Pain Management Nursing xxx (xxxx) xxx

Contents lists available at ScienceDirect

Pain Management Nursing

journal homepage: www.painmanagementnursing.org

Original Article

Assessing Self-Efficacy for Physical Activity and Walking Exercise in Women with Fibromyalgia

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A R T I C L E I N F O

Article history:
Received 7 July 2020
Received in revised form 20 April 2021
Accepted 27 May 2021
Available online xxx

A B S T R A C T

Background: Exercise and physical activity are an evidence-based practice for chronic pain. Health professionals need instruments to assess self-efficacy for this practice taking into account the specific barriers of patients with these health problems.
Purpose: To develop and test the psychometric properties of a new self-efficacy scale for physical activity and walking exercise in patients with fibromyalgia.
Design: A cross-sectional and prospective study was conducted in a Spanish Fibromyalgia Unit. Two hundred and eleven new patients signed the informed consent and participated in the study. All of them were women, referred to by either Primary or Specialized Health Care. In addition to the new scale, they filled out several self-reported and validated instruments to collect the data present in this study.
Results: Exploratory factor analysis showed a three-factor model (GFI = .99; RMSR = .06) that explained 74.2% of the total variance. They assessed how confident patients felt about walking quickly in both 30- and 60-minute sessions, (Factor I: 10 items; α = .97), to perform daily physical activities (Factor II: 10 items; α = .93) and to undertake moderate physical activity (Factor III: 5 items; α = .95). The total score of the scale and the three-factor scores showed good criterion validity and adequate validity based on the relationships with other constructs.
Conclusions: The scale showed adequate psychometric properties and can be a useful tool to help health professionals monitor patients' self-efficacy perception and customize both physical activity and walking exercise intervention goals and their implementation.

Fibromyalgia is a chronic widespread musculoskeletal pain condition that is often presented with other symptoms such as fatigue, sleep disturbance, emotional problems, cognitive, and somatic complaints (Clauw, 2014; Wolfe et al., 2016). Fibromyalgia is a complex health condition associated with high perceived health impact and socio-economic burden (Knight et al., 2013) and is more prevalent in women. From a biopsychosocial point of view, the most effective intervention for fibromyalgia combines pharmacologic strategies, physical exercise, and cognitive-behavioral therapy (Clauw, 2014). In particular, a lifestyle with physical activity and regular exercise have shown benefits in fibromyalgia health outcomes (Andrade et al., 2020; Bidonde et al., 2017). Walking is an easy and accessible form of exercise with low musculoskeletal impact which is suggested due to its positive effects in chronic pain and fibromyalgia health conditions (Gusi et al., 2009; O'Connor et al., 2015). Despite the benefits associated with health, women with fibromyalgia have reported low physical activity and low frequency of walking exercise (López-Roig et al., 2016; McLoughlin et al., 2011). In previous studies, women with fibromyalgia who reported high control perception increased their likelihood of adhering to a walking program around threefold, in comparison with women with low control perception (Pastor-Mira et al., 2020). These findings support the evidence in other

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https://doi.org/10.1016/j.pmn.2021.05.007

populations in regard to the role of control perception in physical activity (McEachan et al., 2011).

Self-efficacy is conceptualized as a control belief referring to the confidence in one's abilities to carry out the behaviors needed to reach a desired outcome (Bandura, 1996). Self-efficacy, a powerful driving force and a causal agent of human behavior, it determines the personal effort and persistence facing the obstacles that may arise while progressing towards one's own goals. Bandurański formulation of self-efficacy underlined its behavioral specificity and the need to take into account the different difficulties that people can find. In general, undertaking and maintaining regular exercise is a difficult task, mainly in chronic pain disorders such as fibromyalgia, where patients report many difficulties due to their own illness (Pastor-Mira et al., 2015). Self-efficacy has demonstrated promoting proper lifestyle and exercise behaviors in healthy adults (Williams & French, 2011) and people with fibromyalgia (Beal et al., 2009; Oliver & Cronan, 2002, 2005). It has also been the psychological process involved in increasing physical activity and exercise (Jones, Burckhardt, & Bennett, 2004). Moreover, in this context there is evidence regarding the positive effects of self-efficacy on health outcomes (Dobkin et al., 2010; Jackson et al., 2014; Miles et al., 2011) and its role in the effectiveness of self-management interventions, which usually include physical training (Burckhardt, 2005).

