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Original Article

Turkish Translation of the Patterns of Activity Measure-Pain in Patients with Chronic Low Back and Neck Pain: Validity and Reliability

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ABSTRACT

Objective: To translate the Patterns of Activity Measure-Pain (POAM-P) into Turkish and test its validity and reliability.
Methods: A total of 252 patients with chronic low back and neck pain were included. The Turkish translation of the POAM-P (POAMP/T), which has subgroups of Avoidance, Overdoing, and Pacing, was performed in accordance with international recommendations. The POAMP/T was administered twice. Physical activity level was assessed with the International Physical Activity Questionnaire-7 (IPAQ-7), and psychologic status was assessed with the Hospital Anxiety (HADS-A) and Depression Scales (HADS-D). The internal and external construct validity, internal consistency, and test-retest reliability were analyzed.
Results: Three related factorial structures were defined in Confirmatory Factor Analysis. Indexes and factor loads were found to be sufficient. A negative relationship was observed between avoidance and IPAQ-7 (rho = –0.328, $p < .001$), HADS-D ($\rho = -0.163$, $p = .009$), and HADS-A scores ($\rho = -0.164$, $p = .009$); whereas, a positive relationship was observed between overdoing and IPAQ-7 ($\rho = 0.362$, $p < .001$), HADS-D ($\rho = 0.309$, p < .001), and HADS-A scores ($\rho = 0.325$, $p < .001$). A negative correlation was found between pacing and IPAQ-7 ($\rho = -0.200$, $p = .001$), HADS-D ($\rho = -0.507$, $p < .001$), and HADS-A scores ($\rho = -0.509$, $p < .001$). The Cronbach alpha values for avoidance, overdoing, and pacing were obtained as 0.941, 0.917, and 0.940, respectively. The intraclass correlation coefficient for avoidance, overdoing, and pacing was found as 0.972, 0.973, and 0.972, respectively. Test and retest scores were similar ($p > .05$).
Conclusions: The Turkish version of the POAM-P is a valid and reliable scale for the assessment of pain-related activity patterns in patients with chronic low back or neck pain.

Chronic pain has been known to be a serious public health problem and a maladaptive process (Treede et al., 2015; Uyar & Köken, 2017). It usually accompanies affective, cognitive, and motivational disorders, usually lasting longer than three months, regardless of the healing attempts (Treede et al., 2015; Uyar & Köken, 2017). Prolonged pain causes deterioration in quality-of-life (QoL), functional and psychological conditions, and disability of patients (Börsbo et al., 2009).

As one of the secondary effects of chronic pain, there are some changes in the way patients perform activities of daily living (Philips, 1996). The most common activity changes are avoidance, overdoing, and pacing (Cane et al., 2013). *Avoidance* is defined as not doing activities or keeping away from activities associated with pain (Cane et al., 2013). Prolonged avoidance has detrimental effects on the musculoskeletal and cardiovascular systems and leads to the *disuse syndrome*, which may aggravate the pain problem (Bortz II, 1984). *Overdoing* is characterized by continuing to do the activity/work by tolerating it even if pain occurs until the activity/work is completed (Cane et al., 2013). Those who overdo have a higher level of daily living activities than those who avoid, and the continuation of activity despite pain in these people causes an increase in disability associated with overuse (Huijnenl et al., 2011; Kindermans et al., 2011). Moreover, periods of exacerbation of pain may become more severe and prolonged as a result of excessive activity (Andrews et al., 2016). *Pacing* is the third activity model developed against pain. It is defined as the regulation of patients' activities according to the pain level (Nielson et al., 2001) and it also serves as a coping strategy (Andrews et al.,

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2012; Cane et al., 2013; McCracken & Samuel, 2007; Nijs et al., 2008). Pacing is considered a set of behaviors that patients use to cope with chronic pain or to reduce the effect of pain on daily activities (Nielson et al., 2014). While avoidance and overdoing are thought to be dysfunctional approaches to activity, pacing is assumed to be a potentially adaptable strategy for the management of chronic pain (Cane et al., 2013). Pacing has been used in pain management programs to help individuals with chronic pain maximize their functional activity and QoL (Kerns et al., 2011).

