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Physical Activity Stage of Change and Its Related Factors in Secondary School Students of Sarableh City: A Perspective from Iran

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Abstract

BACKGROUND: Physical activity is highly beneficial to health. These benefits are so important and indispensable for adolescents.

AIM: The aim of this study was to investigate the Physical activity stage of change and its related factors in the male secondary School students of Sarableh city.

MATERIAL AND METHODS: In a cross-sectional study, 261 male secondary School students possessing the eligibility criteria were selected using the simple random sampling technique. After giving their informed consent, the students filled the stage of change questionnaire and the structures of the transtheoretical model in a self-reporting manner. Using SPSS.21, the data were analysed through One-way ANOVA and Pearson correlation test with a 0.05 level of significance.

RESULTS: The mean age of the students was 16.16±0.89 years. According to the stage of change, 26.8 per cent (n = 70) were in preaction stages (precontemplation, contemplation, and preparation) and 73.2 per cent (n = 191) were in action and maintenance stages. The one-way ANOVA revealed that awareness is raising, self-reevaluation, counter conditioning and reinforcing management differed significantly across stages ($P < 0.05$). However, this difference is not significant for other cognitive and behavioural processes ($P > 0.05$). According to the findings, increase in the self-efficacy, pros and decrease in cons was found by students' progress in the Physical activity stage of change ($P < 0.05$).

CONCLUSION: Self-efficacy and processes of change are warranted when designing Physical activity stage interventions in the adolescents.

Introduction

Physical activity (PA) plays a significant role in maintaining health, especially for adolescents. PA has many different benefits including prevention and reduces the risk of cardiovascular diseases, high blood pressure, and diabetes [1]. Moreover, it also has advantages about the improvement of mental health including improving stress management, reducing anxiety and depression, increasing self-confidence, the spirit of cooperation and academic achievement [2]. It should also be noted that PA is the key to energy consumption and weight reduction [3]. Regular PA is necessary for reinforcing motor skills and empowering the musculoskeletal functions [4]. PA is one of the important aspects of a healthy lifestyle, but many adolescents are not active enough to benefits from it [5] [6]. Obesity which is one of the factors closely linked with heart diseases, high blood pressure, and type 2 diabetes, has had an increasing trend during the last 30 years [7]. According to the World Health Organization (WHO), insufficient PA is among the 4 main causes of death in the world and every year about 2 million people die as a result of this factor [5]. The estimations provided by the WHO show that about 80 per cent of adolescents all around the world do not have sufficient PA [8]. The minimum

amount of sufficient PA for adolescents between 15 and 17 years of age is 60 minutes of intense or moderate activity during the day [9]. According to the WHO, in 2013 about 27.1% of secondary school students had less than 60 minutes of PA during the day, and 15.2 per cent of them are physically inactive [7]. In Iran, According to the Caspian study about investigating the state of behaviors related to students' health, it is estimated that 5.4% of elementary school students, 9.2% of the students in the first level and 13.3% in the second level of secondary school did not have at least 30 minutes of PA per day. 21.9% of elementary school students, 15.6% of secondary school students and 14.4% of secondary school students had reported less than 30 minutes of PA per day [10]. According to the evidence, in determining PA behaviours in adolescents, various factors must be considered. Thus, identifying these factors can provide an appropriate framework for implementing effective health education interventions. Training through school-based interventions is so important for increasing the adolescents' PA [11]. Transtheoretical Model (TTM) is one of the models that properly take these factors into consideration, includes precise planning for behaviour change, and is frequently used by researchers for evaluating PA and improving it. The TTM was introduced in 1980 by James O. Prochaska; it is one of the comprehensive models of behaviour change. The major constructs of TTM are the stage of change (soc), self-efficacy, decisional balance and processes of change.

Following the structure of the SOC, in this model people are faced with different stages of preparation for change, and for behaviour change go through the stages of precontemplation, contemplation, preparation, action, and maintenance. According to this model, people use cognitive and behavioural processes to progress in the SOC, and when their assessment of the benefits (pros) of the behaviour is more than its disadvantages (cons), it will be easier and more probable to move to higher stages. Self-efficacy in doing PA, which refers to the person's judgment regarding his ability for performing athletic behaviours under various circumstances, is the major factor that can facilitate the person's move to higher stages [12]. Thus, the present research aimed at investigating the PA SOC and its predictors according to the TTM in the male secondary school students of the Sarableh city.

Materials and Methods

This research was of a descriptive-analytic study which conducted on 261 male students of the secondary schools of Sarableh city located in the west of Iran, in 2017. The students enrolled in the study using a simple sampling method. The eligibility criteria for entering the study included not having physical disabilities, studying in public schools and studying in secondary schools. To collect the data for the study, first of all, the researches took the required certificates to enter the schools. Afterwards, they explained the objective of the study to the students and filled the informed consent form for them. Thus, the students who filled the form entered the study and filled out the questionnaire. So, a self-report questionnaire was used to calculate demographic characteristics and the TTM constructs related to PA. The 5-item questionnaire by Marcus was used to determine the SOC [13].

