Original article

Assessment of Questionnaire of Physical Activity at Workplace Based on the Social Cognitive Theory (PAWPQ-SCT): A Psychometric Study in Iranian Gas Refinery Workers

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ABSTRACT

Background: This study aimed to develop and assess the psychometric features of the Physical Activity at Workplace Questionnaire (PAWPQ) based on the Social Cognitive Theory (SCT) to evaluate employees' physical activity (PA) behaviors at the workplace.
Methods: This psychometric cross-sectional study was conducted on 455 employees working in one of the gas refineries in Iran. The participants were selected using the proportional stratified sampling method in 2019. The data collection tools were a demographic information questionnaire, the short form of the International Physical Activity Questionnaire (IPAQ), and a questionnaire developed based on the SCT, whose psychometric features were confirmed in terms of validity and reliability. Data were analyzed using $SPSS_{22}$ and $AMOS_{20}$ software.
Results: The first version of PAWPQ-SCT had 74 items. After evaluating content and face validity, nine items were removed. The results of the content validity index (0.98), content validity ratio (0.86), and impact score (3.62) were acceptable for the whole instrument. In exploratory factor analysis, after removing seven items—58-item final version of the scale—six factors could explain 73.54% of the total variance. The results of structural equation modeling showed the acceptable fit of the model into the data (RMSEA = 0.052, CFI = 0.917, NFI = 0.878, TLI = 0.905, IFI = 0.917, CMIN/DF = 2.818). Cronbach's alpha coefficient and Intraclass Correlation were 0.90 and 0.86, respectively.
Conclusion: This study confirmed that the psychometric features of the 58-item final version of PAWPQ-SCT constructs were acceptable in a sample of Iranian employees. This questionnaire can be used as a valid and reliable tool to evaluate Iranian employees' PA behaviors and develop effective educational interventions for workers and managers.

1. Introduction

Physical activity (PA) is one of the main determinants of physical and mental health and quality of life [1–3]. Adults aged 18-64 years are recommended to have 150 to 300 minutes of moderate to vigorous aerobic fitness activity per week [4]. Evidence shows that more than a quarter of the world's adult population (27.5%) have inadequate PA [5]. Since adults spend a significant portion of their time in the workplace [6], the work environment is proposed as a key and ideal place for implementing health promotion programs in the 21st century [7]. The workplace is where diverse groups of individuals are accessible, many of whom are physically inactive