There are different scales evaluating the characteristics of activity patterns developed by patients with chronic pain (Benaim et al, 2017). Some of them are the Patterns of Activity Measures-Pain scale (POAM-P), the Activity Pattern Scale (APS), the Chronic Pain Coping Inventory (CPCI), and the Tampa Kinesiophobia Scale (TKS) (Cane et al., 2013; Esteve et al., 2016; Jensen et al., 1995; Vlaeyen et al., 1995). Of these scales, only the TKS is available in Turkish (Yilmaz, et al., 2011). Whereas the TKS is used to determine avoidance behavior due to only fear from pain-related activity patterns (Yilmaz et al., 2011), POAM-P was developed by Cane et al. in order to identify altered activity patterns such as avoidance, overdoing, and pacing, which can exacerbate pain and reduce QoL (Cane et al., 2013). POAM-P has been adapted into Dutch and French (Benaim et al., 2017; Kindermans et al., 2009), translated into Spanish, and its only reliability study was performed for the Spanish version (Esteve et al., 2016).

The POAM-P allows the detailed evaluation of the changing activity patterns caused by chronic pain, and it supports the management of chronic pain. There is no Turkish version of the POAM-P. Therefore, this study aimed to translate the POAM-P into Turkish and test its validity and reliability in patients with chronic low back or neck pain.

Methods

Translation

Permission for adaptation of the Turkish version of the POAM-P (POAM-P/T) was obtained by e-mail from Dr. Douglas Cane, who developed the scale. Ethics committee approval of the study was received from Ankara Yildirim Beyazit University Ethics Committee (Approval number: 2017-13). We followed the procedure developed by Beaton et al., which was described in the guide of translation and cultural adaptation of patient-oriented scales (Beaton, et al., 2000). First, the POAM-P was translated into Turkish independently by two native speakers of Turkish who were fluent in English, one of whom was informed about the scale and the other who was not informed about it. The people who translated the scale into Turkish were then convened and merged both translations into a single translation. The Turkish version of the scale was re-translated into English by two sworn translators whose native language is English and had a good command of Turkish. The two scales translated from Turkish to English were synthesized and turned into a single translation. In order to adapt the scale to the Turkish language and to evaluate its cultural adaptation, the source and backward versions were compared by a translation group consisting of two physiotherapists, one physiatrist, and two sworn translators, and then, the first draft of the Turkish version was produced. To determine the degree of comprehensibility of the first draft of the scale, a pilot study was conducted in 30 patients with chronic low back or neck pain. All patients reported that all the items were understandable, and the final version of the scale was created.

Participants

The participants of the study were patients 18-80 years old with chronic low back or neck pain, who were admitted to the Physical Therapy and Rehabilitation outpatient clinics of Ankara Ataturk Training and Research Hospital, Ankara, Turkey. The inclusion criteria were having chronic low back or neck pain, being native Turkish speakers, age >18, and being a volunteer to participate in the study. The exclusion criteria were having musculoskeletal pain due to cancer, fracture, or surgery in the last 6 months, having a serious psychiatric disorder such as panic disorder or major depression, and not completely filling out the scales administered. Written informed consent was obtained from the participants stating that they participated in the study voluntarily.

One of the methods used in the calculation of the sample size in scale adaptation studies is that the total number of participants should be at least 5-10 times the total number of questions (Floyd & Widaman, 1995; MacCallum et al., 1999). According to this rule, data collection process was initiated with the aim of reaching at least 150 patients, which is five times of 30 questions. Larger sample size was targeted to minimize potential losses during data collection. Initially, 258 patients were enrolled in the present study. Six patients were excluded: two patients withdrew from the study, two patients had low back pain due to a spinal surgery history in the previous 6 months, and two patients were unable to fill out the scales. The study was completed with 252 patients.

Assessments

Physical and demographic characteristics were recorded. Pain localization was determined using a body diagram. Pain duration was recorded. In order to determine pain intensity, a 10 cm Visual Analog Scale (VAS), developed by Clark et al., was used (Clark et al., 2003). The starting point on the scale, indicating “no pain” (0 points), and the end score on the scale, indicating “unbearable pain” (10 points), were explained to the patients. Then, they were asked to mark the pain intensity on the horizontal 10 cm line. When calculating pain intensity, the distance between the marked point and the starting point was measured and recorded in cm (Collins et al., 1997). In this study, the psychological state and physical activity level of the patients were also evaluated because these parameters have been known to accompany chronic pain (Griffin, 2013; Huijnenl et al., 2011). Similar parameters were evaluated in the validity analyses of the original and translation studies of the POAM-P (Benaim et al., 2017; Cane et al., 2013). Then finally, the POAM-P/T was administered.

