Original article

International Journal of Musculoskeletal Pain prevention

Volume 2, Number 2, Spring 2017

The status of Tension Exercise Behavior among Iranian Office Workers based on Trans Theoretical Model

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Background: Exercise behavior is associated with decreased risks of mortality resulted from all causes. While people suffer from inactivity, doing stretching exercise as an important daily activity increases joints and muscles full range of motion and flexibility. This study aimed to assess the status of tension exercise behavior among Iranian office workers based on Trans-Theoretical Model (TTM).

Methods and Materials: In this cross sectional study, 420 office workers were selected randomly. The A self-reported questionnaire based on TTM and tension exercise behavior were used to collect data through self-reporting and analyzed by SPSS software version 16.

Results: Totally 420 office workers with mean age 37.12 ± 8.031 years were assessed. The results found that 11.7 % of the participants (N = 49) were in pre-contemplation stage, 32.9% (N = 138) in contemplation, 10 % (N = 42) in preparation stage, 24.5% (N = 103) in action stage and % 21 of participants (N = 88) were in maintenance stage. There were significant relationship between stages of TTM and tension exercise behavior.

Conclusions: This study indicated that about the majority of office workers were in contemplation and pre-contemplation stag regarding tension exercise. Therefore, designing proper educational intervention is strongly recommended

Keywords: Tension exercise, Change model, Office workers

Introduction

Exercise is associated with decreased risks of mortality resulted from all causes (O'Donovan et al., 2017). While people suffer from inactivity, stretching as an important daily activity increases joints and muscles full range of motion and flexibility (Bishwajit et al., 2017).

With the repetitive daily usage of computers, people habitually adapt a slouched posture causing rounded shoulder posture, neck pain, and back pain (Caputo, Di Bari, & Orellana, 2017).

One of the ways to increase exercise capacity is to implement an appropriate training program targeting muscle endurance and tension-flexibility. In recent years, the workplace has appeared to be a prime setting for implementing such a program, since it offers employees the opportunity to make healthy choices, and therefore, potentially limits their risk exposure and prevents the development of work related musculoskeletal pain (Balaguie et al., 2017).

People identified as inactive should be subjected to certain conditions and be trained stretching. Moreover, the execution of a worksite adapted flexibility exercise program aimed at improving the level of exercise capacity seems to be a convenience approach that could remove the barrier of practicing flexibility exercises not

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Access this article online	
Website: ijmpp.modares.ac.ir	
DOI:	

[DOR: 20.1001.1.24765279.2017.2.2.5.1]

directly related to work activities (Balaguie et al., 2017).

Given the world population, patterns of exercise, follow-up, and care for people with low mobility is a criterion (O'Donovan et al., 2017).

Physical activity become desirable if the following actions such as: determining an individual's physical fitness level using Trans-Theoretical (Trans-Theoretical Model) Model (TTM), learning the importance of physical activity and maintaining active status of the body using TTM based on the person's stage of exercise behavior, flexibility testing through sitting and stretching self-assessment exercises is recommended. observing the brochures and training manuals in the field of physical activity (flexibility and stretching exercises), re-evaluating the individual's progress in physical activity through using a questionnaire measuring weight and body mass index (Rostami et al., 2017).

To carry out the necessary and useful recommendations in order to improve physical fitness, the employees must also be assessed in terms of physical activity and flexibility while comparing the scores with national norms (Shuval et al., 2017).

For example, in the first stage of change, pre-contemplation, the following steps should be taken beforehand. In this stage individuals do not have a serious decision for performing stretching exercises However, following events such as informing and educating the public about the importance of stretching exercises for health improvement, encouraging people to do more stretching activities by discussing about the advantages of stretching activities, introducing stretching activities, encouraging people to oppose with change in this approach and giving recommendations to person about the readiness exercises stage will be happened in this stage.

Contemplation stage in which individual thinks about performing more physical activity. Therefore, in this stage, the events such as thinking about the barriers and causes of inactivity or lack of stretching and offering individual the solutions to overcome these obstacles, emphasizing on people agreeing with the exercise and reducing the number of people opposing to more stretching activities will be done. Also, at this stage, the focus may be on helping and advising people to do sports. In addition in this stage, the individuals learn how to overcome inactivity and encourage more mobility and also increase their motivation to do some stretching activities.