The self-efficacy theory has been proposed to develop nursing interventions to increase physical activity and exercise in special populations (Lee et al., 2008). In this regard, improving the sense of self-efficacy is one of the goals to create routine exercise in both fibromyalgia and chronic patients (Jones & Liptan, 2009; Lorig et al., 2001). The effort of health professionals from this perspective is essential since adherence in walking programs has been higher when, mainly nurses, supervised the exercise process (Sanz-Baños et al., 2018). It is commonly known that advice and information about activity and exercise are not enough to motivate the patient. They need to rely on their capabilities to carry out the required behavior (Jones et al., 2004; Lee et al., 2008). Nurses are key professionals in helping patients with fibromyalgia. From a biopsychosocial point of view, nurses have applied different interventions to improve the patients' health status, from those that are single-component, such as music therapy (Onieva-Zafra et al., 2013) or guided imagery relaxation therapy (Onieva-Zafra et al., 2015) to those that are multi-component, from a multidisciplinary perspective, mainly focused on providing education and self-management strategies (Vincent et al., 2011). They have also carried out evidence-based interventions built on information technology for fibromyalgia educative purposes, such as the FibroGuide specific tool (Sparks et al., 2016), which includes one module about being active. All of these interventions have shown positive effects in specific fibromyalgia health outcomes, showing the usefulness of self-management strategies for daily coping with this chronic pain problem. It is worth underlining the importance of improving self-efficacy to implement self-management of healthy habits in fibromyalgia (Pérez-Velasco & Peñacoba-Puente, 2015).

Thus, there is evidence about the main role of self-efficacy beliefs to understand and promote health and exercise. However, most of the instruments available in the context of chronic pain do not specifically address exercise and physical activity or the usual obstacles that prevent people from undertaking these behaviors. They usually comprise several domains like self-efficacy for managing pain and other symptoms, for physical function (mainly related to daily activities) or for communication with health professionals (Miles et al., 2011). To the best of our knowledge, there is a need to develop self-efficacy instruments for physical activity and exercise that take into account the common barriers in the chronic pain and fibromyalgia population. Physical activity and exercise are evidence-based recommendations for fibromyalgia both for its implementation as part of a new lifestyle due to the illness and as treatment from a rehabilitative point of view. Therefore, our aim is to develop a self-efficacy scale for physical activity and walking exercise for women with fibromyalgia and test its psychometric properties preliminarily.

Method

Participants

Two hundred and eleven women attending the Fibromyalgia Unit (FU) of the Valencian Community, diagnosed with the American College of Rheumatology criteria (Wolfe et al., 1990, 2010), participated in this study. Most were married (67.3%; n = 142), with primary (47.6%; n = 100), secondary (33.3%; n = 70), and university studies (10.5%; n = 22); 25.6% of participants were working out of home (n = 54), 19% were housewives (n = 40), 20.4% unemployed (n = 43), 7.1% were retired due to pain (n = 15), 6.2% were retired (n =13), and 21.8% were on sick leave (n = 46). The mean age was 52.6 (SD 7.9). The mean time from the appearance of symptoms was 13.9 years (SD 9.7) and 7.0 years (SD 7.3) from the diagnosis. On a scale of 10, mean pain intensity perception was 7.00 (SD 1.6).

Variables and Instruments

Socio-demographic and clinical variables were measured with an "ad hoc" questionnaire.