The activity patterns of chronic pain patients were assessed with the POAM-P/T, a self-administered scale, which classifies these activity patterns into 3 main categories as *avoidance*, *overdoing*, and *pacing* (Cane et al., 2013). The scale, which is originally in English, has a total of 30 five-point Likert-type items (0 never, 4 always), 10 in each subgroup. The score range for each subgroup is 0 to 40. Which subgroup the items represent is indicated in the scale. The scores for each subgroup are summed up separately. The activity change patterns of the patients are determined according to the highest score from the subgroups of the scale.

Psychological status was assessed with the Hospital Anxiety Depression Scale (HADS) (Zigmond & Snaith, 1983). The reliability and validity study of the Turkish version of this scale was conducted by Aydemir et al. (1997). The HADS has two subscales: anxiety (HADS-A) and depression (HADS-D). The HADS consists of a total of 14 four-point Likert-type items. The total score ranges between 0 and 21. Higher scores indicate higher depression and anxiety levels (Aydemir et al., 1997; Zigmond & Snaith, 1983).

Physical activity level was evaluated with the Turkish version of International Physical Activity Questionnaire-7 (IPAQ-7), whose reliability and validity study was performed by Saglam et al. (Saglam et al., 2010). The IPAQ-7 consists of seven items and assesses severe physical activity (duration:min, and frequency:day), moderate physical activity (duration:min and frequency:day), and walking time of at least 10 min (frequency:day) for the previous 7 days. Severe and moderate activity and walking times are converted to the metabolic equivalent (MET) corresponding to the basal metabolic rate, and the total physical activity score (MET-min/week) is calculated.

Statistical Analysis

The distribution of continuous measurements was evaluated with the Shapiro-Wilk test and normality graphs. Continuous variables in the physical and demographic data are expressed as mean (X) ± standard deviation (SD) and median (minimum-maximum) depending on the distribution. Categorical variables, such as gender, are expressed as numbers (%).

In our study, the validity of the POAM-P/T was examined via internal and external construct validity analyses. In the internal construct validity analysis, whether the items were adequately represented in the determined sub-dimensions and whether the identified sub-structures were sufficient to explain the original structure of the scale were analyzed using both confirmatory factor analysis (CFA) and diagonally weighted least square (DWLS) estimation. The residual correlation and modification indices of the scale items were examined, and the parameters to be added to increase the fit of the model were determined. In order not to distract the scale structure from its original state, new models were obtained by adding the highest modification index parameters one by one for the loaded items of the same dimension. As a result, $\chi 2$ and degree of freedom (df), comparative fit index (CFI), Tucker-Lewis index, root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR) were used as recommended by Kline (Rex, 2015) to assess model fit. $\chi 2$ was considered with other fit indices since it is sensitive to large sample sizes and strong correlations between items. The following criteria were used for good (or acceptable, at least) fit: CFI ≥ .95, TLI ≥ .95, RMSEA < .06 or < .08 at most, and SRMR < .08 (Hooper et al., 2008; Hu & Bentler, 1999; Browne and Cudeck, 1992). The consistency of the fit indices was investigated by nonparametric bootstrap with 1000 replications, and 95% confidence intervals (CI) of bootstrap results were given. For external construct validity of the scale, the relationships between the IPAQ-7, HADS-D, and HADS-A scores and the avoidance, overdoing, and pacing scores of the POAM-P/T were evaluated by the Spearman correlation coefficient (ρ).

Cronbach's alpha coefficient for each dimension was calculated for the internal consistency reliability of the scale. Test-retest reliability was calculated using the two-way ANOVA model for Intraclass Correlation Coefficient (ICC) and 95% confidence intervals of ICC. Test-retest scores were compared with the Wilcoxon test. CFA was implemented with the "Confirmatory Factor Analysis (CFA)" function in the "lavaan" package in the R-3.1.0 package program. CFA graph was drawn with the "semPaths" function in the "semPlot" package. IBM SPSS Statistics 21.0 (version 21.0. Armonk, NY) was used for other statistical analyses and calculations. Statistical significance level was accepted as $p < .05$.