In preparation stage of TTM, individual performs tensile activities not correspondent to the required standard in the field. In action stage TTM, individual performs activities based on tensile instructions for less than 6 months. Finally, in maintenance phase, individual performs stretching activities based on the guidelines for more than 6 months (Walker et al., 2017).

This study aimed to assess the status of the office workers' tension exercise performing based on TTM.

Methods and Materials

This study was conducted during May to September 2016. The study population consisted of 420 office workers of Shahid Beheshti University of Medical Sciences (SHBUMS) in Tehran, Iran. In this analytical research, 420 office workers were selected based on the random allocation sampling method. In this study, cluster sampling method was applied, so at first each one of the Health network or health centers affiliated to SHBUMS was considered as a cluster. Then, from each one of these three clusters, three health network or health centers were selected randomly, and the eligible office workers were proportionally chosen. The data gathering tool was a self-reported questionnaire based on the TTM and tension exercise, which were completed by the office workers in the health centers. In order to comply with ethical considerations, goals and the nature of this study was described for office workers, and for their participation in this study, they signed consent forms. Inclusion criterion was just personal satisfaction to enter into the study. Exclusion criteria was any disability or illness that prevents stretching exercises. The research instrument included some questions adopted from TTM, some question about tension exercise, as well as some demographic information such as age, education, marital status, work experience, and pain. The questionnaires were filled out by office workers as their self-report.

The questionnaire content and face validity was confirmed by a panel of 15 experts. The questionnaire was developed after assessing the existed literature regarding the themes of the content held on the musculoskeletal pain prevention and tension exercises. For more

[DOR: 20.1001.1.24765279.2017.2.2.5.1]

reform, there were 15 experts, and specialists in the field of health education and exercises who gave comments and feedback. Content Validity Index (CVI) greater than .79 and Content Validity Ratio (CVR) has been reported as 68% that were acceptable.

To determine the questionnaire internal stability (Cronbach's Alpha), in a pilot stage, a preliminary study was conducted with 30 workers. Moreover, for obtaining the questionnaire reliability, test-retest method was used so that the questionnaire was completed by the workers in two phases with an interval of 10 days. Alpha coefficient computed for the measure in the pilot stage was .86, indicating desirable levels of reliability and consistency of the scales. TTM was evaluated with a question as follows: "Which manifests you select to do tension exercise". There were 5 particular response: 1) I never did not tension exercise and never (to think) plans; 2) I intend to perform tension exercise regularly during the practice tension the next six months (contemplation); 3) I'm going to perform tension exercise regularly during the next month (Preparation); 4) I performed tension exercise Last month (practice); 5) I have done tension exercise regularly for six months (Maintenance). The answers to these questions were rated through a 5-point Likert-type rating scale ranging from never to highly. As for behavior, there were four questions practicable to tension exercise. The data were then processed and analyzed by SPSS software version 16. To further analyze the information, frequency distribution of one way generalized linear regression model was applied. The significance level was .05.

In this study, tension exercise was defined as doing the tensions behavior for three or more times a week for 20 minutes or more at any time.

Results

Means age of the subjects was 37.12 ± 8.031 years. The rest of demographic characteristics are shown in Table 1.Regarding the rate and status of predicting tension exercise through TTM it was found that the stages of change model were capable in predicting the stages of behavior change in 54% of tension exercise behaviors. This study confirmed the effectiveness of the TTM in predicting the tension exercises among office workers of Tehran, Iran. Frequency distribution of people based on TTM is shown in Table 2.

Table 1. Demographic characteristics of studied Office workers.

Variables	Levels	Number (%)
Gender	Male Female	113 (26.91) 307 (73.19)
Occupation	-Related to musculoskeletal problems- Non relevant to musculoskeletal problems	276 (65.75) 144(34.35)
Employment Status	Formal Informal	125 (29.89) 295 (70.21)
Residency	City Village	415 (98.8) 5 (1.2)

Table 2. Frequency distribution of participants based on TTM.