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[8]. Adults in urban areas spend almost 77% of their waking time in the workplace, where they are physically inactive [9]. According to some studies in Iran, inactivity in the workplace varies between 44.6% and 74.4% [10–12], and sedentary work constitutes half of the workforce's daily inactive behaviors [13]. According to a review of relevant literature, factors affecting employees' PA behavior are generally divided into three categories—individual, social, and behavioral factors—and each of these factors can either facilitate or hurdle performing PA by employees [14], and they are highly close to the basics of SCT, one of the most common theories used to predict PA behavior. The theory assumes that human behavior can be explained by a three-way reciprocal causality comprising behavioral, environmental, and individual factors, and the unique relationship among these three dimensions leads to behavior change [15]. This theory has made remarkable contributions to the planning and adaptation of health behavior, including PA, by individuals [16]. Regarding the prevalence of inactivity in employees and the importance of regular PA as the main components of healthy lifestyle, the effective role of studies based on SCT in explaining and promoting PA behavior and the lack of a standard questionnaire in this field in the target group, the present study aimed at developing an appropriate tool and evaluating its validity and reliability in accordance with the theoretical framework of SCT to assess employees' PA behavior at the workplace.
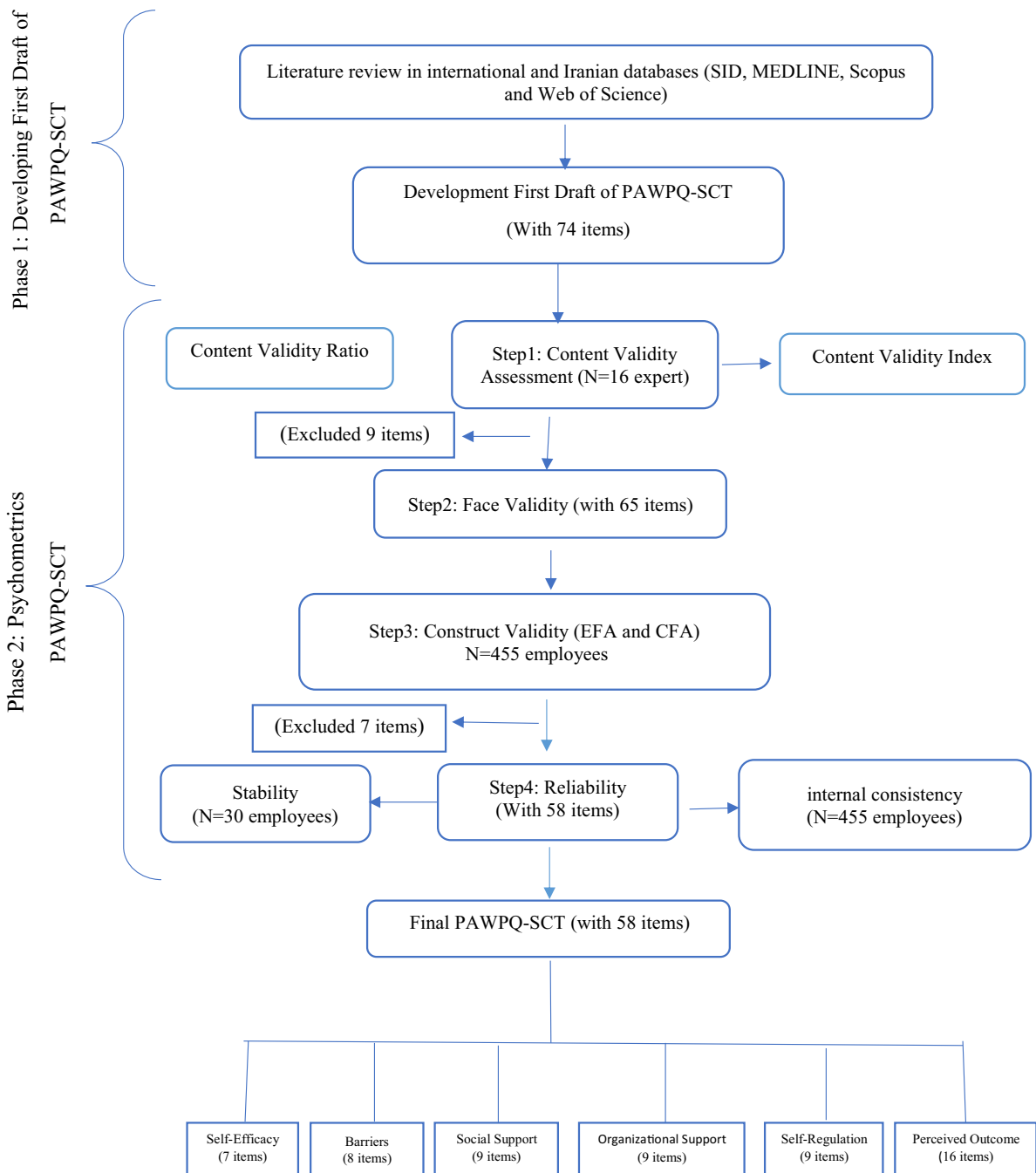

Fig. 1. Flowchart of steps of the study.

Table 1
Content validity assessment of the Physical Activity at Workplace Questionnaire based on Social Cognitive Theory (PAWPQ-SCT)

