

## ORIGINAL RESEARCH

# Content Validation and Psychometric Evaluation of the Self-efficacy and Performance in Self-management Support Instrument for Physiotherapists

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**Abstract**

**Objective:** To develop and psychometrically test the Self-Efficacy and Performance in Self-Management Support instrument for physiotherapists (SEPSS-PT), based on the SEPSS-36, the corresponding instrument for nurses.

**Design:** Instrument development including content validation and psychometric evaluation (construct validity, factor structure, and reliability).

**Setting:** Data were collected from literature, expertmeetings, and online questionnaire

**Participants:** Next to a comprehensive literature study, experts (self-management experts (n=2); physiotherapists (n=10); patients (n=6)) and physiotherapists and physiotherapy students (n=334), participated in different stages of the study.

**Interventions:** Not applicable.

**Main Outcome Measures:** Not applicable.

A literature study (n=42 reviews) and consultations with physiotherapists and patients identified the specific content for physiotherapy.

The Five-A's model and overarching competencies of "supportive partnership attitude", were used to structure the items. Psychometric evaluation of the draft questionnaire (40 items) was tested in a sample of 334 physiotherapists and physiotherapy students from the Netherlands, of whom 33 filled out the questionnaire twice to establish the test-retest reliability.

**Results:** Confirmatory factor analyses revealed satisfactory fit indices for both the 6-factor model and hierarchical model, with best fit for the 6-factor model. The questionnaire discriminated between physiotherapists and physiotherapy students, and between physiotherapists who did or did not consider self-management support important. The overall internal consistency (Cronbach's alpha) was high, both for the self-efficacy and the performance items. In most of the subscales, test-retest intra-class correlation coefficients for both overall self-efficacy and performance were good, but in 3 subscales insufficient for performance.

**Conclusion:** The SEPSS-PT questionnaire is a 40-item, Likert-scaled instrument with good content and construct validity, good internal consistency and reliability, and sufficient test-retest reliability. Future research in a larger and more diverse sample could confirm stability and discriminating power.

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Nowadays, physiotherapists are more and more involved in fostering self-management of patients with chronic diseases, and in those with enduring or recurrent complaints—across primary, secondary, and tertiary care.<sup>1-7</sup>

Providing self-management support (SMS) is internationally recognized as a core component of chronic care.<sup>8,9</sup> Its importance is stressed in current guidelines in physiotherapy,<sup>6,10</sup> and a generic guideline on self-management states that in every treatment trajectory physiotherapists should pay attention to a patient's self-management needs.<sup>11</sup> Reported favorable effects of self-management include less disability and pain, obtaining greater autonomy, self-confidence, a better quality of life, and increased participation.<sup>1,12-15</sup>

A widely accepted definition of self-management is “The individual's ability to manage symptoms, treatment, physical and psychosocial consequences and lifestyle changes inherent in living with a chronic condition and to affect the cognitive, behavioral, and emotional responses necessary to maintain a satisfactory quality of life. Thus, a dynamic and continuous process of self-regulation is established”.<sup>16</sup>

Adaptive challenges may be related to medical management (coping with limitations, symptoms, and treatment), role management (adequate relation with caregivers and important others), and emotional management (preparing for an uncertain future, emotional balance, and positive self-image).<sup>17</sup> These challenges require specific competencies. Lorig and Holman distinguish 6 self-management skills: problem solving, decision-making, using resources, building and maintaining a good relation with caregivers, action planning, and self-tailoring (customization).<sup>17</sup>

Fostering patients' self-management during the treatment process also assumes a relatively new role with corresponding competencies.<sup>7,18-20</sup>

SMS is an essential part of person-centered care. It requires a patient-centered collaborative approach to care, ample attention to health and behavior, and a more coaching role from the physiotherapist. It demands competencies on educational, supportive, and communicational level in all phases of the support process and aims at promoting active involvement of the patient, education, and empowerment.<sup>21-25</sup>

Although this relatively new role is not easily integrated into daily physiotherapy practice,<sup>7,18-20</sup> training is likely to improve self-efficacy and performance of SMS.<sup>25-27</sup>

Therefore, it seems informative to evaluate and/or reflect upon SMS-competencies for the physiotherapy profession with a theory-based instrument.