Stages of Changes	N	%
Pre-contemplation	49	11.7
Contemplation stage	138	32.9
Preparation stage	42	10.0
Action stage	103	24.5
Maintenance phase	88	21.0
Total	420	100.0

To evaluate the relationship between the TTM and tensional exercise, spearman's correlation test was used (Table 3). As this Table shows, there was a significant correlation between the stages of behavior change and tensional exercises in such a way that office workers showed more tendencies to adopt change and perform tensional exercise ($P < .05$).

Table 3. Generalized linear regression model and factors influencing Tension exercise.

Variables	*β*	T	*P*-Value
Gender	0.034[a]	0.689	.491
Job	0.017[a]	0.355	.722
Employment Status	0.056[a]	1.076	.282
Residency	.033[a]	0.666	.506
Pre-contemplation	0.033[a]	10.51	.001
Contemplation stage	1.217[a]	7.38	.001
Preparation stage	0.06 [a]	^.18	.0٠008
Action	-1.004[a]	3.71	.01
Maintenance phase	0*	-	-

[a] a prophesied in the model and pattern.
*The base is considered.
Total. $R^2 = 0.540945$ [a] S.E = 3.93 Maintenance phase.

[DOR: 20.1001.1.24765279.2017.2.2.5.1]

An extended linear regression model was applied in analyzing the influence of gender, job, employment status, address, and familiarity with tension exercise on TTM. Results are shown in Table 3.

Likewise, there was no significant relationship between TTM and gender, marriage status, job, employment status, address level using Chi-square test ($P > .05$) (Table 4). A significant relationship was observed between tension exercise and TTM using the Chi-square test so that office workers showed more tendency to adopt change and tension exercise ($P < .05$).

Table 4. Comparison of stages of TTM in the studied office workers based on demographic variables.

Stages of change		Pre-contemplation	Contemplation stage	Preparation stage	Action	Maintenance phase	*P*-Value
Gender	Female	33	99	32	79	64	.765
	Male	16	39	10	24	24	
Marriage status	Single	21	46	13	28	23	.265
	Married	28	92	29	75	65	
Job	Related	36	83	29	68	60	.454
	non-work-related	13	55	13	35	28	
Employment Status	Formal	17	50	9	24	25	.143
	Informal	32	88	33	79	63	
Residency	Village	1	1	0	0	3	.200
	City	48	137	42	103	85	
Number of office workers with tension exercise	Yes	3	56	27	100	83	.001
	No	46	82	15	3	5	
Total		49	138	42	103	88	

* Chi-square test.

Table 5. Stages of Trans Theoretical Model (TTM).

Stage	Items
Pre-contemplation	I currently haven't done tensional exercise, and I don't intend to start exercising in the next 6 months.
Contemplation stage	I currently haven't done tensional exercise, but I am thinking about starting exercising in the next 6 months.
Preparation stage	I currently have done some exercises, but not regularly.
Action stage	I currently have done tensional exercise regularly.
Maintenance Stage	I did tensional exercised regularly in the past, but I am not doing so currently.

Discussion

The present study evaluated the relationship between tension exercise and stages of change in TTM in office workers of SHBUMS in Tehran, Iran. The results of the present study showed that the stages of change in this model were capable in predicting and describing the stages of change of tension exercise behaviors among Iranian office workers.

The minority of office workers were in pre-contemplation stage and did not think to do tension exercise in their mind. According to the stages of change model on tension exercise behavior, in pre-contemplation stage, office workers considered the advantages of not practicing this behavior more than its disadvantages thus they were stopped at this stage. Of course, this could be as a result of unawareness of the adverse consequences of not practicing tension exercise, or participants' frequent failures in properly practicing the behavior. Meanwhile, encouragement and raising their awareness concerning tension exercise and risks of inactivity would enable them to move forward onto the next behavior stages.