Items	CVI	CVR	Impact score	Result
Self-regulation: It refers to setting goals and plans so that a person can perform the selected behavior more easily (**from never to always**).				
1-I ask my friends, colleagues or family members to exercise with me.	0.91	0.62	2.26	
2-If the weather is not suitable, I will make another plan to do physical activity.	0.95	0.75	4.4	
3-Instead of focusing on the problems caused by physical activity, I remind myself of the benefits of exercise.	0.96	0.87	2.73	
4-I walk instead of using a car to do my daily chores.	0.98	0.87	2.53	
5-I daily allocate time to physical activity.	0.98	1	4.4	
6-I write down my exercise program in a notebook.	1	1	4.6	
7-I consult with a sports expert or a health expert to do physical activity.	0.96	0.62	3.8	
8-I record the number of my steps every day.	0.93	0.87	3.73	
9-I have a special plan for my physical activity.	1	0.75	3.66	
10-I choose physical activities appropriate for my plans.	0.93	0.62	3.93	
11-I usually set a time frame for my exercise goals (for example, weight loss).	1	0.75	3.26	
12-I exercise on certain days and hours during the week.	1	0.75	3.46	
Outcomes Expectancy: This refers to the prediction of possible consequences of engaging in the behavior under discussion (**from strongly disagree to strongly agree**).				
1-Exercise makes me feel better.	1	1	4.66	
2- Exercise helps me feel less tired	1	1	4	
3- Exercise makes my mind more active	0.98	0.87	3.8	
4- Exercise makes me stronger in daily activities	1	1	3.46	
5- Physical activity helps me have stronger and more rigid bones	1	1	4.66	
6. I enjoy doing regular exercise very much	1	1	3.8	
7- It is important to me to acquire fitness by doing exercise	0.98	0.87	3.4	
8- Exercise improves my social relationships in the workplace	1	0.86	4.06	
Value Expectancy: The value a person attributes to the possible outcomes of a certain behavior (**from strongly disagree to strongly agree**).				
1- It is important to me to feel better by exercise.	0.98	0.87	3.8	
2- It is important for me to feel less tired by exercise.	0.98	0.62	3.66	
3- It is valuable to me to acquire a more active mind by exercise.	0.95	0.75	2.93	
4- It is valuable to me to have more abilities by doing regular physical activity.	0.98	0.87	4.66	
5- It is important to me to increase my bones' strength and resistance by doing exercise.	0.98	0.75	3.46	
6- Enjoying regular exercise is important to me.	0.98	0.87	4	
7- It is important to me to acquire fitness by doing exercise.	0.95	0.75	3.66	
8-It is important to me to have positive social relationships in the workplace.	0.98	0.87	3.86	
Self-efficacy: This concept refers to confidence in one's capability to pursue a behavior (**from strongly disagree to strongly agree**).				
1-My exercise time interferes with my favorite TV show.	1	0.87	3.53	
2-I do not enjoy exercising.	0.98	0.75	3.66	
3-Commuting to the gym is difficult for me.	1	0.75	3.33	
4-My work and life schedules interfere with my exercise schedule.	1	1	4	
5-I have many concerns and family problems.	1	1	4.5	
6-I am tired.	1	0.5		Deleted
7-I am unhappy.	0.94	0.62		Deleted
8-I have a lot of work.	1	0.42		Deleted
9-The weather is not suitable.	1	0.87	3.53	
10-I have to exercise alone.	1	0.75	3.86	
11-My daily work is prolonged and exhausting.	0.90	0.62	3.66	
Organizational Support: This item refers to perceived organizational support for performing regular physical activity (**from strongly disagree to strongly agree**).				
1-There are no appropriate incentive programs for those who do regular physical activity.	0.95	1	2.93	
2-The work schedule does not allow me to do physical activity.	1	1	2.53	
3-Employees' physical activity is not a priority for the organization.	0.98	0.75	3.53	
4-Suitable sports clothes are provided to those who do regular physical activity.	0.98	0.97	4.13	
5-Broken sports equipment is repaired or replaced as soon as possible.	1	1	3.66	
6-An experienced full-time sports coach is not available.	1	0.87	3.4	

Table 1 (*continued*)

Organizational Support: This item refers to perceived organizational support for performing regular physical activity (**from strongly disagree to strongly agree**).				
7-The health of the employees is not the main concern of our organization's managers.	1	0.62		Deleted
8-There is no regular schedule for sports competitions.	1	1	2.73	
9-There is no suitable place for doing physical activity in my workplace.	0.98	0.87	3.06	
10-The opening hours of the gym do not match my exercise hours.	0.98	0.75	3.86	
11-My favorite sport does not exist in my workplace.	0.95	0.87	3.53	
12-I have to commute a long distance to go to the gym.	0.93	0.75	3.66	
Social Support: The term refers to perceived support resulting from social relationships and interpersonal interactions to pursue a behavior (**from strongly disagree to strongly agree**).				
1-There are people who exercise with me.	0.98	0.87	3.66	
2-There are people who remind me about my daily exercise (i.e., Asking me if I'm ready to do daily exercise?)	1	1	3	
3-There are people who help me continue my sports plan.	0.96	1	3.53	
4-There are people who talk to me about sports and its importance.	0.98	0.75	3.6	
5-I am rewarded for doing regular physical activity.	0.93	0.87	3.66	
6-They help me plan my exercise activities.	0.96	0.87	3.86	
7-They criticize, blame, or mock me for my poor physical activity skills.	0.98	1	2.93	
8-I have been told that I do not need to exercise, believing that I can be healthy without exercise.	1	0.87	3.13	
9-I have been told to avoid physical activity to avoid injuries or accidents during exercise.	1	0.87	4.4	
10-They encourage me because I am more physically active than my peers.	0.96	1	4	
11-They expect me to work hard in my sports field.	0.98	0.54		Deleted
12-One of my friends does physical activity with me.	0.98	0.62		Deleted
Barriers: This concept refers to barriers preventing physical activity at work (**from strongly disagree to strongly agree**).				
1-I prefer to spend more time with my colleagues and friends.	1	0.87	2.53	
2-I have to be present in my workplace for a long time due to my job requirements.	0.98	0.87	3.8	
3-Because of watching my favorite TV shows, I do not have enough time for physical activity.	1	1	3.33	
4-Because of playing computer games and surfing on social media, I do not have enough time for physical activity.	1	0.87	3.86	
5-Because of reading many books, I do not have enough time for physical activity.	0.96	0.50		Deleted
6-I fall asleep because I become exhausted after work.	1	1	3.53	
7-Bad weather makes me not do physical activity.	1	1	3.66	
8-My age is not suitable for physical activity.	0.94	0.75	2.93	
9-My illness does not allow me for physical activity.	1	0.48		Deleted
10-I do not have enough time for physical activity.	0.98	0.52		Deleted
11-I do not have motivation needed for physical activity.	0.98	0.87	4.5	