Self-efficacy for physical activity scale (SEPAS)

We adapted the Spanish self-efficacy scale for physical activity scale (SEPAS) (Fernández et al., 2011) designed for primary health care settings. With 39 items answered on an 11-point scale (0 = not at all confident, 10 = completely confident) this questionnaire assessed the confidence people felt in their ability to do regular physical activity despite several barriers. It comprises three behavioral domains: practicing regular physical exercise at least three times a week, doing physical activity related to daily tasks, and walking. In our adaptation, to ensure content validity, these domains were changed considering: (1) the sedentary condition of women with fibromyalgia (López-Roig et al., 2016), (2) the three intensity levels of physical activity (light, moderate and vigorous) assessed in physical activity questionnaires (Munguía-Izquierdo et al., 2011), and (3) the walking recommendations for women with fibromyalgia aimed in our research. (Pastor-Mira et al., 2014). In addition, we used the five most frequent exercise barriers associated with fibromyalgia, which include pain, fatigue, bad weather, feeling stressed, sad and worried, and having a bad day due to fibromyalgia (Pastor-Mira et al., 2015). Therefore, the SEPAS was composed of 35 items clustered in seven situations (walking while taking advantage of doing other activities; light, moderate, and vigorous physical activity; brisk walking at least 30, 60, or 90 minutes) with the aforementioned five barriers included in each situation.

With five items we asked for the perceived self-efficacy of walking when doing regular physical activity related to daily activities, despite the previously mentioned barriers (*How confident are you that you can walk at least 30 minutes while taking advantage of going to work, shopping or taking the dog out, despite …?*). Another fifteen items asked for the perceived self-efficacy of doing 30 minutes of light and moderate physical activity and 20 minutes of vigorous physical activity, despite the same five barriers (*How confident are you that you can do light physical activity, such* *as going upstairs or swimming, for at least 30 minutes, despite…?);* we repeated the question changing the level and examples of the physical activity. The remaining fifteen items were related to self-efficacy in regard to walking as physical exercise, despite the same barriers (*How confident are you that you can walk quickly at least 30 minutes twice a week doing physical exercise, despite* …?); we repeated the question, changing the time for 60 and 90 minutes. Responses were recorded with Fernandez's 11-point scale (0 = not at all, 10 = completely). Higher scores indicate higher physical activity and walking self-efficacy.

Chronic pain self-efficacy beliefs

They were assessed by the Spanish adaptation of the Chronic Pain Self-efficacy Scale (Martín-Aragón et al., 1999). The items are distributed among three self-efficacy factors: for coping with symptoms, for physical function, and for pain management. Responses were recorded on an 11-point scale (0 = not at all confident, 10 = completely confident). Higher scores indicate higher self-efficacy. We used the subscales and the total scores measured. The internal consistencies in our sample was α = .89, α = .83, α = .84, respectively, and α = .92 for the total scale. With this scale we tested the SEPAS criterion validity. Despite not specifically including an exercise subscale, the instrument has two related items in the physical function subscale. We expected positive and significant relationships between the subscales and total scores.

In order to test the validity based on the relationships with other constructs, we assessed:

Physical activity

We obtained scores of the Metabolic Equivalence (MET) minutes-week spent walking, moderate and vigorous intensity activities, as well as overall physical activity level, using the Spanish version of the International Physical Activity Questionnaire–Short Form (IPAQ-S; www.ipaq.ki.se). The IPAQ-S asks for the amount of time the person has spent in the last seven days on different activities.

In addition, with five 'ad hoc' questions following the wording of the SEPAS, patients were asked how many times in the last seven days they did at least 30 minutes of daily walking, 30 minutes of light, moderate and walking exercise, and 20 minutes of vigorous activity (ie: *In the last seven days, how many times did you walk at least 30 minutes while taking advantage of going to work, shopping or taking the dog out?*). We used the mean score to obtain the frequency of the physical activity variable.

These variables were measured 10 days after the first measures (see design and procedure section). We hypothesized significant and positive relationships between SEPAS scores and physical activity measures.

Pain intensity perception

Measured with the mean score of the maximum, minimum, and usual pain intensity during the last week and pain intensity at time of the assessment. These four items were answered with an 11-point numerical rating scale (0 = "no pain at all" and 10 = "the worst pain you can imagine") (α = .80). Higher scores indicate high pain intensity perception.

Perceived impact of fibromyalgia and disability

We used the total score of the Spanish adaptation of the Revised Fibromyalgia Impact Questionnaire (FIQ-R; Salgueiro et al, 2013) and the score of its physical function subscale (which assesses the perceived difficulty in doing nine daily activities). The internal consistency for this sample was α =.89 and α =.83, respectively. Higher scores represent higher fibromyalgia impact perception and disability.