According to the obtained results, in TTM preparation stage, all five stages of the model were verified in our target office workers. It can be concluded that in our studied office workers, the decision to begin tension exercise behavior or exercising is the same as in study of Ben and co-workers who reported 35% of the studied participants were in contemplation stage, also

[DOR: 20.1001.1.24765279.2017.2.2.5.1]

Sinelnikov and co- workers indicated 18% of the participants were in this stage and ; Wells reported as 18% in this stage, However, Ben study indicated 20%, Sinelnikov study revealed 8% and Wells study stated 11.8 % of their participant were in action stage (Garber et al., 2008; Ben-Ami et al., 2017; Sinelnikov & Wells, 2017).

In present study, the studied office workers verified that there was a significant correlation between the stages of change of TTM and tensional exercise in such a way that office workers showed more tendencies to adopt change and tensional exercise significantly. Regarding the association between gender, job, employment status and residency with tension exercise, the results showed no significant correlation. However, in some previous studies a significant relationship was observed between gender, job, exercise and tension exercise (Chen, Dai & Gao, 2017; Jessor, Turbin & Costa, 2017) .

In the present study, the participants showed more tendency to adopt change in tension exercise. This result is consistent with other studies carried out in other contexts (Ersöz & Eklund, 2017; Guo & Zhang, 2017; De La Cruz et al., 2017; Walker et al., 2017).

Moreover, the results of the other studies with higher relationship supports our results (Rostami et al., 2017). It means that the results of the present study were consistent with previous evidence in which the authors tried to investigate the relationship between exercise and stages of change model. Furthermore, in the Ghiami study, the prediction rate of the stages of change for the exercise was similar to what was found in the present study (Ghiami et al., 2017). In addition, in previous study (Prugger et al., 2017), the Contemplation stage analysis showed 15.9% accuracy in predicting behaviors . Therefore, this study verified that it is possible to predict the stages of change in the office workers who are living in different stages of exercise-related change (Middelkamp et al., 2017).

Consequently, to better prepare individuals for following a moderate physical activity and healthy lifestyle so as to safeguard their own health and prevent diseases, they need to develop specific health behaviors and receive appropriate health training to support such behaviors (Larsen, Carr, & Dunsiger, 2017). In this manner, it seems that a TTM model is capable to serve as an outstanding model in the description and analysis of tension exercise.

Despite the strong points of the present study, there were some limitations for this study. The first one is that all the office workers were female, and only a few were men; so the results of this study cannot be generalized to male office workers. Furthermore, the sample was taken from specific health network or health centers in Tehran, Iran, and the findings could not be generalized to all Iranian office workers.

Moreover, we included just office workers who were in the contemplation and action stages, in so doing, this study cannot be generalized to office workers who are in other stages. Exploring the stages of behavior based on TTM in this study is not the main finding for physical activities; it was just reported for comparison with tension exercise behaviors. Despite all mentioned limitations, the results of our study were supported by other existed published pieces of evidence. Nevertheless, the findings from this study showed that these results could be used for measuring the change in exercise behaviors among males and females office workers who are going to change their behaviors. However, doing more research in future with larger sample size including different subgroups is strongly recommended.

Conclusions

This study verified TTM could be applied to assess the stages of tension exercise behavior among Iranian office workers; however more researchers are needed to confirm these results to be enable to apply them for designing proper interventions.

Acknowledgement

The authors would like to thank research deputy of Tarbiat Modares University for its financial support of this study.

Conflict of Interest

There is no conflict of interest for this article.

Author contribution

SST, MHD: Conducted whole study and had full access to all of the data for analysis. S. S. T, MHD were was involved in drafting the article

MHD took responsibility for conducting the study and the integrity of the data and the accuracy of the data collection.

SST, MHD and AK confirmed the final version of the manuscript**.**

Funding support

Research deputy of Tarbiat Modares University for conduction PhD thesis.

[DOR: 20.1001.1.24765279.2017.2.2.5.1]

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How to cite this article: Delshad, M. H., Tavafian, S. S., Kazemnejad, A., The status of Tension Exercise Behavior among Iranian Office Workers based on Trans Theoretical Model. IJMPP 2017; V2, N2. P: 251-256.

[DOR: 20.1001.1.24765279.2017.2.2.5.1]