



Original Article

Psychometric Evaluation of the Short Form of Situational Influences Scale for Stretching Exercise among Office Employees Based on the Health Promotion Model

Mohammad Hossein Delshad^{1, 2, 3}, PhD; Sedigheh Sadat Tavafian^{2*}, PhD; Anoshirvan Kazemnejad⁴, PhD

¹Department of Public Health, School of Health, Torbat Heydariyeh University of Medical Sciences, Torbat Heydariyeh, Iran

²Department of Health Education and Health Promotion, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran

³Health Sciences Research Center, Torbat Heydariyeh University of Medical Sciences, Torbat Heydariyeh, Iran

⁴Department of Biostatistics, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran

ARTICLE INFO

Article History:

Received: 01/04/2019

Revised: 03/12/2019

Accepted: 23/12/2019

Keywords:

Muscle

Musculoskeletal system

Muscle stretching exercises

Health behaviour

Posture

Please cite this article as:

Delshad MH, Tavafian SS,

Kazemnejad A. Psychometric

Evaluation of the Short Form of

Situational Influences Scale for

Stretching Exercise among Office

Employees Based on the Health

Promotion Model. JRSR. 2019;6(4):188-192.

doi:

ABSTRACT

Background: Situational influences can facilitate or impede stretching exercise behaviours. However, since there is no measurement to assess situational influences among office employees, it might be difficult to understand the role of situational influences on stretching exercises. The current study aimed to evaluate the psychometric characteristics of Short Form of Situational influences Scale for predicting Stretching Exercise among office employers based on the Health Promotion Model (HPM).

Methods: By multistage cluster sampling method, this cross-sectional study was conducted among 385 office employees selected from the health networks at Shahid Beheshti University of Medical Sciences of Iran (SBUMS) who were assessed through the Short Form of Situational influences Scale. Exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and Cronbach's alpha were employed.

Results: The mean age of the office employees was 39.4 ± 7.76 years. Content Validity Index (CVI) and Content Validity Ratio (CVR) of each question were greater than 0.79. The result of EFA with principal component analysis showed one factor (Situational influences) with 43.6% cumulative variance and KMO with 90.4% ($P < 0.001$). This was a good fit index in CFA. The reliability of the questionnaire was confirmed through acceptable Cronbach's alpha ($\alpha = 0.79$). Regarding CFA, the result showed $RMSEA = 0.048$, $GFI = 0.978$, $AGFI = 0.986$ confirmed with Cronbach's alpha ($\alpha = 79\%$) and $ICC = 0.71$ 95% CI (0.69, 0.79).

Conclusion: The current study revealed that the Short Form of Situational influences Scale for Stretching Exercise is a valid instrument. Therefore, it can be used as a reliable and valid instrument to investigate Stretching Exercise behaviours among office employers.

2019© The Authors. Published by JRSR. All rights reserved.

Introduction

Musculoskeletal discomfort is a symptom often accompanied by physical pain and tiredness. Benzo

research has found sedentary computer workers who report symptoms of discomfort are at increased risk for decreased productivity due to both physical and psychosocial factors [1].

Stretching Exercises (SE) can benefit many daily activities through facilitating muscular flexibility and extension [2]. Work-related Musculoskeletal Disorders

*Corresponding author: Sedigheh Sadat Tavafian, No 212, Department of Health education and Health Promotion, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran. Tel: +98 21 82884547
Email: tavafian@modares.ac.ir

(WMSDs) are a group of preventable disorders that affect muscles, tendons, and nerves which are all involved during daily repetitive activities [3].

Situational influences can facilitate or interfere with stretching exercise behaviours. A large proportion of office employees do not engage in typical exercise programs, which could be prompted/inhibited through associated external and internal motivators, interpersonal influences, situational influences, and barriers [4, 5].

The situational influences on health promotion behaviors, such as exercises, include perceptions of existing options, desires or needs, and aesthetic features of an environment that behaves like exercises. In order for interpersonal interactions to be more likely to act in the direction of behavioral intention, individuals must be associated with and understand the behaviors, aspirations, and information of others and adapt and coordinate themselves with the cognitive symptoms associated with the behavior in question [5].