Moreover, Blanchard et al., [14] decisional balance questionnaire, the Norman et al., processes of change questionnaire [15] and the Nigg et al., [5] scale was also used to assess the self-efficacy in PA. All of the mentioned questionnaires were scored in 5 points Likert scale. It should be noted that these questionnaires have been used in various studies and their validity and reliability have been confirmed in Iran [16][17]. Finally, data were analysed using SPSS.21 with considering a significance level of 0.05 (confidence interval=95%) and conducting statistical tests including descriptive tests, one-way ANOVA and Pearson correlation.

Results

This study involved 261 secondary school students from four schools including Imam Ali (n = 49), Hesabi (n = 20), Razi (n = 85) and Enqelab (n = 107). The age average of the students was 16.16 ± 0.89 years. Of these 261 students, 167 (64%) lived in urban areas and 94 (36%) in rural areas. The distribution of students in the four schools was as follows: 49 students (18.8%) from Imam Ali, 20 students (7.7%) from Hesabi, 85 students (32.6%) from Razi, and 107 students (41%) from Enqelab. Further details are provided in Table 1.

Table 1: Demographic characteristics of the study participants

Variable		Frequency	Per cent
Location type	Urban	167	64
	Rural	94	36
Family income	Low	127	48.7
	moderate	105	40.2
	Imam Ali	49	18.8
School	Hesabi	20	7.7
	Razi	85	32.6
	Enghlab	107	41
	Underweight	68	26.1
	Normal	170	65.1
BMI	Overweight	21	8.0
	Obese Class I	1	0.4
	Obese Class II	1	0.4

The findings of the study demonstrated that 70 of the participants in the study (26.8%) are in preaction stages (precontemplation, contemplation, and preparation) and the other 191 (73.2%) are in the

action and maintenance stages of PA. Comparison of the average and standard deviation of the cognitive and behavioural processes of change, self-efficacy in performing PA, and the benefits and obstacles of PA are represented in table 2, based on the SOC. The findings of a one-way analysis of variance showed that using processes of consciousness-raising, self-reevaluation and the counter conditioning were significantly different within SOC ($p < 0.05$). But this difference is not significant for processes of dramatic relief, environmental-reevaluation, social liberation, helping relationships and stimulus control ($p > 0.05$). A significant difference in the mean of persons' self-efficacy in different SOC was found. So, higher self-efficacy was related to transition upper stages ($p < 0.05$). Also, the findings were demonstrated a significant difference in the mean of the perceived benefits (pros) of PA by stages ($p < 0.05$). But this difference was not significant for the disadvantages (cons) to PA ($p > 0.05$).

Table 2: Mean and SD of the processes of change, self-efficacy, decisional balance (pros and cons) to PA by SOC

Variables	Pc			C			P			A			M			Sig
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	
Consciousness raising	30	2.5	1.4	12	3.1	1.03	28	2.9	1.2	76	2.9	1	115	3.3	1.2	0.02
Dramatic relief	30	7.7	2.2	12	9.2	3.51	28	8.2	2.4	76	8.6	2.4	115	9.2	2.9	0.44
Environmental reevaluation	30	2.6	1.1	12	3	1.53	28	3.1	1	76	3.1	1.1	115	3	1.4	0.512
Self-reevaluation	30	9.3	2.8	12	11.5	2.5	28	10.3	3.17	76	10.6	2.6	115	11.7	2.7	0.00
Social liberation	30	5.7	2.1	12	6	1.47	28	6.3	1.9	76	6.21	1.9	115	6.6	1.8	0.13
Counter conditioning	30	7.2	2.7	12	8.1	2.88	28	8.4	2.2	76	8	2.8	115	9.2	3	0.00
Helping relationships	30	2.3	1.2	12	3	.95	28	2.6	1	76	2.8	1.3	115	3	1.3	0.06
Reinforcement mangemet	30	2.6	1	12	3.5	1.24	28	2.8	1.2	76	3.1	1.2	115	3.4	1.2	0.00
Self-liberation	30	2.5	1	12	3.2	1.13	28	2.8	1.1	76	3	1.1	115	3.3	1.2	0.02
Stimulus control	30	4.4	1.9	12	5	2.17	12	5	2.1	76	4.8	2.2	115	5.2	2.1	0.24
Self-efficacy	30	28.2	7.5	12	33	9.59	28	28.3	9.8	75	30.1	8.3	115	32.9	9.1	0.01
Pros	30	28	8.3	12	35.5	6.51	28	31.2	7.3	76	32.3	7.1	115	34.4	6.7	0.00
Cons	30	17	5.5	12	14.9	5.01	27	14.7	3.9	76	14.7	3.9	115	15	5.2	0.26

Note. Pc (Precontemplation), C (Contemplation), P (Preparation), A (Action) and M (Maintenance).

Moreover, investigation of the correlation intensity of the processes of change, self-efficacy and pros to PA with the SOC demonstrated that there is a direct and positive relationship between the structures above and the SOC.