For the nursing profession, the Self Efficacy and Performance in Self-Management Support instrument-36 (SEPSS-36) is available and addresses both self-efficacy and performance.<sup>28</sup> Its

underlying framework is the Five-A's model,<sup>12</sup> a leading model that describes the process of SMS in 5 key activities: (1) Assess—assess the patients' needs and beliefs; (2) Advise—give the patient information he needs; (3) Agree—set goals together with the patient; (4) Assist—assist the patient to overcome barriers; (5) Arrange—arrange follow-up care.<sup>12,29</sup> Furthermore, it includes competencies regarding a supportive partnership attitude, required in each phase of the SMS process.<sup>11,12,30-32</sup>

We took the SEPSS-36 as a basis for further development of a questionnaire applicable for physiotherapists, which we named the Self Efficacy and Performance in Self-Management Support instrument for Physiotherapists (SEPSS-PT). The present study was performed to develop and psychometrically test the SEPSS-PT. Our aims were to (1) establish the essential competencies for physiotherapists to support patients in self-management; and (2) to validate a questionnaire that measures the necessary (sub)competencies of the physiotherapist for SMS in a valid and reliable way.

## Methods

A 2-phase approach was undertaken.

**Phase 1** consisted of instrument adaptation and content validation, to define the physiotherapeutic specific adjustments to the original SEPSS-36.

**Phase 2** entailed the psychometric evaluation of the draft questionnaire in a sample of physiotherapists and physiotherapy students.

In this procedure, the Consensus-based Standards for the selection of health Measurement Instruments (COSMIN) criteria were adhered to.<sup>33,34</sup>

## Ethical approval

The Medical Ethics Review Board of Erasmus University Medical Center Rotterdam ruled that the study was exempted from further ethical testing, as it did not fall under the Medical Research Involving Human Subjects Act (MEC-2019-0547).

## Phase 1: Instrument adaptation and content validation

To identify relevant (sub)competencies for SMS, an interactive expert meeting was held with a diverse group of physiotherapists representing 1 or more health care settings (primary care, hospital care, rehabilitation care, nursing home, physiotherapy education, physiotherapy research), and a representative of patients with a chronic disorder (N=7).<sup>34</sup>

As open start, experts shared self-introduced competencies, and competencies derived from the Dutch Professional Competencies Profile (DPCP) were introduced.<sup>35</sup> The meeting was dedicated to discussing the applicability of the Five-A's model in physiotherapy practice, the relevance and phrasing of the SEPSS-36 items for physiotherapists, and the overlap with self-introduced competencies and DPCP-competencies. The meeting, moderated by a skilled group moderator (A.F.), followed a topic guide and was audio-recorded. All input from audio-recording, memo notes, flip-overs, was included in a comprehensive report.

One researcher (L.W.) prepared an overview of the discussed competencies and relevance for physiotherapy in Excel. Its accuracy was checked by A.F.

### List of abbreviations:

<b>CFA</b>	<b>confirmatory factor analyses</b>
<b>COSMIN</b>	<b>COnsensus-based Standards for the selection of health Measurement INstruments</b>
<b>DPCP</b>	<b>Dutch Professional Competencies Profile</b>
<b>ICC</b>	<b>intraclass correlation coefficient</b>
<b>SEPSS-36</b>	<b>Self Efficacy and Performance in Self-Management Support instrument-36</b>
<b>SEPSS-PT</b>	<b>Self Efficacy and Performance in Self-Management Support instrument for Physiotherapists</b>
<b>SMS</b>	<b>self-management support</b>

Next, A.F. and L.W. performed a comprehensive literature study of reviews on self-management and physiotherapy regarding the competencies for SMS that physiotherapists should possess.

The search was carried out by an expert from the medical library of the Erasmus MC University Medical Center in October 2019 (for details, see appendix 1, available online only at <http://www.archives-pmr.org/>).

From every included review, information on patients' needs regarding SMS from a physiotherapist (or health care professional in a multidisciplinary team), or relevant elements derived from effective self-management interventions, and (sub)competencies were copied into Excel. L.W. conducted both the selection and data extraction, which were checked by A.F.

Next, all (sub)competencies derived from the literature were arranged under the 6 subscales of the SEPSS-36. L.W. and A.F. went through the list together to identify synonyms, overlap, and arrangement. When consensus was not reached, A.v.S. was consulted to resolve the issue.

### Combining information from expertmeeting and literature into an overview of items

Then, L.W. and A.F. combined the competencies derived from both the literature study and the expert meeting, and marked synonyms and overlap with the relevant SEPSS-36-items.<sup>28</sup> L.W. and A.F. discussed their draft list with A.v.S. and S.v.H. regarding synonyms and overlap, relevance to the physiotherapist, and unambiguousness. Competencies were rewritten as questionnaire-items in recognizable language for the target group, worded in active and specific form, and placed in a logical order. Responses could be given on a 5-point Likert scale. Scores on Self-efficacy could range from "I think I can do this" via "not at all" to "very well". Scores on Performance could range from "I do this" via "never" to "always".<sup>28</sup>

The draft questionnaire was presented to 4 physiotherapists, 2 physiotherapist-researchers, and 2 self-management experts. In addition, it was presented to a focusgroup of 5 people (aged 35-70 years) with osteoarthritis who were (or had been) under physiotherapeutic treatment. Relevance, comprehensiveness of items and instructions, and the response options were discussed to confirm content validity.<sup>34</sup> Then, the research group discussed the comments and invited a linguist to check the questionnaire for clarity and unambiguous language, resulting in the SEPSS-PT.