Table 1
Physical and Demographic Characteristics of the Patients

	Patients With Chronic Low Back or Neck Pain (n = 252)
Age (year, median [min-max])	45 (19-76)
BMI (kg/m², mean ± SD)	27.12 ± 4.73
Sex (n, %)	
Female	157 (62.3)
Male	95 (37.7)
Working status (n, %)	
Working	137 (54.4)
Not working	115 (45.6)
Education status (n, %)	
Primary school	102 (40.5)
Secondary school	34 (13.5)
High school	37 (14.7)
University	79 (31.3)

BMI = body mass index; min = minimum; max = maximum; SD = standard deviation.

Results

The physical and demographic findings of the patients included in the study are presented in Table 1. It was found that 60.7% (n = 153) of the patients included in the study had chronic low back pain, and 39.3% (n = 99) had chronic neck pain. The median pain intensity was found to be 6 (min-max = 2-9) cm. The mean pain duration was 40.47 ± 33.17 months.

In the CFA analysis, when the related three-dimensional structure was identified, $\chi 2 = 1723.483$, $p < .001$; CFU = .988; RMSEA = .114 (95% CI: .109-.120) was obtained for the model (Table 2). It was decided that $\chi 2/SD = 4.287$, RMSEA = .114 (%95 GA:0.109-.120), and SRMR = .081 measurements and model fit were not sufficient. When the modification indices (MI) were examined to improve the model fit, the highest index was found to be between the covariance structure between items 4 and 7 (MI = 377.127). The second model was created by defining the term covariance among the related items. Similarly, model fit was not considered sufficient for this model, and by defining a covariance term between items 9 and 14 in the modification indices, a third model was created (MI = 172.904). Additionally, the fourth

Table 2
Modification Indices of the Installed Models

Indices	Models					Bootstrap
	Model 1	Model 2	Model 3	Model 4	Model 5	95% CI
χ^2	1723.483	1343.963	1171.401	1026.686	892.483	934.887-1556.324
DF	402	401	400	399	398	398
P	<.001	<.001	<.001	<.001	<.001	–
χ^2/DF	4.287	3.352	2.929	2.573	2.242	2.349-3.910
RMSEA (95% CI)	0.114 (0.109-0.120)	0.097 (0.091-0.103)	0.088 (0.082-0.094)	0.079 (0.073-0.085)	0.070 (0.064-0.077)	0.073-0.108
CFI	0.988	0.991	0.993	0.994	0.996	0.989-0.996
TLI	0.987	0.991	0.992	0.994	0.995	0.988-0.995
SRMR	0.081	0.074	0.073	0.070	0.066	0.064-0.086

χ^2 = chi square; CI = confidence interval; CFI = comparative fit index; DF = degree of freedom; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual; TLI = Tucker-Lewis Index.
$p < .05$.

Table 3
The Relationship between POAMP/T Scores and Physical Activity Level, and Depression and Anxiety Scores

	Avoidance Score		Overdoing Score		Pacing Score	
	ρ	p	ρ	p	ρ	p
IPAQ-7	−0.328	<.001	0.362	<.001	−0.200	**.001**
HADS-D	−0.163	.009	0.309	<.001	−0.507	**<.001**
HADS-A	−0.164	.009	0.325	<.001	−0.509	**<.001**

HADS-A = Hospital Anxiety Depression Scale-Anxiety; HADS-D = Hospital Anxiety Depression Scale–Depression; IPAQ-7 = International Physical Activity Questionnaire-7
$p < .05$.

(MI = 144.023) and fifth models (MI = 133.593) were created by adding the relation between items 4 and 23, and items 7 and 23 to the model, respectively. In the last model, although the p value of $\chi 2$ was significant, $\chi 2$ /SD, RMSEA, CFI, TLI, and SRMR were at least acceptable for model fit. In the modification indices of the fifth model, it was recommended that item 12 be loaded into the second dimension. The model development process was halted, as this suggestion would lead to a departure from the original structure of the scale. When the bootstrap confidence intervals of the fit measurements obtained from the last model were examined, it was found that the lower limit of the CFI and TLI confidence intervals was greater than .95, and the upper limit of the confidence intervals of RMSEA and SRMR were slightly higher than .10 and .08, respectively (Table 2).

When the parameter estimations obtained from the model were examined, it was seen that the factor loads of all items, except item 30, were significant ($p < .001$). Also, the predictions regarding the covariance terms between items 4, 7, and 23, items 9 and 4, and the sub-dimensions were found to be significant ($p < .001$). Item 30 was kept in the model so that the original scale structure was not distorted and the equal distribution of the items (10 items) in each subgroup of the scale would be maintained.