However, it is difficult to understand that the situational influences for stretching exercises could be different among office employers who work in different workplaces. So that in Iran, there is a lack of instrument to measure situational influences among workplace office employees.

Few studies were conducted with the Short Form of Situational Influences Scale. In this regard, Leonard et al. dealt with situational factors affecting workout involvement factors [6]. A questionnaire was applied on the situational influences Scale on adolescents' physical activity without using educational models. However, in the questionnaire used in Cury et al. study, the individual factors and the situation that affect the intrinsic interest of female adolescents in physical education were addressed in a structural equation modeling analysis. They used Perceived Motivational Climate in Sport Questionnaire [7]. In particular, the idea of the impact of the situational influences on individual goals regarding physical activity in students helped fitting the educational objectives of the health promotion model with the study objectives better.

The reason for designing and evaluating the psychometric properties of the questionnaire in this study is that there is a lack of appropriate instruments for studying the variable of situational influences related to stretching behaviors. Efforts to enhance the knowledge of the factors that influence situational influences, should be considered in educational interventions to increase stretching exercise. Appropriate instruments can facilitate specific methods for evaluating the factors affecting the situational influences of educational programs on stretching exercises.

Health Promotion Model (HPM) is a comprehensive model which determines the influencing factors affecting health promoting behaviours specifically in worksites. This model describes factors such as the situational influence on health behaviours. It has been documented that Iranian office workers commonly exercise but there is no valid instrument to measure real needs of Iranian office employers based on HPM constructs to evaluate the causes for not doing Stretching Exercises (SE).

The current study aimed to evaluate the Short Form of

Situational Influences Scale for Predicting Stretching Exercise among Iranian office employers based on HPM.

Methods

The current cross-sectional study was conducted from June to August 2018. This study is a part of a PhD thesis of Tarbiat Modares University has approved it.

Sampling Method and Sample Size

Totally 385 office employees were recruited from the various 10 health networks at Shahid Beheshti University of Medical Sciences of Iran (SBUMS) by multistage cluster sampling method. The sample size of 385 office employees was anticipated for exploratory factor analysis (EFA) based on the rule of 5 individuals for each object (77×5). Following that, 385 questionnaires were administered, out of which 362 were returned.

Inclusion/Exclusion Criteria

Inclusion criteria were as follows: working in the SBUMS as an employee; working with computer as the main job; and signing informed consent. Excluding criteria was suffering from any disability or illness that prevents stretching exercises for example musculoskeletal discomfort.

The Questionnaire

In the current study, two questionnaires were employed. The first included items of demographic characteristics and the second one was a three-point Likert scale, based on HPM questionnaire for exercise by Pender et al. [5]. We performed extensive search in the literature to select existing questionnaires for assessing stretching exercise behaviour. The short form scale including only 9 items, employed in the current study. The three-point Likert scale ranged from 1 to 4 assigned from never to always. Therefore, total score of the questionnaire was from 9 to 36 points and the higher score showed better status.

Subsequently, to perform content validation, a panel of experts including 15 specialists evaluated the questionnaire for the wording style. The significance of items and scaling were studied too. Accordingly, primary adjustments were made.

After preparing a preliminary version of the tool, we held focus groups with 30 office employees for clarity and importance of the tool. They indicated confusing questions, after which the questionnaire for better comprehensions and interpretation. They also ensured face validity for smooth comprehension and ease of answering.

Data Collection

In the current study, the data were collected by the researcher from the office employees at their workplaces. The situational influences scale of previous study was validated [8].

Content Validity

Content validation and evaluation of the questionnaire for the working style were performed by a panel of experts

including 15 specialists including 6 health education and health promotion specialists, 2 psychologists, one psychometrician, one physiotherapist, one nursing instructor on pain management, one neurology of pain of specialists, one orthopaedic, and one physiatrist. Relevance of items and scaling were also checked. Accordingly, minor changes were applied to the questionnaire.

Face Validity

The face validity of the instrument was assessed by 30 office employees to insure that questions are comprehensible and easy to answer.

Construct Validity

In the current study, Exploratory Factor Analysis (EFA: principle component extraction with varimax rotation) and Confirmatory Factor Analysis (CFA: with maximum likelihood estimation) were applied. Cumulative Variance (CV) of greater than 0.4 and the Kaiser-Meyer-Olkin (KMO) of greater than 0.7 were considered good fit indices in EFA and REMSEA<0.05, GFI>0.9, AGFI>0.9, P>0.05 were considered good fit indices in EFA.