## Phase 2: Psychometric evaluation

This phase included evaluation of the construct validity (confirmatory factor analyses [CFA], discriminating power) and reliability (internal consistency, test-retest).

### Sample for data collection

The SEPSS-PT was tested in a sample of physiotherapists and physiotherapy students in the Netherlands. The sample size aimed for was based on the recommended 7 respondents per item as a minimum to support the CFA for stable covariates<sup>33,34</sup> plus 10% to account for missing values.

### Procedure

From January to March 2021, the questionnaire was distributed online by the Royal Dutch Society for Physiotherapy, 5 Bachelor of Physiotherapy programmes at Universities of Applied Sciences, and a training organization (Randstad West). We aimed to recruit

respondents in diverse work settings. Furthermore, all physiotherapy students in years 2 (n=172) and 4 (n=82) from the Rotterdam University of Applied Sciences doing an internship were invited through e-mail.

Physiotherapists and physiotherapy students were recruited anonymously through digital/online newsletters. The link to the online-questionnaire was distributed by intermediaries of the respective organisations with invitation to participate, an information letter detailing the aim and procedures, and seeking informed consent.

Next to the SEPSS-PT, respondents' demographic variables and perception of the importance of SMS (scale ranging from 1="not important at all" to 10="very important") were collected. To optimize response, a reminder was sent, and 20 gift vouchers of €15, were raffled among participants.

To test the stability of the SEPSS-PT, we invited a number of the above-mentioned physiotherapy students to complete the instrument twice at a week's interval. To make the procedure less sensitive to memory bias, they had not been informed in advance that this concerned a test-retest procedure.

### Data analysis

Statistical analyses were performed using SPSS-27 (version 27) and AMOS-25 (version 25, IBM Corp, Armonk, NY, USA). A significance level of  $P < .05$  was applied.

Questionnaires with a repetitive response pattern of more than 36 of the 40 items (>90%), indicating a haphazard completion, were excluded. When over 10% of the items of a subscale were left open, the questionnaire was excluded from further calculations. At subscale level (range 0-4), mean scores were calculated. The total score was calculated by summing the mean scores of the subscales for self-efficacy (range 0-24) and for performance (range 0-24) in SMS. The normal distribution of the variables on self-efficacy and performance was assessed.

Because the reliability testing of the total scale and subscales yielded Cronbach's alphas above 0.70, further validation was justified.<sup>33</sup>

Construct validity of the instrument was assessed by CFA and discriminating power. CFA was conducted to verify the underlying factor structure using (a) a single factor model in which all items are direct indicators of SMS; (b) a 6-factor model with items loading on their respective factor of SMS, and (c) a 6-factor hierarchical model to examine the degree to which the 6 factors are elements of an overarching construct of SMS. This was conducted for both self-efficacy and performance (for details, see appendix 2, available online only at <http://www.archives-pmr.org/>).

To study the instrument' discriminating power, 3 subgroups with a theoretically expected difference in self-efficacy and performance in SMS were predefined:

- (1) graduated physiotherapists vs physiotherapy students;
- (2) physiotherapists with a bachelor degree vs physiotherapists with master degree;
- (3) physiotherapists perceiving SMS as highly important ( $\geq 9$ ) vs physiotherapists perceiving SMS of little or no importance ( $\leq 6$ ).<sup>28</sup>

Independent sample *t* tests were used to calculate differences between the mean scores of these predefined groups guided by a Levene's test for equality of variances.

The reliability of the instrument was assessed by internal consistency analysis and by test-retest reliability (intraclass correlation coefficient [ICC]). Inter-item correlations were calculated at subscale and at scale level, Cronbach's alpha between 0.70 and 0.95 was considered as satisfactory.<sup>36</sup> The ICC of the test-retest was calculated for each subscale and for the total score on self-efficacy and performance by using a 2-way random effects model with absolute agreement. Reliability coefficients of  $\geq 0.70$  were considered as satisfactory.<sup>36</sup>

## Translation

The SEPSS-PT was translated from Dutch into English by an independent professional scientific translator (K.H.). Back-translation was performed by another independent translator, who has been working as a physiotherapist in USA for >20 years with Dutch as mothertongue (IS-B). After back-translation few discrepancies in rewording were discussed by the professional translator (K.H.) and researchers (A.F., A.v. S., D.S.) and resolved by consensus.