2. Material and methods

This psychometric study aimed to develop a tool and evaluate its psychometric features. This study was part of a larger project determining the effect of the Healthy Lifestyle Promotion Program (HeLPP) based on the cognitive-social conceptual framework. The present study was conducted in two phases (Fig. 1.), as follows:

2.1. Phase 1: Developing the first draft of the questionnaire

In the first step, the concept was to be measured and its constructs were determined based on SCT. Then a comprehensive literature review was conducted using keywords such as workplace, worksite, PA, social, psychometric, questionnaire, cognitive theory, sport, and physical fitness on credible international and Iranian scientific databases (SID, MEDLINE, Scopus, and Web of Science). Finally, the general conceptual framework of the study was designed. After exchanging opinions among the members of the research team and avoiding the repetition of items, their relevance to Iranian cultural and social values, and the frequency of their appearance in the literature, a repository of primary items relevant to PA behavior was created, including 74 items (Table 1) [17–21].

Other Data Collection Tools: These scales included a demographic profile questionnaire and the short form of the International Physical Activity Questionnaire (IPAQ) [22] to measure PA in the target group, employee (study participant) recruitment is described under Step 3: Construct Validity Assessment.
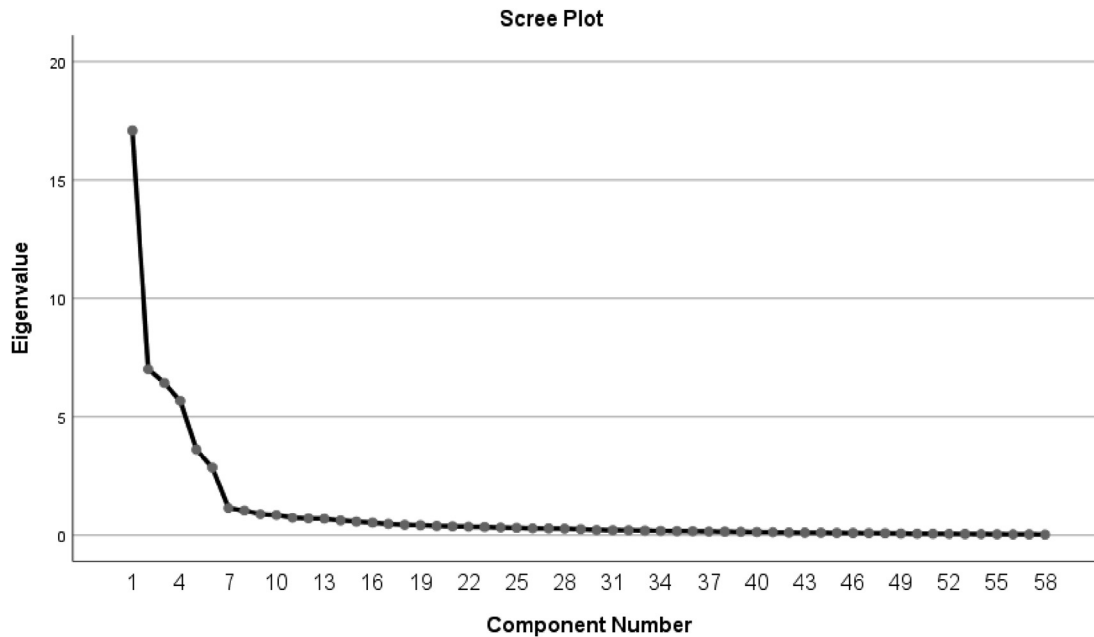
Scree Plot

Fig. 2. Scree plot for image of the Eigenvalue in each of the extracted items.

2.2. Phase 2: Psychometrics

This phase was implemented in four steps as follows:

2.2.1. Step 1: Cultural compatibility (Content Validity Assessment)

In this step, the content validity of the 74-item questionnaire was measured using both qualitative and quantitative approaches. For the qualitative evaluation of content validity, experts in the fields of health education and health promotion, physical education, and psychometrics were asked to evaluate the questionnaire in terms of syntax, use of proper vocabulary, necessity, significance, placement of the items, and scoring. The quantitative evaluation of content validity was conducted using content validity ratio (CVR)

and content validity index (CVI). To determine the CVR of the scale, 16 experts scored each item on a 3-point Likert scale (Necessary; Useful but not necessary; and Unnecessary). According to Lawshe's table, items whose CVR is above 0.49 are retained [23]. Evaluation of CVI was conducted using the Waltz and Bausell [24] approach: the experts rated the relevancy, clarity, and simplicity of each item on a 4-point Likert scale. Waltz et al. [25] recommend a score of 0.79 and above for accepting the CVI of an item. During the CVR determination, nine items were removed, and five items were modified. Regarding the CVI values, all items met the acceptance criteria, and no item was removed in this step. Total CVR and CVI for the whole questionnaire were 0.86 and 0.98, respectively. Thus, the number of the items in the questionnaire shrank to 65 items (Table 1).