Reliability

Cronbach's alpha values (α) of greater than 0.79 were considered good fit indices for reliability. The test-retest of the scale with a 2-week interval was performed on 30 PC users.

Statistical Analysis

All statistical analyses were conducted with SPSS version 16 and AMOS22. Furthermore, a t-test was used to compare the two groups and the Kolmogorov-Smirnov test was used to assess the normality distributions of the variables.

Ethical Issues

All ethical principles were considered in the study. The ethics committee of Tarbiat Modares University

Table 1: Distribution of Demographic Variables of the studied office employees

Variable	No. (%)
Age, y	
≤25	35 (9.7)
26-30	44 (12.2)
31-35	117 (32.3)
>35	166 (45.8)
Marital status	
Single	140 (38.7)
Married	222 (61.33)
Educational level, y	
Under<14	76 (21)
Bachelor=16	166 (45.8)
Upper Bachelor>18	120 (33.2)
Stretching Exercise	
Yes	128 (35.3)
No	234 (64.7)

approved the study protocol with ethics committee code (IR.TMU.REC.1395.329). Informed consent was obtained from all participants.

Results

The mean age of the 362 office employees was 39.4±7.76 years. Most office employees were married 222 (61.33%) and had Bachelor education 166 (45.8%). CVI and CVR of each question were greater than 0.79. The results of the ICC indicated precise and suitable stability (ICC=0.78, 95% CI (0.70-0.88)) (Table 1).

The result of EFA with principal component analysis showed Interpersonal influences factor with 43.6% cumulative variance, and KMO was 90.4% (P<0.001). This was a good fit index in CFA. The reliability of the questionnaire was confirmed by identifying factors with a Cronbach's alpha. The result showed REMSEA=0.048, GFI=0.978, AGFI=0.986 confirmed with Cronbach's alpha (α =79%) and [ICC=0.71 95% CI (0.69, 0.79)] (Table 2 and Figure 1).

Table 2: Regression Weight Extracted From EFA and CFA in addition to validity and reliability goodness of fit index

Question	Item Weight Based on EFA	Item Weight Based on CFA
Never Sometimes Often Always		
I try to understand the right ways of doing stretching exercise.	B	B (T Value)
At work, there are good conditions for stretching exercise.	0.67	0.55 (7.43)
If my work environment is busy, I can even do stretching exercises without planning.	0.72	0.58 (7.72)
I can stretch exercise easily on my working desk.	0.73	0.64 (8.23)
At work, there are cheat codes for stretching exercise.	0.79	0.66 (8.41)
At work, I support stretching exercise during rest periods and interruptions.	0.77	0.65 (8.38)
While working with my computer I'm sure the software installed on my computer's desktop is an automatic reminder to perform stretching exercise.	0.74	0.646 (6.87)
In order to save time, I sit at the desk and think of stretching exercise at training sessions.	0.78	0.65 (7.32)
On my computer, there is a guide for using the auto-exercising software.	0.69	0.53 (7.08)

EFA Goodness of Fit Index: KMO=90.4%; % Cumulative of Variance=43.6%

CFA Goodness of Fit Index: REMSEA=0.048; GFI=0.978, AGFI=0.986; P value<0.001

0.71 % (0.69, 0.79%) ICC=95% CI

Score range (5-25) with higher score means better status

Response options

1 - Non at all 2 - Much 3 -Very much 4- Too much 5-no Difference

CFA, confirmatory factor analysis; EFA, exploratory factor analysis; KMO, the Kaiser-Meyer-Olkin.

EFA goodness of fit index: KMO=90%; $\chi^2/df=1.5$; P>0.03.