We expected significant and negative relationships between SEPAS, pain perception, fibromyalgia impact, and disability.

Finally, taking into account that self-efficacy perception influences the personal persistence of behavioral efforts and the thoughts and emotional reactions (Bandura, 1996), we expected a) significant and positive relationships with the commitment of an active lifestyle and exercise goals, and b) significant and negative relationships with catastrophizing and fear of movement. Therefore, we measured:

Commitment to being physically active and doing exercise

With two items, answered on a 10-point scale, we asked to what extent did the patients feel committed to being active and to doing physical exercise (1 = very little, 10 = a lot).

Catastrophizing

We used the total score of the Spanish adaptation of the Pain Catastrophizing Scale (García Campayo et al., 2008), with 13 items answered on a 5-point scale (0 = not at all, 4 = all the time). Higher scores indicate higher catastrophizing (α = .95).

Fear of movement

With the total score of the Spanish adaptation of the Tampa Scale for Kinesiophobia (Gómez-Pérez et al., 2011). The scale contains 11 items answered on a four-point scale (1= completely agree, 4= completely disagree). Higher scores indicate higher fear of movement (α = .80).

Design and Procedure

This work is part of a broader research approved by the Ethic Committees of the Alicante General Hospital and the Miguel Hernandez University which aims to identify a physical activity and exercise self-regulation model in women with fibromyalgia in rehabilitation settings. For 18 months, all new patients attending the FU, who met the inclusion criteria, were invited to participate in the study (n = 248). Inclusion criteria consisted of women, aged 18–70 years, with a fibromyalgia diagnosis confirmed by the FU and the ability to properly fill out the questionnaires. Two hundred and eleven accepted and signed the informed consent. We conducted a cross-sectional, prospective design with two measurement times where only physical activity variables were recorded 10 days after the first assessment.

Data analysis

We used the SPSS-v25 and Factor 10.10.1 (Lorenzo-Seva & Ferrando, 2006) for the exploratory factor analysis (EFA). We used the unweighted least squares method (ULS) extraction method with Promin rotation and Optimal Implementation of Parallel Analysis (Timmerman & Lorenzo-Seva, 2011) to decide the number of factors. The goodness of fit of the data was evaluated with the goodness-of-fit index (GFI $\geq$ .95) (Miles & Shevlin, 1998), root mean aquare residual (RMSR $\leq$ .08) (Hu & Bentler, 1999), and the percentage of total variance explained by the factors. We obtained the Kaiser-Meyer-Olkin and the Bartlett sphericity tests to explore sampling and data adequacy. Items were retained with loading values greater than .40. Pearson correlation was used to calculate the item-corrected scale correlation and to assess the relationships between SEPAS and other constructs. The internal consistency was calculated with Cronbach's alpha.

Table 1
Descriptive statistics and discrimination index of the removed items

Item	*How confident are you that you can …*	M SD	Sk	K	$r_{I\text{-}T}$	α
… spend at least 20 minutes doing a vigorous activity (increases significantly your breathing, perspiration and having difficulties to carry out a conversation) like running or cycling fast despite…						
16	Experiencing pain	1.3 2.3	1.9	2.7	.65	.92
17	Feeling fatigue	1.2 2.2	2.0	3.4	.62	.93
18	Suffering from bad weather (heat, cold, rain)	1.6 2.6	1.7	2.2	.61	.93
19	Feeling stressed, sad or worried	1.7 2.7	1.6	1.7	.61	.94
20	Having a bad day due to fibromyalgia	1.2 2.1	2.1	3.9	.65	.93
… walk fast to do exercise over 90 minutes at least twice a week despite…						
31	Experiencing pain	1.5 2.7	1.9	2.6	.78	.94
32	Feeling fatigue	1.3 2.6	2.1	3.4	.76	.94
33	Suffering from bad weather (heat, cold, rain)	1.6 2.9	1.9	2.9	.75	.95
34	Feeling stressed, sad or worried	1.6 2.8	1.8	2.0	.79	.94
35	Having a bad day due to fibromyalgia	1.2 2.5	2.3	4.5	.76	.95

Sk= Skewness; K= Kurtosis; $r_{I\text{-}T}$=item-total correlation

Results

Preliminary Item Analysis

Six participants were eliminated from the analysis because they showed atypical patterns of response. The score of all or most of the items related to one situation were a) the maximum (9 or 10) or b) the extremes (0 or 10). Therefore, the sample for analysis was 205 participants. The EFA included 201 participants because some items were not answered by all subjects.