## Results

### Phase 1: Instrument adaptation and content validation

#### Expert meeting and literature study

All participating physiotherapists (n=6) found the Five-A's model and overall competencies helpful to focus more consciously on SMS. Its domains were considered appropriate and in line with the physiotherapeutic process. The 36 (sub)competencies from the SEPSS-36 were discussed, supplemented by 25 (sub)competencies the researchers derived from the DPCP, and 33 by experts self-introduced (sub)competencies.

Thirteen items of the SEPSS-36 were reported fitting the physiotherapeutic context after minor modification into more recognizable wording. The item "discuss with patient to whom he will tell about his condition", was found less appropriate for physiotherapists and deleted. All self-introduced competencies largely overlapped the items of the SEPSS-36 on "overall competence" and were therefore not included.

For the literature study, qualitative information from 42 reviews was included and ordered within the 6 subscales of the SEPSS-36. After removing duplicates and overlapping items, 98 items remained.

#### Combining information and additional input

After ranking the competencies derived from the experts' meeting and literature into 1 list, these were checked for overlap, relevance, formulation, and unambiguousness, resulting in 43 competencies. All competencies were reformulated into items. Additional input from the 5 focus group members (patients' perspectives) confirmed the relevance of all items. However, the consulted professionals (physiotherapists, students, self-management experts) reported 3 items to be insufficiently recognizable or overlapping with other items. These items were removed, resulting in a SEPSS-PT questionnaire with 40 items.

Overall, fourteen SEPSS-36-items remained unchanged, in 6 items small textual changes were made, in thirteen items changes in word choice or formulation were made (fitting more with

physiotherapy profession), 3 items were deleted (1 was found inappropriate for physiotherapists, 2 showed overlap with other items), 7 new items relevant and specific for the physiotherapy profession were added.

Few minor textual adjustments were made as a result of the translation process (for details, see appendix 3, available online only at <http://www.archives-pmr.org/>).

### Phase 2: Psychometric evaluation

#### Sample characteristics

In total, 334 respondents, 207 physiotherapists and 127 physiotherapy students, of whom 136 were men (40.7%), filled in the complete questionnaire. Thirty-one questionnaires were excluded because of >10% missing values.

Most (85.8%) worked in a primary care setting, and 12.6% in inpatient care (table 1). SMS was rated as highly important (score 9 or 10) by 174 respondent (44.0%) and only 10 (3.0%) rated this as not important (score 3-6).

Mean scores on the SEPSS-PT-subscales ranged from the minimum score to the maximum score (0-4 points). Differences were found between self-efficacy (scoring higher) and performance (scoring lower), with the largest differences (>0.50) in the subscales Advise and Arrange, which also had the lowest mean scores (table 2). Scores on individual items are presented in appendix 4 (available online only at <http://www.archives-pmr.org/>).

#### Construct validity

Fit indices of the CFA for both self-efficacy and performance are shown in table 3. All chi-square tests were significant. Both the 6-factor model and the 6-factor hierarchical model showed acceptable fit according to the liberal fit indices for both self-efficacy and performance, confirming that SMS has multiple dimensions in self-efficacy and performance. Only the CFI-scores were below 0.90, indicating room for improvement of the fit of the model compared with the perfect model. The Akaike Information Criterion (AIC) showed the best fit for the 6-factor model (table 3).

Factor loadings of the 40 items for the 6-factor model are provided in table 4; all standardized factor loadings were strong and significant, ranging from 0.46 to 0.79 in Self-efficacy and from 0.40 to 0.75 in Performance of SMS. Based on goodness-of-fit, factor loadings and theory, all 40 items were retained.

Sample adequacy was confirmed by the Kaiser–Meyer–Olkin test (self-efficacy=0.95; performance=0.93) and Bartlett's test of sphericity (self-efficacy: chi-square=6543.22, df=780,  $P<.001$ ; performance: chi-square=5460.87, df=780,  $P<.001$ ), indicating that correlations between items not occur by chance.

#### Discriminating power

Of the 3 predefined hypotheses on discriminating power, significant differences were demonstrated between physiotherapists (scored higher) and physiotherapy students, and between physiotherapists who scored either lower or higher on importance of SMS (table 5). Scores between physiotherapists with a bachelor degree and those with a master degree did not differ.