CFA goodness of fit index: REMSEA=0.059; GFI=0.96, AGFI=0.98; P<0.05

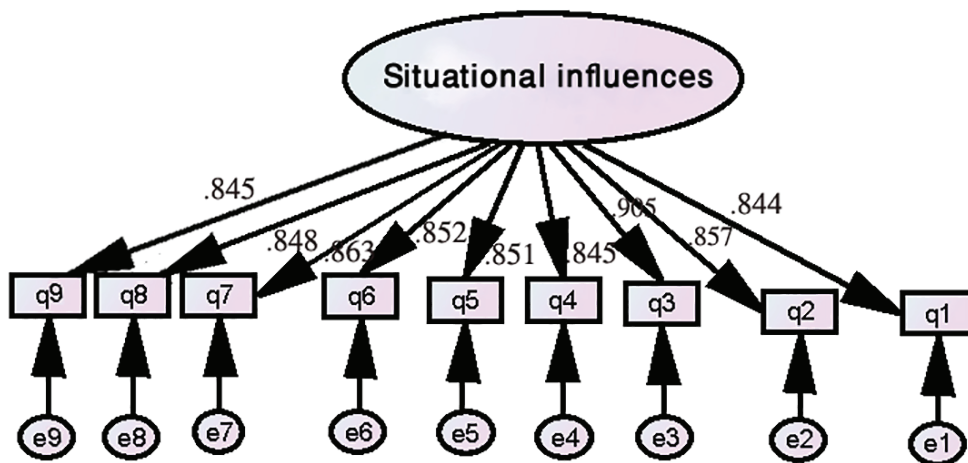


Figure 1: Model Path Using Confirmatory Factor Analysis

Finally, in the validity for to confirm, situational influences as a predictive factor for stretching exercise, revealed with positive significant relationship ($P > 0.001$). Because of the significant of situational influences, good predictive validity was obtained. This one values showed good reliability according to CR index.

Discussion

The current study evaluated the reliability/validity of the situational influences questions among office employees. The results of the present study showed that the situational influences structure was a valid and reliable tool, which could be used to measure situational influences regarding stretching exercise among office employees. Additionally, this situational influences measure can explain why office employees in their workplace do little stretching exercise while they are actually inclined to do it.

In other words, according to the HPM, in the current study, based on CFA analysis, all nine items of situational influences scale were verified in the target group.

The psychometric evaluation of the situational influences scale in the present study showed that this scale was a valid and reliable instrument to measure situational influences for stretching exercise among Iranian office employees; the result was consistent with those of previous studies [9].

In addition, in other studies, such as Jeong et al. [10] and Ronnis et al. [11] Similar reliability was compared to the study. This means that the procedures of psychometric evaluation in the present study, in terms of reliability, are consistent with previous evidence in which the authors attempted to validate the situational impact scale. The results of the current study confirmed high internal reliability that was consistent with previous studies [12]. Furthermore, situational variables findings were supported by the findings of other studies [13].

The current study had good reliability, which was consistent with the results of the study by Bajamal, Brooks et al. and Chenary et al in which Cronbach's alpha coefficient (α) of the instrument was acceptable [14-16].

The Cronbach's alpha of the situational influences was similar to the previous study [17].

Furthermore, the current study findings supported the results of previous researches in which the internal consistency was measured through Cronbach's alpha coefficient, a two-week interval test-retest correlation, and also split-half coefficient for the nine-item situational influences scale which were all optimal [17]. In addition, in the previous study by Pender et al. on the EFA, it was revealed that the factors explained 43.6% of the total variance [18-20]. Therefore, the current study verified that the situational influences scale was an effective measure to encourage office employees for stretching exercise.

Despite the strong points of the current study, there were some limitations; for instance, the data used in this study were collected through self-report that might obscure the results. Furthermore, the office employees were randomly selected, but they all came from one university and the findings could not be generalized to all Iranian office employees. EFA in the current study was not the main finding and was reported solely to make comparisons with CFA. Despite all the mentioned limitations, the results were supported by earlier published evidence. The findings showed that this instrument could be used to measure behavioral changes of stretching exercises among the office employees who are going to change their behaviors. We strongly recommend that further studies be conducted including larger sample sizes and different subgroups.

Conclusion

The current study approved the Short Form Situational Influences Scale for Stretching Exercise among Iranian office employees. Also, this study could be a initiative for further investigations to confirm this instrument as a tool for assessing factors which may influence stretching exercise behaviors.

Acknowledgment

The authors appreciate the research deputy of Tarbiat

Modares University for funding and would like to thank all the participants.

Conflict of Interest: None declared.