The mean of the items ranged from 1.16 (item 20) to 5.83 (item 1). The items with the highest mean were those assessing self-efficacy for daily activity walking and light physical activity; the items with the lowest mean were those related to vigorous physical activity and walking exercise in either 60 or 90 minutes. The item skewness indices were between [–.31, 2.07] and the kurtosis indices between [–1.25, 4.46]. The 10 self-efficacy items about undertaking vigorous physical activities and about walking fast for 90 minutes were removed from the analysis due to their no normality distribution and the high skewness and kurtosis indexes (Table 1).

Items number 27 and 30 had high skewness and kurtosis indexes (Table 2) but they were not excluded because they were qualitatively informative and belong to the same exercise situation. Hence, the final SEPAS had 25 items which addresses both light and moderate physical activity and walking exercise lasting 30 or 60 minutes at least twice a week. The mean of these items ranged from 1.4 (number 30) to 5.8 (number 1). The central category (5) obtained the highest percentage of response in the items referring to daily activities, walking, light intensity physical activity with pain, fatigue, bad weather or feeling sad, stressed, or worried. In most items the category with the lowest response rate was 9.

Construct Validity

The sample and the correlation matrix were suitable in performing the EFA (KMO = .86; Bartlett = 7310.7, df = 300, p <.001). Parallel analysis suggested three factors. This 3-factor solution explained 74.22% of the variance (Factor I = 49.98%, Factor II = 16.82%, Factor III = 7.42%). The model fit indices were GFI = .99 and RMSR = .06. Table 2 shows the pattern coefficients from the rotated matrix. The items loading on Factor I, 'Self-efficacy for walking exercise," assessed how confident patients felt in their ability to walk fast for both 30 and 60 minutes (10 items; α = 0.97). The items loading on Factor II, "Self-efficacy for daily physical activities," assessed patient confidence in carrying out walking and light intensity physical activity (10 items; α = 0.93). The items loading on Factor III, "Self-efficacy for moderate physical activity," assessed the patients' confidence in undertaking this level of activity (5 items; α = .95). The internal consistency of the total scale was α = 0.96.

The correlations of Factor I with Factor II and Factor III were r = 0.43 and r = 0.56, respectively. Factor II and Factor III showed the highest relationship (r = 0.64). This last value suggested a second-order model which would group the items of Factor II and III. We also tested this two-factor model (fit indices: GFI = 0.97, RMSR = 0.09; explained variance = 66.81%).

Criterion Validity

All relationships between SEPAS scores and the other self-efficacy measures were significant and ranged from r = 0.32 (Factor I and 'self-efficacy for symptoms management' scores) to r = 0.59 (total scores of the two scales). Table 3 shows these data.

Validity Based on the Relationships with Other Constructs

Significant correlations between SEPAS and physical activity measures ranged from r = .14 (Factor I and frequency of physical activity scores, $p \leq .05$) to r = 0.28 (Factor II and frequency of physical activity, $p \leq .01$) (Table 4).

SEPAS measures, except Factor I, showed significant relationships with disability and the total FIQ-R score. They ranged from r = –0.18 to r = –0.26 (both $p \leq .01$) for Factor II and Factor III with the total FIQ-R score respectively (Table 4). All SEPAS scores were significantly related to commitment with physical activity and exercise goals (positive sign) and to fear of movement and catastrophizing (negative sign).