2.2.2. Step 2: Face validity assessment

Face validity was determined through qualitative and quantitative methods. First, 15 study participants from the target group (Iranian gas refinery workers) were interviewed and asked to comment on the presence of difficult phrases, lexical ambiguity, or different perceptions in each item of every construct and to express the appropriateness and coordination of items with the main purpose of each [26]. After the views of the target group were collected, necessary changes were made in the items.

To check quantitative face validity, the instrument was then provided again for 15 members of the target group, who were then asked to rate each item in terms of importance on the Likert scale (it

Table 2
Participants' demographic characteristics and physical activity (PA) level

Variable		Frequency (%)
Age (years)	≤35	81 (17.8)
	45-36	**275 (60.4)**
	45-55	75 (16.5)
	≥56	24 (5.3)
Work Experience (years)	≤10	102 (22.4)
	11- 20	**246 (54.1)**
	≥21	107 (23.5)
Type of Job	Official	196 (43)
	Shift Worker	129 (28.4)
	Manual Laborer	74 (16.3)
	Unit Supervisor	56 (12.3)
Educational Status	Non-Diploma	67 (14.7)
	Diploma	50 (11)
	Associate Degree	66 (14.5)
	Bachelors' Degree	185 (40.7)
	Master's Degree and higher	87 (19.1)
Marital Status	Married	345 (75.8)
	Single	92 (20.2)
	Divorced	18 (4)
Body Mass Index (BMI)	Underweight	0 (0)
	Normal Weight	138 (30.3)
	Overweight	260 (57.1)
	Obese	57 (12.6)
Physical Activity (PA)	Low	261 (57.3)
	Moderate	191 (42.0)
	High	3 (0.7)

Table 3
Classical analysis of results obtained for Items

Variable	CITC	M (SD)
Self-Regulation	0.745 (0.683, 0.841)	2.88 (1.320)
Perceived Outcome	0.823 (0.751, 0.900)	4.42 (0.887)
Self-Efficacy	0.756 (0.697, 0.807)	3.19 (1.157)
Organizational Support	0.836 (0.679, 0.923)	3.02 (1.073)
Barrier	0.850 (0.703, 0.934)	2.20 (1.151)
Social Support	0.707 (0.457, 0.856)	2.39 (1.203)

Note. CITC = Corrected Item Total Correlations.

Table 4
Factor loadings for exploratory factor analysis (EFA) for the PAWPQ-SCT (N = 455)

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
PO3	871/0					
PO7	868/0					
PO12	865/0					
PO6	863/0					
PO4	857/0					
PO15	850/0					
PO8	845/0					
PO14	834/0					
PO13	832/0					
PO10	825/0					
PO1	791/0					
PO5	789/0					
PO11	778/0					
PO9	749/0					
PO16	749/0					
PO2	715/0					
OS3		939/0				
OS4		921/0				
OS8		915/0				
OS5		888/0				
OS7		888/0				
OS6		871/0				
OS9		861/0				
OS10		811/0				
OS11		737/0				
Ba4			936/0			
Ba6			925/0			
Ba8			924/0			
Ba7			913/0			
Ba5			880/0			
Ba3			776/0			
Ba2			771/0			
Ba1			707/0			
SS6				898/0		
SS5				881/0		
SS3				859/0		
SS2				831/0		
SS9				809/0		
SS1				758/0		
SS4				657/0		
SS10				645/0		
SS8				496/0		
SR9					826/0	
SR11					778/0	
SR5					764/0	
SR8					759/0	
SR2					730/0	
SR10					711/0	
SR7					677/0	
SR6					623/0	
SR12					619/0	
SE8						829/0
SE4						816/0
SE5						816/0
SE7						803/0
SE6						785/0
SE3						769/0
SE2						755/0
Total	230/12	043/7	623/6	928/5	689/5	142/5
% Of Variance	087/21	143/12	420/11	221/10	808/9	865/8
% Cumulative	471/29	554/41	629/52	407/62	633/68	544/73

Note. Factor 1 = Perceived Outcome (PO), Factor 2 = Organizational Support (OS), Factor 3 = Barrier (Ba), Factor 4 = Social Support (SS), Factor 5 = Self-Regulation (SR), Factor 6 = Self-Efficacy (SE).

does not matter at all; it does not matter; it almost matters; it matters and it matters very much) from 1 to 5. The impact scores for the importance of points 5 and 4 were then calculated separately through 'importance $\times$ relative frequency [%] = the item impact score'. Finally, the mean impact score of each item was determined, and items with an impact score higher than the cut-off point of 1·5 were accepted. Moreover, no item was removed in this step (Table 1) [26].