References

1. Benzo RM, Kruse NT, Hughes WE et al. Acute Effects of Interrupting Sitting on Discomfort and Alertness of Office Workers. *Int J Occup Environ Med.* 2018;60.9:804-809.
2. Richmond H, Lait C, Srikesavan C et al. Development of an exercise intervention for the prevention of musculoskeletal shoulder problems after breast cancer treatment: the prevention of shoulder problems trial (UK PROSPER). *BMC Health Serv Res.* 2018;18.1:463.
3. Cheung K, Szeto G, Lai GKB et al. Prevalence of and factors associated with work-related musculoskeletal symptoms in nursing assistants working in nursing homes. *Int J Environ Res Public Health.* 2018;15.2:265.
4. Aro AA, Agbo S, Omole OB. Factors influencing regular physical exercise among the elderly in residential care facilities in a South African health district. *Afr J Prim Health Care Fam Med.* 2018;10.1:1-6.
5. Pender NJ, Murdaugh CL, Parsons MA. *Health promotion in nursing practice.* New York: Prentice Hall; 2015. 1-200.
6. Wankel LM. Personal and Situational Factors Affecting Exercise Involvement: The Importance of Enjoyment. *Res Q Exerc Sport.* 1985;56.3:275-282.
7. Cury F, Biddle S, Famose JP et al. Personal and Situational Factors Influencing Intrinsic Interest of Adolescent Girls in School Physical Education: a structural equation modelling analysis. *Edu Psycho.* 1996; 16.3: 305-315.
8. Delshad M, Tavafian S, Kazemnejad A. Determinants of Stretching Exercise Behavior among Office employees based on Health Promotion Model with Added Constructs. *JLUMHS.* 2019;18.02:152-159.
9. Delshad M, Tavafian S, Kazemnejad A. Designing and Psychometric Evaluation of Stretching Exercise Influencing Scale (SEIS). *J BMJ OPEN* 2019; 9.5: e026565.
10. Jeong N, Lee MH. A Predictive Model on Health Promotion Behavior in Women who Immigrate for Marriage. *J Korean Acad Nurs.* 2010;40.5.
11. Ronis DL, Hong O, Lusk SL. Comparison of the original and revised structures of the health promotion model in predicting construction workers' use of hearing protection. *Res Nurs Health.* 2006;29.1:3-17.
12. Ng JY, Chan AH. The Work Ability of Hong Kong Construction Workers in Relation to Individual and Work-Related Factors. *Int J Environ Res Public Health.* 2018;15.5:990.
13. Park YI, Joo N. Structural relations of late night snacking choice attributes and health promotion behaviors according to dietary style of industrial workers. *Nutr Res Pract.* 2014;8.4:432-438.
14. Bajamal E, Robbins LB, Ling J et al. Physical activity among female adolescents in Jeddah, Saudi Arabia: a health promotion model-based path analysis. *Nurs Res.* 2017;66.6:473-482.
15. Brooks JM, Kaya C, Chan F, Thompson K, Sánchez J, Cotton BP, et al. Validation of the Behavioural Regulation in Exercise Questionnaire-2 for adults with chronic musculoskeletal pain International. *J Therapy and Rehabilitation.* 2018;25.8:395-404.
16. Chenary R, Noroozi A, Tavafian SS, Firoozabadi MSJIRCMJ. Effective factors on health-promoting lifestyle among iranian chemical veterans in 2014 based on health promotion model: A path analysis. *Iran Red Crescent Med J.* 2016;18.8.
17. Mehrabbeik A, Mahmoodabad SSM, Khosravi HM, Fallahzadeh HJEP. Breakfast consumption determinants among female high school students of Yazd Province based on Pender's Health Promotion Model. *Electron Physician.* 2017;9:5061.
18. Wu TY, Pender N. Determinants of physical activity among Taiwanese adolescents: an application of the health promotion model. *Res Nurs Health.* 2002;25:25-36.
19. Kholifah SN, Yumni H, Susanto T. Structural model of factors relating to the health promotion behavior of reproductive health among Indonesian adolescents. *Int J Nurs Sci.* 2017;4.4:367-373.
20. Jeon MS, Kim H-O. A Predictive Model of Health Promotion Behavior in Obese School-Age Children. *J Korean Acad Nurs.* 2010;40:2.