Discussion

We aimed to develop a self-efficacy scale adapted to women with fibromyalgia for all levels of physical activity and brisk walking. However, the high asymmetries and no normality distribution of the vigorous activity and 90 minutes walking items did not allow us to reach our entire aim. Therefore, the final SEPAS, with 25 items, only refers to light and moderate physical activity and walking over 30 and 60 minutes at least twice a week (see Appendix). The fibromyalgia clinical setting could explain this result. Participants had a long history of disease and started treatment at a tertiary level focused on rehabilitation care. They were referred after seven years of diagnosis on average and they were suffering from the symptoms for twice as long. Although this is a long time, it is lower than the mean time obtained, for example, in another study with a community-dwelling sample of women

Please cite this article as: S. López-Roig, María-Ángeles Pastor-Mira, R. Núñez et al., Assessing Self-Efficacy for Physical Activity and Walking Exercise in Women with Fibromyalgia, Pain Management Nursing, https://doi.org/10.1016/j.pmn.2021.05.007

Table 2
Exploratory Factor Analysis. Descriptive statistics and discrimination index

Item	*How confident are you that you can …*	Loading	M SD	Sk	K	r_{I-T}	α
	Factor I. Self-efficacy for walking exercise						**.96**
… walk fast to do exercise over 30 minutes at least twice a week despite…							
21	Experiencing pain	.85	2.9 3.4	.8	-.8	.78	.96
22	Feeling fatigue	.85	2.5 3.1	1	-.3	.80	.96
23	Suffering from bad weather (heat, cold, rain)	.86	2.8 3.4	.8	-.7	.77	.96
24	Feeling stressed, sad or worried	.83	2.8 3.3	.8	-.8	.79	.96
25	Having a bad day due to fibromyalgia	.78	1.9 2.7	1.3	.5	.80	.96
… walk fast to do exercise over 60 minutes at least twice a week despite…							
26	Experiencing pain	.96	1.8 2.8	1.5	1.1	.81	.96
27	Feeling fatigue	.94	1.6 2.6	1.6	1.6	.82	.96
28	Suffering from bad weather (heat, cold, rain)	.88	1.9 2.9	1.4	.8	.79	.96
29	Feeling stressed, sad or worried	.88	1.9 2.8	1.4	.8	.83	.96
30	Having a bad day due to fibromyalgia	.79	1.4 2.3	1.8	2.7	.81	.96
	Factor II. Self-efficacy for daily physical activity						**.93**
… walk at least 30 minutes taking advantage of going to work, shopping or taking the dog out despite …							
1	Experiencing pain	.84	5.8 3.1	-.31	-.9	.54	.93
2	Feeling fatigue	.83	4.8 3.2	.01	-1.1	.61	.92
3	Suffering from bad weather (heat, cold, rain)	.85	4.9 3.5	-.03	-1.3	.54	.93
4	Feeling stressed, sad or worried	.79	5.0 3.3	-1	-1.2	.61	.92
5	Having a bad day due to fibromyalgia	.77	3.8 3.3	.4	-1	.58	.93
…spend at least 30 minutes doing a light physical activity (not increase your breathing) like going upstairs or swimming despite…							
6	Experiencing pain	.78	3.2 3.2	.7	-.7	.63	.92
7	Feeling fatigue	.75	4.2 3.2	.3	-.9	.67	.92
8	Suffering from bad weather (heat, cold, rain)	.74	4.6 3.4	.1	-1.2	.63	.93
9	Feeling stressed, sad or worried	.69	5.6 3.3	.1	-1.2	.68	.92
10	Having a bad day due to fibromyalgia	.74	3.5 3.0	.5	-.8	.66	.92
	Factor III. Self-efficacy for moderate physical activity						**.95**
…spend at least 30 minutes doing a moderate physical activity (increase somewhat your breathing and perspiration) like dancing or cycling at a regular pace, despite…							
11	Experiencing pain	.91	3.2 3.2	.6	-.7	.76	.93
12	Feeling fatigue	.86	2.8 3.0	.9	-.3	.76	.93
13	Suffering from bad weather (heat, cold, rain)	.73	3.1 3.1	.7	-.7	.76	.94
14	Feeling stressed, sad or worried	.89	3.1 3.1	.6	-.8	.77	.93
15	Having a bad day due to fibromyalgia	.95	2.5 2.7	.8	-.3	.76	.94

Sk= Skewness; K= Kurtosis; r_{I-T}=item-total correlation

Table 3
Correlation coefficients and descriptive statistics of SEPAS and CPSES[a]