2.2.3. Step 3: Construct validity assessment (EFA, CFA, and Classical Analysis of Items)

The construct validity of the instrument was assessed using the classical item analysis, the exploratory factor analysis (EFA), and the confirmatory factor analysis (CFA). In this study, following Bentler and Chou and considering six persons per item and a dropout of 10%, 480 employees of a gas refinery in southern Iran were selected as the research participants [27]. Inclusion criteria were willingness to participate in the study, working at the operation region during the research period, the age range of 25-60 years, informed consent, and not suffering from a specific illness limiting PA. Unwillingness to participate or continue participation and incomplete responses to the questionnaire were exclusion criteria. The stratified proportional sampling method was used to select the participants according to the type of their job positions (administrative, shift worker, manual worker, and supervisor). After collecting the required data, EFA was performed. Principal Component Analysis (PCA) with Varimax rotation and a minimum factor loading of 0.4 was used to extract data, and factors were determined based on Eigenvalue >1 and using a scree plot (Fig. 2.). After running the factor analysis and removing inappropriate items, ceiling and floor effects were evaluated.

In the classical analysis step, the items were assessed in terms of mean, variance, kurtosis, and Cronbach's alpha. The acceptance threshold was between −3 and +3 for kurtosis, >0.4 for corrected item total correlations (CITC), and >0.7 for Cronbach's alpha [28–30]. Then factor analysis was performed to validate the constructs obtained from EFA using fit indices.

2.2.4. Step 4: Reliability assessment (Internal Consistency and Stability)

The internal consistency of the whole instrument (final version) and its subscales (i.e., items extracted by the factor analysis) was calculated using Cronbach's alpha coefficient for all samples (n = 455). The test-retest method was used to investigate the stability of the instrument, for which the tool was completed twice (two weeks apart) by 30 persons who were not among the final participants of the study, and the correlation coefficient between the scores obtained in the two occasions was calculated.

3. Data analysis

The data analysis was performed with SPSS$_{22}$ and AMOS$_{20}$. Descriptive statistics were used for presenting quantitative variables, and CVI, CVR, and impact score were used to assess quantitative content validity. The normality of quantitative data was checked using the Kolmogorov-Smirnov test. The fitness of the data for EFA was tested using the Kaiser-Meyer-Olkin (KMO) index, Bartlett's sphericity test, model fit tests, the Chi-square to the degree of freedom ratio (CMIN/DF), Comparative Fit Index (CFI),

Normal Fit Index (NFI), Toker-Lewis Index (TLI) (or unadjusted fit index), and Root Mean Square Error of Approximation (RMSEA). The acceptance level was 1-5 for CMIN/DF, >0.9 for CFI, IFI, NFI, and TLI, and <0.08 for RMSEA [31,32].

4. Results

Out of 480 completed questionnaires, 455 responses met the inclusion criteria and proceeded to the data analysis (inclusion criterion was 5% unanswered items). The relevant tool was evaluated in a survey. The results obtained for compiling the items, checking content, and face validity are presented in the Methods section. The survey findings are presented below in four sections: Descriptive characteristics, classical item analysis, and EFA, CFA, and reliability assessment.

4.1. Descriptive characteristics

Most of the participants were in the age range of 36−45 years (60.4%), most education status was bachelor's degree (40.7 %), and less than half of the participants had an office job (43%). Additionally, the PA level was low in 261 (57.3%) of the employees. Table 2 presents the participants' demographic features and their PA level.

4.2. Classical item analysis and exploratory factor analysis (EFA)

In examining the floor and ceiling effects, the relative frequency of the minimum (score 65) and maximum (score 325) possible score that could be obtained from the tool (65 items) in this step was zero. Skewness and kurtosis between -3 and +3 and CITC were >0.4 for the dimensions of the questionnaire. It showed that all items had acceptable criteria; hence, no item was removed in this step (Table 3). Items 4 and 5 of the organizational support construct and Items 7, 8, and 9 of the social support construct were reversed.