The results of the relationships examined for the external structure validity of the POAM-P/T are given in Table 3. The median IPAQ-7, HADS-D, and HADS-A scores (min-max) applied within this validity study were found to be 792.50 (66-15564), 7 (0-17), and 10 (0-19), respectively. Accordingly, a correlation was found between the avoidance score and the IPAQ-7 ($\rho = -0.328$, $p < .001$), HADS-D ($\rho = -0.163$, $p = .009$), and HADS-A ($\rho = -0.164$, $p = .009$). A correlation was observed between the overdoing score and the IPAQ-7 ($\rho = 0.362$, $p < .001$), HADS-D ($\rho = 0.309$, $p < .001$), and HADS-A ($\rho = 0.325$, $p < .001$). A correlation was found between the pacing score and HADS-D ($\rho = -0.507$, $p < .001$), and HADS-A ($\rho = -0.509$, $p < .001$). A correlation was observed between the pacing score and the IPAQ-7 ($\rho = -0.200$, $p = .001$) (Table 3.).

The Cronbach alpha values for avoidance, overdoing, and pacing were obtained as 0.941, 0.917, and 0.940, respectively (Table 4). Test-retest reliability was significantly higher for all dimensions (avoidance, overdoing, and pacing) (ICC = 0.972, 0.973, and 0.972, respectively). There were no significant differences between test-retest scores in avoidance ($p = .996$), overdoing ($p = .072$), and pacing ($p = .054$) (Table 4.).

Discussion

Measurement of a phenomenon through a scale requires a translation and adaptation process for the scale to be used in any target group speaking a language different than its original language. Psychometric properties of the translated version should also be assessed to ensure the validity and reliability. It was found in the present study that, in Turkish people with chronic low back or neck pain, the POAM-P/T is a valid and reliable scale.

POAM-P was developed in English. Thereafter, Dutch and French adaptation studies of POAM-P have been conducted, respectively (Benaim et al., 2017; Kindermans et al., 2009). POAM-P was also translated into Spanish, but its validity was not tested (Esteve et al., 2016).

In our study, the validity of the POAM-P/T was examined by internal and external structure validity analyses. In the analysis of internal structure validity of the POAM-P/T, DFA was used to test whether the items were adequately represented in the specified sub-dimensions and whether the identified substructures were sufficient to explain the original structure of the scale. The results of the factor analysis related to the construct validity of the scale showed that the data were compatible with the model (confirmed the 3-factor structure), the items and sub-dimensions of the scale were related to the scale, and the items in each sub-dimension defined their factor as sufficient. Furthermore, internal structure validity was not examined in the original study of the scale or in the Dutch adaptation, French adaptation, and Spanish translation studies (Benaim et al., 2017; Cane et al., 2013; Esteve et al., 2016; Kindermans et al., 2009).

Moreover, in our study, the relationships between the IPAQ-7, HADS-D, and HADS-A scores and avoidance, overdoing, and pacing scores were evaluated for external construct validity of the scale. Accordingly, while there was a negative correlation between avoidance and physical activity level, a positive correlation was found between overdoing and physical activity level. This may be due to the fact that the patients in the avoidance group avoided activities because they thought that they would cause pain, and thus they decreased the level of daily physical activity, and the patients in the overdoing group continued to complete their daily activities by ignoring the pain. There was a negative correlation between pacing and physical activity level. This result can be explained by the fact that the patients in the pacing group have taken more breaks than they should have in their activities, and thus, they have reduced their activities more than they should have depending on their pain levels. In a previous study, it was stated that the patients in the pacing group may be those who have lost confidence because of the adoption of a wrong pacing strategy (Kindermans et al., 2011). Huijnen et al. examined the physical activity characteristics of individuals with chronic low back pain and found that the physical activity level of the avoiding group was lower than that of the

Table 4
Results of the POAM-P/T Reliability Analysis

	Avoidance	Overdoing	Pacing
Cronbach's alfa	0.941	0.917	0.940
ICC (95% CI)	0.972 (0.959-.981)	0.973 (0.960-0.982)	0.972 (0.959-0.981)
Test–retest comparison			
Test			
Median (min-max)	19.0 (0.0-37.0)	24.5 (4.0-39.0)	22.0 (0.0-39.0)
Retest			
Median (min-max)	19.0 (0.0-36.0)	24.0 (6.0-36.0)	21.0 (0.0-40.0)
P	.996	.072	.054

CI = confidence interval; ICC = intraclass correlation coefficient; min = minimum; max = maximum.

overdoing group (2011). Derek et al. (Griffin, 2013) examined in detail the relationship between physical activity and psychological factors in patients with chronic low back pain. In their study, as in our study, a negative relationship was found between avoidance and pacing and physical activity. According to these results, appropriate physical activity programs should be planned according to avoidance, overdoing, and pacing patterns in order to increase the physical activity levels of patients with chronic pain.