Self-efficacy	1	2	3	4	Mean	SD	Skewness	Kurtosis
1. for walking exercise					2.15	2.56	1.02	.03
2. for daily physical activities	.42				4.64	2.55	.09	-.67
3. for moderate physical activities	.56	.61			2.95	2.73	.55	-.78
4. Total SEPAS	.79	.81	.88		3.25	2.17	.48	-.59
5. for symptoms management	.32	.41	.47	.48	4.86	2.34	-.24	-.56
6. for physical function	.38	.56	.39	.54	4.87	2.33	-.07	-.67
7. for pain management	.40	.44	.37	.49	3.56	2.51	.16	-.99
8. Total CPSES	.42	.55	.49	.59	4.59	2.03	-.28	-.56

SEPAS= Self-efficacy for physical activity scale; CPSES= Chronic pain self-efficacy scale;
a = All correlations at $p \leq .01$

with fibromyalgia (López-Roig et al., 2016). Both, longtime suffering from symptoms and low physical activity are common facts in this chronic problem; however, the total time suffering from fibromyalgia has not been a significant predictor of the adherence to walking exercise (López-Roig et al., 2016). Therefore, the main influence in the tool development may be not the time by itself, but likely the patients' poor physical and psychological health status, which is the main reason why these patients are referred to tertiary care in our health care context. The issue, together with the experience that involves the uncontrollability of their illness, could contribute to them not feeling confident to undertake vigorous activities. In fact, our data showed that patients did not feel confident in carrying out physical activities and brisk walking at any level of intensity or duration. These results support the assertion that women with fibromyalgia need skills to overcome the barriers of becoming physically active (Jones et al., 2004) and increase their control perception, which is a main factor in improving adherence to doing physical exercise (Pastor et al., 2020). Techniques such as action planning, which has been useful in improving self-efficacy and physical activity in healthy adults (Williams & French, 2011), would allow us to set specific and graded goals for physical activity (even for daily activities) and exercise, increasing the likelihood of mastery experiences. Customizing and planning the activity could enhance the patients' perception of self-efficacy and the SEPAS could be helpful in accomplishing this task.

Regarding the SEPAS construct validity, the three-factor model obtained the best fit. The "Self-efficacy for walking exercise" (Fac-

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Table 4
Correlations of the SEPAS with physical activity variables and other constructs

	Self-efficacy for			
	Walking exercise	Daily physical activities	Moderate physical activities	Total SEPAS
IPAQ-S[a]: Walking MET minutes/week	.02	.22**	.08	.13
Moderate physical activity MET minutes/week	-.03	.19*	.15*	.12
Total physical activity MET minutes/week	-.05	.16*	.10	.09
Frequency of physical activity[b]	.14*	.28**	.15*	.23**
Pain perception	.01	-.10	-.01	-.04
Disability (FIQ-R)	-.13	-.23**	-.10	-.18**
Total FIQ-R	-.07	-.26**	-.18**	-.21**
Physical activity goal commitment	.24**	.39**	.34**	.39**
Exercise goal commitment	.27**	.40**	.39**	.43**
Catastrophizing	-.21**	-.33**	-.36**	-.36**
Fear of movement	-.22**	-.17*	-.26**	-.26**

SEPAS= Self-efficacy for physical activity scale; IPAQ-S= International Physical Activity Questionnaire-Short Form; [a]= In table only IPAQ variables with significant correlations with SEPAS (no significant correlations with IPAQ vigorous activity); [b]= in the last week; * $p \leq .05$; ** $p \leq .01$

tor I), comprised the minimum and the standard time of brisk walking recommended for this exercise in fibromyalgia (Gusi et al., 2009; Pastor-Mira et al., 2014). The "Self-efficacy for daily physical activities" (Factor II), included light intensity activities and walking while taking advantage of doing other daily activities. Finally, the "Self-efficacy for moderate physical activity" (Factor III), referred to activities such as dancing or cycling at regular speed (among others) which increases breathing and perspiration, while still carrying out a conversation. While intensity is conceptually included in these factors, this structure also underlines the relevance of the type of activity. This means the SEPAS could be useful in interventions to increase self-efficacy focused on the specific type of physical activity included in each factor.