In exploratory factor analysis, KMO indicated that the sample size was adequate. Moreover, the index of Bartlett's sphericity test at the significance level of 95% was (P < 0.00, KMO = 0.906, X^2 = 328007/49), reflecting that the structure of the correlation matrix was a good fit with the factor analysis. In this regard, EFA revealed a six-factor model with a total variance of 73.54%. Then the following items with a factor loading <0.4 were removed: items 1, 3, and 4 of the self-regulation construct, item 1 of the self-efficacy construct, item 7 of the social support construct, and items 1 and 2 of the organizational support construct. Furthermore, the two constructs of value and outcome expectation fell under the same factor and, therefore, were merged as perceived outcomes. According to the findings, six explanatory factors were identified to explain the PA at Workplace Questionnaire (PAWPQ) based on the Social Cognitive Theory (SCT) (Table 4).

4.3. Confirmatory factor analysis (CFA)

The confirmatory factor analysis revealed an optimal fit for the six-factor model, whose fit indices were acceptable, confirming the questionnaire's appropriate construct validity (RMSEA = 0.052,

CFI = 0.917, NFI = 0.878, TLI = 0.905, IFI = 0.917, CMIN/DF = 2.818), (Table 5, Fig. 3.).

4.4. Reliability

Regarding the reliability of the questionnaire, Cronbach's alpha coefficient of the questionnaire dimensions ranged from 0.91 to 0.97 and was 0.90 for the total questionnaire. To evaluate stability, the PAWPQ-SCT was administered twice to a subsample of 30 subjects at an interval of two weeks. The ICC was 0.85 for the total questionnaire, and ranged between 0.85 and 0.94 for its dimensions (Table 6).

5. Discussion

According to the findings of the present study, the items were consistent with the scales, confirmed by the means and variances of the scores obtained for each item, as well as the correlations among all items. Such evidence reflected the favorable convergence of the data. In this study, 78.9% of the participants had inadequate PA. This finding was consistent with the findings reported by Danaei et al. [33] and Mazloumi Mahmoudabad et al. [34]. Accordingly, it seems necessary to scrutinize the determinants of physical behavior in populations. However, Daniali et al. [35] Mahmoudi et al. [36], and Ashouri-Ahmadgoorabi et al. [37] reported contradictory findings, which may be explained by the differences in the participants' gender (*examined both men and women*), their occupations, and employed tools. For example, Mahmoudi et al. [36] used the extended form of the IPAQ, while Daniali et al. [35] utilized the standard form of the Health Promoting Lifestyle Profile (HPLP) questionnaire. On the other hand, the short form of the IPAQ was used in our study to evaluate employees' PA.

According to the results of this study, the proposed instrument had the criteria required to verify its content and face validity. Moreover, all items of this scale acquired an impact score >1.5. According to the results of PCA with varimax rotation and minimum eigenvalue, 58 items were identified in the form of six factors extracted through exploratory factor analysis. The Perceived Outcome (PO) factor, accounting for 21.08 % of the model variance, was the strongest predictor and Self-Efficacy (SE) factors, accounting for 8.86 % of the model variance, was the weakest predictor in the model. The factor loads of the items ranged from 0.49 to 0.93, and the cumulative variance for the whole model was 73.54 %. Some experts argue that an instrument has favorable construct validity if its factors extracted during factor analysis can explain >50% of the total variance [38]. According to our findings, the internal consistency of the whole instrument was acceptable, indicating the plausible homogeneity of the questionnaire's items in assessing regular PA behavior in the target group. This implies that this questionnaire can be used in similar studies. Moreover, CFA supported the six-factor construct of the conceptual research framework and the acceptable fit of this model in the target population. Ramirez et al. reported that the measured SCT constructs were a good fit for predicting children's PA behavior [39]. Lubens et al. [40] and Ardestani et al. [41] assessed the PA behavior of teenage girls using the SCT and confirmed the appropriate fit of the questionnaire. Lee et al. [42] revealed that social cognitive constructs could predict 58% of the variance in the target variable.

The main strength of this study was using the SCT framework to investigate the PA behavior of a diverse group of employees regarding their individual and occupational characteristics. The present study examined employees working in one of Iran's gas refineries, which limits the generalization of the findings to all