**Table 1** Sample characteristics

Characteristics	N	%
<i>All respondents (N=334)</i>		
Sex		
Men	136	40.7
Women	197	59.0
Other	1	0.3
Age (y)		
<25	127	38.2
25-34	53	16.0
35-44	36	10.8
45-54	49	14.8
>55	67	20.2
Missing	2	
Educational degree		
Physiotherapy students (yes)	130	38.9
Bachelor degree (yes)	130	38.9
Master degree (yes)	74	22.2
<i>Working physiotherapists (N=207)</i>		
Work setting ( <i>multiple settings possible</i> )		
Primary care	175	85.8
Health centers	21	10.3
Hospital	6	2.9
Rehabilitation center	7	3.9
Nursing home/home for the elderly	13	6.4
Sports centers	3	1.5
Missing	5	
Work experience (years)		
0-5	35	17.2
6-10	13	6.4
11-15	18	8.9
>15	137	67.5
Missing	1	
Working hours (per wk)		
1-8	6	2.9
9-16	18	8.8
17-24	21	10.3
25-32	86	42.2
>32	73	35.8
Specialism ( <i>multiple specialisms possible</i> )		
Manual therapy	50	24.5
Pediatric physiotherapy	7	3.4
Oncology physiotherapy	32	15.7
Geriatric physiotherapy	14	6.9
Occupational physiotherapy	8	3.9
Sports physiotherapy	21	10.3
Pelvic floor physiotherapy	6	2.9
Psychosomatic physiotherapy	17	8.3

## Reliability

### Internal consistency

Cronbach's alpha was 0.95 for the total self-efficacy scale and 0.94 for performance.

For the self-efficacy subscales, Cronbach's alpha ranged from 0.77 to 0.86; and for the performance subscales from 0.72 to 0.84 (table 6).

### Test-retest reliability

A group of 33 physiotherapy students completed the questionnaire twice. On the first occasion, the mean total score for self-efficacy was 17.97 (SD 2.68) and for performance in SMS 15.63 (SD 2.46). At retest, the corresponding figures were 18.10 (SD 2.92) and 16.10 (SD 2.71). The overall intra-class correlation coefficient was 0.93 (95% CI=0.85-0.96) for the self-efficacy items and 0.87 (95% CI=0.74-0.94) for the performance items (table 6).

## Discussion

With self-management becoming an important and integrated part of physiotherapy treatment,<sup>6,8-11</sup> it seems logical to reflect on ones competencies needed for SMS and evaluate training programs on this topic.<sup>37,38</sup>

The SEPSS-PT questionnaire contains of 40 items and maps out self-efficacy and performance in application of SMS. It is derived from the SEPSS-36 for the nurse profession,<sup>28</sup> and based on the steps of the process of SMS of the Five-A's model.<sup>12</sup>

The included items fitted with literature data and with the perspectives of both physiotherapists and patients and are in line with the self-management skills of patients defined by Lorig and Holman.<sup>17</sup> The questionnaire showed good construct validity and discriminated between students and experienced physiotherapists, and between those who found SMS important and those who did not.

The SEPSS-PT showed good overall test-retest reliability, and sufficient reliability for most subscales. The intraclass correlations reported by Duprez et al (2016) were higher than those in our study, which might be ascribed to the fact that their participants completed the questionnaire again within 2 hours. Our physiotherapy students completed the SEPSS-PT twice in a week's interval, which we considered long enough to prevent recall, and short enough to confirm that the students competencies had remained stable.<sup>34</sup>

The physiotherapists in our sample scored higher on the SEPSS-PT than did the physiotherapy students. This is in line with the needed competencies described in the professional profile,<sup>39</sup> and with the finding that experienced physiotherapists report a higher frequency of seeking explicit patient understanding to evaluate their teaching than novice physiotherapists and perceive fewer patient-related barriers to their practice.<sup>40</sup> In addition, physiotherapists who found SMS highly important scored higher than those who did not. A possible explanation is that the former will probably pay more attention to SMS during treatment.

Although physiotherapists with master's degrees were expected to score higher—due to higher level of critical thinking abilities and problem-solving skills—other factors, such as working with specific patient groups and additional training in communication skills, for physiotherapists with either bachelor's or master's degrees, may contribute even more to higher scores on the SEPSS-PT.

In our sample, differences were found between self-efficacy (scoring higher) and performance (scoring lower), as in a study in nurses.<sup>41</sup> The largest differences (>0.5) were seen in Advise and Arrange. In Advise, "asking permission before giving advise or information" and "checking whether this information was clear for the patient", scored lowest in performance. In Arrange the lowest scores on performance concerned "Assisting the patient remotely with support tools such as E-health or telephone

**Table 2** Subscale and scale scores

Subscale	Self-efficacy			Performance		
	Mean	SD	Range	Mean	SD	Range
Assess	3.00	0.53	1.24-4.00	2.55	0.64	0.88-4.00
Advise	2.79*	0.60	1.29-4.00	2.14	0.62	0.29-3.86
Agree	2.87	0.60	0.00-4.00	2.47	0.70	0.00-4.00
Assist	2.99	0.53	1.33-4.00	2.68	0.58	1.00-4.00
Arrange	2.81*	0.69	0.86-4.00	2.26	0.78	0.14-4.00
Overall competencies	2.85	0.56	1.00-4.00	2.59	0.63	0.50-4.00
Total scale <sup>†</sup>	17.33	2.95	9.19-24.00	14.67	3.20	5.86-23.86

Subscale scores range from 0 to 4.

