	3	3	YES ^g
Ataxia	22	3	2	2	3	2	3	1	1	1	1	2	2	1	NO
Low back pain	23	5	4	3	4	4	4	1	1	1	3	3	3	1	NO
Myelopathy	24	4	5	4	4	5	4	3	1	3	1	3	5	3	NO
	25	4	4	3	3	3	4	4	1	1	2	4	3	1	YES ^h
Polio	26	5	5	4	5	4	5	1	1	1	1	5	3	1	NO
	27	5	5	4	4	4	5	3	1	1	1	5	5	1	YES ⁱ
Polyneuropathy	28	5	5	3	4	3	5	1	1	1	1	2	4	1	NO
Cancer	29	5	5	3	3	4	5	1	1	1	3	5	3	1	NO
Total (median)		5	5	3	4	4	5	1	1	1	1	4	3	1	

Twenty-nine patients with different conditions completed the questionnaire. SEQ Scores follow a 5-point Likert scale¹. Questions Q7, Q8, Q9, Q10, Q12 and Q13 are negative and, therefore, a score of “1” indicates good suitability. Whereas in the rest of the questions, a score of “5” represent positive suitability perception. Question 14 asks whether the patients felt *uncomfortable during the task*, and if yes, *to describe the reasons*. PD: Parkinson’s disease and Parkinsonism, PS: Post-stroke, MS: multiple sclerosis, TBI: traumatic brain injury, SCI: spinal cord injury, CP: cerebral palsy, BPPV: benign paroxysmal positional vertigo. ^a: knee pain; ^b: embarrassment, lack of coordination, difficulty to walk on treadmill; ^c and ^e: dizziness after treatment; ^d: visual flow was discomforting; ^f: needed rest after treatment; ^g: dizziness, blurred vision, needed rest after treatment; ^h: limited airflow in the room; ⁱ: fear of fall, insecure.

REFERENCES

1. Gil-Gómez J-A, Gil-Gómez H, Lozano-Quilis J-A, Manzano-Hernández P, Albiol-Pérez S, Aula-Valero C. SEQ: suitability evaluation questionnaire for virtual rehabilitation systems. Application in a virtual rehabilitation system for balance rehabilitation. Proceedings of the 7th International Conference on Pervasive Computing Technologies for Healthcare; 2013: ICST (Institute for Computer Sciences, Social-Informatics and Telecommunications Engineering); 2013. p. 335-8.
2. Cha ES, Kim KH, Erlen JA. Translation of scales in cross-cultural research: issues and techniques. *Journal of advanced nursing* 2007; **58**(4): 386-95.