Table 5
Fit indices of PAWPQ-SCT

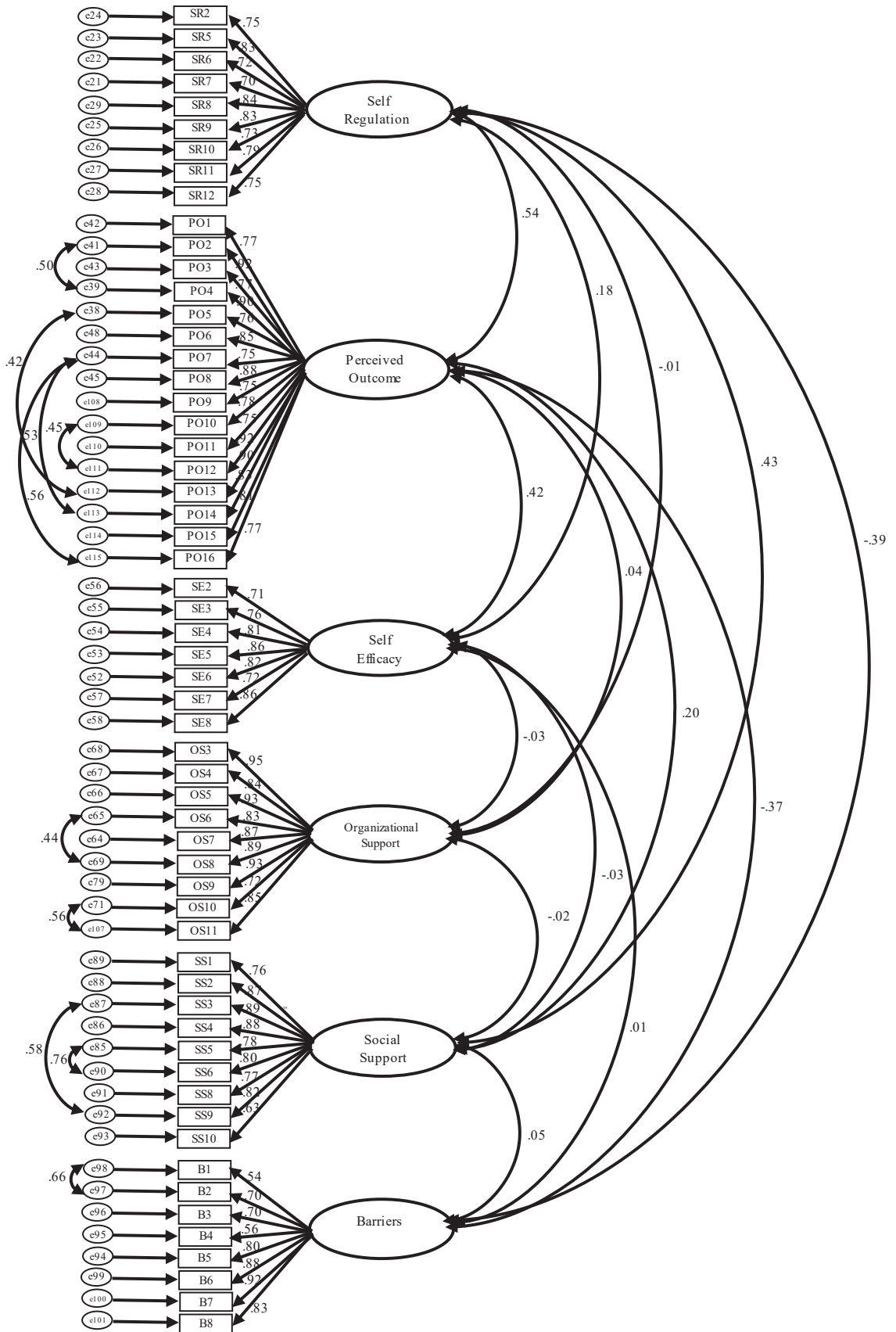| Model fit indices	CMIN/DF	DF	CMIN	NFI	IFI	RMSEA	CFI	TLI
Acceptance level	2.818	1494	4209.917	0.878	0.917	052/0	0.917	0.905

Fig. 3. A confirmatory factor model for PAWPQ-SCT with standard factor loadings.

Table 6
Reliability of PAWPQ-SCT

Constructs	Item	Internal consistency (N = 455)	Intraclass correlation (N = 30)
Perceived Outcome	16	0.97	0.89
Barrier	8	0.96	0.88
Organizational Support	9	0.96	0.85
Social Support	9	0.91	0.90
Self-Regulation	9	0.93	0.94
Self-Efficacy	7	0.92	0.90
Total	58	0.90	0.86

Iranian employees. It is recommended to evaluate the applicability of the PAWPQ-SCT for other employees in different workplaces. Furthermore, the short forms of this tool can be developed more comprehensively in future studies.

6. Conclusion

This study verified the acceptable psychometric properties of the PAWPQ-SCT scale in a population of Iranian employees. According to our findings, this scale can be used as a valid and reliable instrument to evaluate PA behavior in employees and develop effective educational interventions for workers and their managers.

6.1. Limitations

Limitations of the study include the large number of items in the questionnaire, responding to the questions in the form of self-reporting, and this study was conducted on Iran gas refinery workers, which can limit the generalization of the results to all employees in the workplace. An additional limitation is not examining the convergent validity and relationship of PAWPQ-SCT with another scale measuring the same variable.

7. Ethical statement

The article was extracted from a research proposal approved by the Research Committee of the Isfahan University of Medical Sciences (Ethics code: IR.SUMS.REC.1399.405). The participants were ensured of the confidentiality of their information, were informed about the research objectives, and submitted their informed consent.

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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