\* Differences between mean self-efficacy score and mean performance score >0.5.

<sup>†</sup> Scale scores range from 0 to 24.

consultation” and on “Discussing the patient’s ability to maintain the set exercise goals”. Thinking one can (self-efficacy) but doing it less than expected (performance) may fit the setting but can also imply barriers for performance or in prioritization.

## Limitations

Although we had invited—through an online newsletter or e-mail—a large group of physiotherapists, a relatively small group responded. We have no insight into how many people actually read the online invitation in the newsletter.

Furthermore, this sample was a convenience sample and not representative for all registered physiotherapists in the Netherlands. For example, our sample contained more young physiotherapists up to 25 years (SEPSS-PT: 38.2% vs nationally: 6.3%), explained by the large number of participating students (38.9%).<sup>42</sup> In addition, relatively few physiotherapists working in inpatient care (hospital, nursing home, rehabilitation center) participated. This might limit the generalizability of the findings.

Regarding the test-retest reliability, some of the ICCs (performance on assess, advise, and assist) were “doubtful” (ranging from 0.59 to 0.60) according to the COSMIN-criteria. This may be due to the relative small sample size of physiotherapy

students (n=33).<sup>34</sup> The results of the stability tests should be considered an initial trend. Further stability testing in a larger sample is recommended.

Although the term SMS itself might be interpreted somewhat differently by different respondents, we tried to be clear by explicitly formulating the items for each subscale, for example: “Asking the patient what he knows about his condition or complaint”; “Letting the patient repeat in his own words the information that I gave (=teach-back-method)”. Therefore, we do not expect a confounding effect or shift in construct validity due to possible differences in interpretation of this construct.

However, the SEPSS-PT is a reflective tool that assesses if and what one does or does not do within SMS, and how often. Thinking one can (self-efficacy) but doing it less than expected (performance), may fit the setting but can also imply barriers for performance or in prioritization. Therefore, additional observations could provide insight into actual application and additional interviews could give insight into considerations regarding providing SMS; for example, whether they have lack of opportunity, or do not think it is important enough. Although circumstances, such as setting, may influence scores, being able to operate adequately on each subscale seems important and should be considered.

**Table 3** Goodness-of-fit indicators for 3 factor models

CFA Model	$\chi^2$ (df)*	RMSEA (95% CI) <sup>†</sup>	SRMR <sup>‡</sup>	CFI <sup>§</sup>	AIC <sup>  </sup>
<i>Self-efficacy</i>					
One-factor	2121.2 (740)	0.08 (0.07-0.08)	0.06	0.77	2281.21
Six-factor	1637.5 (725)	<b>0.06 (0.06-0.06)</b>	<b>0.06</b>	0.85	1827.53
Hierarchical	1675.8 (734)	<b>0.06 (0.06-0.07)</b>	<b>0.06</b>	0.84	1938.55
<i>Performance</i>					
One-factor	2054.2 (740)	<b>0.07 (0.07-0.08)</b>	<b>0.07</b>	0.73	2214.23
Six-factor	1633.8 (725)	<b>0.06 (0.06-0.07)</b>	<b>0.06</b>	0.82	1823.79
Hierarchical	1659.8 (734)	<b>0.06 (0.06-0.07)</b>	<b>0.06</b>	0.81	1831.84

\*  $\chi^2$ : each model differs significantly from prior models per chi-square difference test.

<sup>†</sup> RMSEA, root mean square error of approximation (good fit: <0.10 or less (liberal) or <0.06 or less (conservative)).

<sup>‡</sup> SRMR, standardized root mean squared residual (good fit: <0.10 (liberal) or 0.05 (conservative)).

<sup>§</sup> CFI, comparative fit index (good fit: >0.90 (liberal) or >0.95 (conservative)). Note, numbers in bold indicate good fit.

<sup>||</sup> AIC, Akaike Information Criterion (lowest score indicating the best model).