In the present study, a positive correlation was observed between overdoing and depression and anxiety. This correlation supports the original study result of the scale but does not support the French adaptation study result. Due to the continuation of the activity/work in the overdoing group, pain could worsen. Thus, the anxiety and depression levels of the patients may increase. In our study, a negative correlation was found between avoidance and depression and anxiety. This relationship was different from the results of original and French adaptation studies (Benaim et al., 2017; Cane et al., 2013). The sample of the original study of the scale consisted of patients with chronic low back, neck, or shoulder pain, or fibromyalgia. The sample of the French adaptation study of the scale consisted of patients with chronic pain accompanying orthopedic trauma. The difference in the relationship between avoidance and anxiety and depression between our study and the original study and the French version of the scale may be due to the differences in the samples of the studies. In our study, a negative correlation was found between pacing and depression and anxiety. This result supports the original and French adaptation study results. The negative relationship between depression and anxiety and pacing found in the studies may be due to the fact that pacing is accepted as an adaptive pattern that provides daily activities in patients with chronic pain. In addition, in previous studies, more use of pacing has been associated with positive psychosocial outcomes in the form of lower affective distress and greater perceived pain control (Cane et al., 2013; Nielson et al., 2001). Pacing may be used to regulate the psychological state in chronic pain management in the clinics.

In the reliability analysis of the original scale, Cronbach alpha values for internal consistency were found to be .86 for avoidance, .90 for overdoing, and .94 for pacing (Cane et al., 2013). In the French version of the scale, Cronbach alpha values were calculated for internal consistency as 0.877 for avoidance, 0.846 for overdoing, and 0.891 for pacing (Benaim et al., 2017). The Cronbach alpha values of the Spanish translation for avoidance, overdoing, and pacing dimensions were 0.88, 0.85, and 0.91, respectively (Esteve et al., 2016). The Cronbach alpha values of the Dutch version of the scale were reported to be in the range of 0.80-0.94 (Kindermans et al., 2009). In our study, internal consistency and time-invariance analyses were used in the reliability analysis. The POAM-P/T was considered to have high internal consistency. The ICC scores with the test-retest reliability was not examined in the original study, the Dutch version, or the Spanish translation. In the French version of the POAM-P, ICC was calculated as 0.881, 0.731, and 0.865 for avoidance, overdoing, and pacing, respectively (Benaim et al., 2017). In our study, the ICC scores showed that the scale's time-invariance characteristic was excellent.

There were some limitations of the present study. First, the sample of the study consisted of patients with chronic low back and neck pain because they are the chronic pain condition. In order to increase the generalizability and representativeness of the results using the POAM-P/T in different samples, Turkish adaptation studies of this scale can be performed in patient groups with other types of chronic pain in future studies. Second, the cut-off score of the POAM-P/T was not calculated in our study. The cut-off scores of the sub-groups of this scale, which was originally English, were also not calculated (Cane et al., 2013). The activity change patterns of the patients have been determined according to the highest score from the subgroups of the original scale (Cane et al., 2013). Sometimes, this condition could be difficult for researchers to determine their group when the subgroup scores of the participants are equal and high such as avoidance 30; pacing 30; overdoing 20. Thus, the presence of cut-off scores may be important in determining the subgroups of the scale. Further studies considering this issue should be carried out. Third, the number of similar scales with a Turkish version was insufficient to determine the subgroups evaluated by the POAM-P scale. Therefore, for the external construct validity of the POAM-P/T, psychological state (associated with chronic pain) and physical activity level were evaluated.

Conclusion

In this study, it was seen that the POAM-P/T was a valid and reliable scale in patients with chronic low back and neck pain. This scale can be used commonly to detect the pain-related activity patterns in pain clinics. Furthermore, the POAM-P/T should be considered for regulating patients' activities in chronic pain management.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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