SEPAS criterion validity was also adequate, indicating that the new scale measures the self-efficacy construct even taking into account its different domains. We also obtained significant relationships in the expected theoretical sense between SEPAS and physical activity, health outcomes, and psychosocial processes. Although the correlation values were low for physical activity, only Factor I and total SEPAS scores were not significantly related to the IPAQ measures. The use of the IPAQ in fibromyalgia is controversial (Segura-Jiménez et al., 2013); however, in this study, the absence of significant relationships may be due to Factor I referring to a specific way of exercise and not to general physical activity and that Factor I score had a high correlation with the SEPAS total score. Total SEPAS and Factor II scores were related to less disability and fibromyalgia impact, according to previous research with other chronic pain self-efficacy instruments and samples (Jackson et al., 2014). However, we did not find significant relationships with pain perception. This unexpected finding could be explained by the specificity of the self-efficacy domain. In other chronic pain instruments, pain and symptoms management self-efficacy is one of the questionnaire targets. However, in the SEPAS, symptoms are considered only as obstacles when undertaking physical activity.

As we expected, the more self-efficacy in this domain, the stronger the commitment becomes to doing activity and exercise goals and less catastrophizing and fear of movement. These results, besides the tenets of the social cognitive theory, agree with the goal theory and previous research in chronic pain. People with self-efficacy set higher goals and are more committed to them than people with low self-efficacy (Locke et al., 2002) and our results support this claim. Furthermore, the link between self-efficacy and goals has also been demonstrated in chronic lower back pain patients with a goal setting intervention reported higher self-efficacy perception than the control groups (Coppack et al., 2012). Finally, chronic pain self-efficacy has been associated with less catastrophizing and fear of movement (Nicholas et al., 2015; Tirado et al., 2014).

Limitations

This study has some limitations. First, the items response categories 0 and 5 were the most frequently chosen in contrast to the higher ones, with very low frequencies. We need further research to determine whether the asymmetry decreases with less response alternatives. Second, our results are limited to rehabilitation settings. We could assume uncontrollability experiences in women with fibromyalgia in community settings, considering previous results about the low control perception in undertaking exercise (Pastor-Mira et al., 2020). However, we need to test the SEPAS properties in those contexts. Finally, we should complete the validity study using objective measures like accelerometers, mainly for the self-efficacy for walking exercise subscale, which showed the worst relationships with physical activity self-reported measures.

Despite the mentioned limitations, the study has several strengths. Firstly, the SEPAS is exclusively focused on physical activity and walking exercise, and physical exercise programs are recommendable as a rehabilitation strategy in fibromyalgia (Estévez-López et al., 2018). Secondly, their structure allows us to use it as a unique scale or each subscale individually. Thirdly, this includes self-efficacy perception for different graded physical activities such as daily activities, moderate intensity activities, and light to moderate walking exercise. Finally, the scale includes not only pain as an obstacle, which is common in chronic pain instruments, but also other frequent obstacles which were previously identified and are also common in other chronic pain conditions.

Conclusions

In summary, the SEPAS can be a useful instrument in interventions aimed to increase physical activity or walking exercise. It can support health professionals to assess patients' self-efficacy perception and customizes both the intervention goal and its implementation, making sure to enhance the patients' self-efficacy.

Acknowledgments

This work was supported by the Ministerio de Economía y Competitividad (grant PSI2016-79566-C2-1-R), Spain. The contribution of Cecilia Peñacoba was supported by the Instituto de Salud Carlos III (grant PI17/00858), Spain. The authors are grateful to the women with fibromyalgia who participated in the study, as well as to the professionals of the Fibromyalgia Unit of the San Vicente del Raspeig Hospital for their support throughout the entire research period. The authors also want to thank Esther Fernández-Díez and Maider Crujeiras for collecting and cataloguing data.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.pmn.2021.05.007.

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Please cite this article as: S. López-Roig, María-Ángeles Pastor-Mira, R. Núñez et al., Assessing Self-Efficacy for Physical Activity and Walking Exercise in Women with Fibromyalgia, Pain Management Nursing, https://doi.org/10.1016/j.pmn.2021.05.007