**Table 4** Factor loadings of all items on the 6-factor model (n=334)

No	Item (Can/Do)	Six-Factor Model	
		Self-efficacy $\Delta^*$	Performance $\Delta^*$
1.1	Asking the patient what he knows about his condition or complaint.	0.60 <sup>†</sup>	0.58 <sup>†</sup>
1.2	Asking the patient about the influence of the condition or complaint on performing his activities (living, working, leisure).	0.58 <sup>†</sup>	0.46 <sup>†</sup>
1.3	Asking the patient about his exercise history and beliefs about movement and exercise.	0.59 <sup>†</sup>	0.62 <sup>†</sup>
1.4	Asking the patient what he expects from living with a condition or complaint in the near future.	0.69 <sup>†</sup>	0.69 <sup>†</sup>
1.5	Asking the patient what he himself can and is willing to do in the treatment program.	0.64 <sup>†</sup>	0.62 <sup>†</sup>
1.6	Asking the patient about his motivation and discipline to integrate the condition or complaint in his life.	0.79 <sup>†</sup>	0.74 <sup>†</sup>
1.7	Asking the patient about his abilities to cope with the condition or complaint.	0.78 <sup>†</sup>	0.75 <sup>†</sup>
1.8	Asking the patient about how he can share his emotions about the condition or complaint with important others.	0.60 <sup>†</sup>	0.56 <sup>†</sup>
2.1	During each contact, asking the patient what information he needs	0.65 <sup>†</sup>	0.60 <sup>†</sup>
2.2	Asking the patient for permission before giving information or advice.	0.52 <sup>†</sup>	0.40 <sup>†</sup>
2.3	Giving the patient information and instruction about the condition or complaint (for example, about the treatment program, the symptoms, and a healthy lifestyle).	0.63 <sup>†</sup>	0.62 <sup>†</sup>
2.4	Letting the patient repeat the information that I gave in his own words (=teach-back-method).	0.62 <sup>†</sup>	0.48 <sup>†</sup>
2.5	Exploring with the patient the balance between demands and capacity (load management)	0.62 <sup>†</sup>	0.58 <sup>†</sup>
2.6	Helping the patient to formulate questions to discuss with other health care professionals, or, for example, the employer	0.62 <sup>†</sup>	0.50 <sup>†</sup>
2.7	Involving the family when providing information and instruction	0.63 <sup>†</sup>	0.51 <sup>†</sup>
3.1	Helping the patient to identify earlier positive experiences with achieving goals.	0.63 <sup>†</sup>	0.56 <sup>†</sup>
3.2	Allowing the patient to determine his own priorities when setting meaningful goals	0.72 <sup>†</sup>	0.63 <sup>†</sup>
3.3	Jointly with the patient, developing a plan of action to achieve the goals	0.66 <sup>†</sup>	0.60 <sup>†</sup>
3.4	Documenting the goals and arrangements in the patient's record.	0.56 <sup>†</sup>	0.48 <sup>†</sup>
3.5	Helping the patient to make decisions concerning his treatment jointly with me and/or the other health care professionals	0.70 <sup>†</sup>	0.64 <sup>†</sup>
3.6	Recognizing the patient's insecurity about making a treatment decision.	0.67 <sup>†</sup>	0.67 <sup>†</sup>
4.1	Encouraging the patient to perform daily activities independently as much as possible.	0.64 <sup>†</sup>	0.67 <sup>†</sup>
4.2	Providing the patient with tailored functional exercises (home, work, leisure) to encourage healthy exercise behavior	0.61 <sup>†</sup>	0.66 <sup>†</sup>
4.3	Stimulating the patient's pleasure in exercising.	0.66 <sup>†</sup>	0.66 <sup>†</sup>
4.4	Supporting the use of personal coping skills.	0.68 <sup>†</sup>	0.66 <sup>†</sup>
4.5	Assisting the patient in monitoring and managing his own health and physical reactions (eg, diary-keeping, exercise apps).	0.65 <sup>†</sup>	0.55 <sup>†</sup>
4.6	Discussing with the patient who (ie, family, friends, network) can provide daily support in carrying out activities	0.63 <sup>†</sup>	0.50 <sup>†</sup>
5.1	Evaluating with the patient how the individual treatment plan is progressing.	0.67 <sup>†</sup>	0.60 <sup>†</sup>
5.2	Informing and coordinating with other health care and/or welfare professionals involved.	0.71 <sup>†</sup>	0.69 <sup>†</sup>
5.3	Facilitating the patient to easily stay in contact between appointments.	0.66 <sup>†</sup>	0.67 <sup>†</sup>
5.4	Assisting the patient remotely with support tools such as E-health or telephone consultation.	0.63 <sup>†</sup>	0.52 <sup>†</sup>
5.5	If arranged, initiating contact between appointments with the patient, to discuss his health and solve any problems	0.78 <sup>†</sup>	0.70 <sup>†</sup>
5.6	Discussing the patient's ability to maintain the set exercise goals.	0.71 <sup>†</sup>	0.57 <sup>†</sup>
5.7	Discussing with the patient what options are available if there is a need for aftercare.	0.68 <sup>†</sup>	0.57 <sup>†</sup>
6.1	Acknowledging the patient's experiential knowledge as valuable information concerning the treatment plan.	0.73 <sup>†</sup>	0.73 <sup>†</sup>
6.2	Considering the patients' (cultural) background.	0.46 <sup>†</sup>	0.52 <sup>†</sup>
6.3	Together with the patient, determining how much I will take over, if needed .	0.67 <sup>†</sup>	0.62 <sup>†</sup>
6.4	Using the patient's choice as the basis for care, even if it is not ideal from a medical perspective.	0.59 <sup>†</sup>	0.58 <sup>†</sup>
6.5	Showing understanding when the patient does not succeed in achieving the set goals.	0.56 <sup>†</sup>	0.56 <sup>†</sup>
6.6	Reflecting upon my own professional actions.	0.61 <sup>†</sup>	0.48 <sup>†</sup>

\* Standardized factor loading.

†  $P < .001$ .

**Table 5** Discriminating power of the SEPSS-PT

Group	N	Mean* (SD)		t	df	P Value
		Group With Theoretically Expected Higher Score (A)	Group With Theoretically Expected Lower Score (B)			
<i>Self-efficacy items</i>						
1. Physiotherapists (A) vs Physiotherapy students (B)	204 130	17.94 (3.00)	16.37 (2.61)	-4.90	332	<.001
2. Physiotherapists with Master degree (A) vs Bachelor degree (B)	74 130	17.74 (3.07)	18.05 (2.95)	0.75	202	.824
3. Physiotherapists perceiving SMS highly important <sup>†</sup> (A) vs of little to no importance <sup>‡</sup> (B)	10 147	18.46 (2.81)	15.72 (2.30)	-2.97	155	.003
<i>Performance items</i>						
1. Physiotherapists (A) vs physiotherapy students (B)	204 130	15.43 (3.19)	13.49 (2.90)	-5.66	332	<.001
2. Physiotherapists with Master degree (A) vs Bachelor degree (B)	74 130	15.21 (3.14)	15.55 (3.16)	0.75	202	.703
3. Physiotherapists perceiving SMS highly important <sup>†</sup> (A) vs of little to no importance <sup>‡</sup> (B)	10 147	15.85 (2.96)	12.84 (3.73)	-3.05	155	.003

Abbreviations: df, degrees of freedom; t, value independent sample t test.

\* Maximum mean score=24

<sup>†</sup> Score  $\geq 9$ . <sup>‡</sup>Score  $\leq 6$ .

**Table 6** Internal consistency and test-retest reliability

	Internal Consistency Cronbach's $\alpha$	Test-Retest Reliability ICC (95% CI)
Total SEPSS-PT (40 items)		
- Self-efficacy	0.95	0.93 (0.85-0.96)
- Performance	0.94	0.87 (0.74-0.94)
Subscale assess (8 items)		
- Self-efficacy	0.86	0.77 (0.54-0.89)
- Performance	0.84	0.60 (0.22-0.80)
Subscale advise (7 items)		
- Self-efficacy	0.81	0.86 (0.71-0.93)
- Performance	0.72	0.60 (0.20-0.80)
Subscale agree (6 items)		
- Self-efficacy	0.81	0.82 (0.64-0.91)
- Performance	0.75	0.89 (0.77-0.94)
Subscale assist (6 items)		
- Self-efficacy	0.80	0.78 (0.56-0.89)
- Performance	0.77	0.59 (0.19-0.80)
Subscale arrange (7 items)		
- Self-efficacy	0.86	0.85 (0.69-0.93)
- Performance	0.81	0.85 (0.70-0.93)
Subscale overall competences (6 items)		
- Self-efficacy	0.77	0.77 (0.53-0.89)
- Performance	0.76	0.79 (0.57-0.90)

Abbreviation: 95% CI, 95% confidence interval.

## Potential application

The outcome of the SEPSS-PT gives insight into one's current self-efficacy and performance of SMS, and can give input for areas of focus for professional development for individuals or groups. Incorporating the SEPSS-PT into future training and courses on SMS gives the opportunity to explore the responsiveness of the instrument and, if found responsive, to evaluate training effects.

## Conclusions and future research

The SEPSS-PT questionnaire is a promising instrument to measure physiotherapists' self-efficacy and performance with regard to patient's SMS in daily practice.

Future research in a larger and more diverse samples with more physiotherapists who work in inpatients units can confirm its stability and discriminating power.

## Suppliers

- IBM SPSS Statistics, version 27, IBM Corp, Armonk, NY, USA
- AMOS, version 25, IBM Corp, Armonk, NY, USA.

## Keywords

Rehabilitation; competencies; self-management support; physiotherapy; validity; reliability

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