Table 3: Correlation between the constructs of the TTM

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Mean	SD
Stage		.17**	.15**	.05	.26**	.15**	.19**	.15**	.20**	.19**	.13**	.17**	.20**	-.07**		
Consciousness -raising	1		.33**	.27**	.49**	.29**	.31**	.25**	.36**	.32**	.25**	.27**	.56**	-.00	3.07	1.2
Dramatic relief		1		.51**	.50**	.37**	.36**	.32**	.39**	.30**	.19**	.28**	.44**	.04**	8.78	2.7
Environmental reevaluation			1	.38**	.31**	.36**	.34**	.39**	.33**	.17**	.31**	.39**	-.02	3.04	1.2
Self-reevaluation				1	.50**	.48**	.38**	.58**	.52**	.26**	.43**	.69**	-.11*	10.9	2.8
Social liberation					1	.45**	.35**	.29**	.29**	.32**	.25**	.45**	.08	6.34	1.9
Counterconditioning						1	.47**	.42**	.36**	.54**	.52**	.47**	-.14**	8.52	2.9
Helping relationships							1	.43**	.28**	.26**	.26**	.38**	-.10*	2.86	1.2
Reinforcement management								1	.53**	.29**	.40**	.53**	-.08	3.21	1.2
Self-liberation									1	.24**	.38**	.45**	-.12*	3.10	1.1
Stimulus control										1	.48**	.24**	-.09	4.97	2.1
Self-efficacy											1	.39**	-.07	31.1	8.9
Pros												1	-.11*	32.8	7.3
Cons													1	15.1	4.8

But the correlation of the cons and progress in SOC was negative and weak ($r = -0.079$, $p > 0.05$). Furthermore, the participants reported a strong and direct correlation in adopting the processes of change and the pros to PA ($p < 0.05$). Moreover, the correlation was significantly negative with the cons of PA ($p < 0.05$); except for the dramatic relief and social liberation ($p > 0.05$).

The findings of the Pearson correlation test showed that there is a positive and strong relationship between self-efficacy and using processes of change ($p < 0.05$). This relation was direct and negative for the cons to PA ($p > 0.05$).

The Fig. 1 shows the findings of the study participants' decisional balance. Our findings show that the perceived benefits of PA increase with progress in the SOC, while the perceived disadvantage (cons) decrease.

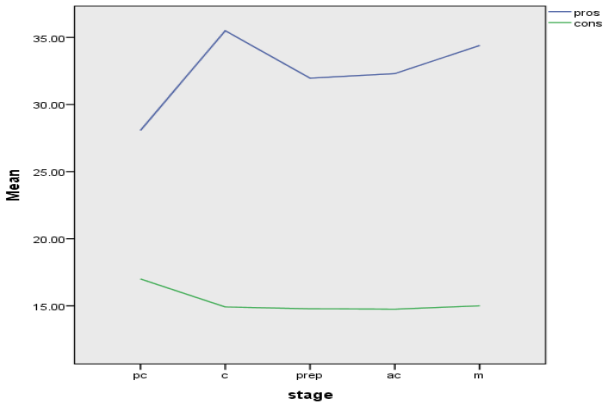

Figure 1: Pros and cons of PA by SOC

Discussion

This study aimed at the evaluation of the relation between the TTM constructs related to PA behaviour in the Secondary School students. Results showed that about 27% of the participants were in the stages of precontemplation, contemplation, and preparation and about 73% were in the stages of action and maintenance of PA. These results are also reported in the study by Aghamolaei et al., (2016) which was carried out on a Sample of Employees in Iran [18]. Considering the general trend of PA among students in the world, the initial expectation is that the percentage of students in the stages of precontemplation, contemplation, and awareness should be high. One of the reasons why the results of this study are different from those of the similar studies can be the fact that the age of the participants is rather low. This factor has also been reported in similar studies such as the study by Rostami et al., (2017), [19]. The impact of the programs by the World Health Organization (WHO) regarding the improvement of PA among the students should also be noted because increasing PA has been one of the concerns of the World Health Organization (WHO) in recent years [5]. This shows how serious the country's

authorities are about the improvement of PA. The reasons for lack of PA in the population under study include low perceived sensitivity, economic problems, physical disability for PA, wastage of free time on school, low level of exposure to the optimal models of PA at school and home (lack of access to optimal models), lack of motivation, influence of friends and classmates activity and self-efficacy in PA, place of residence, lack of access to facilities, and not being aware of the benefits of PA [4]. The earlier studies, including Anderson et al., in 2018, reported the positive role of parents as an effective environmental factor which plays the role of the model for the students in improving PA [1]. These results have also been reported by Teymouri et al., (2008) in which 65% of the students under study had acceptable PA (stages of action and maintenance), [20]. The findings show that using processes of increasing awareness, self-reevaluation, and the counter conditioning significantly varies in different SOC. These findings consist of Rostami et al., (2017) study which was carried out on adolescents [19].

Moreover, Miri et al., study declared that self-efficacy has a negative relation with weight gain in students. This study also shows that obesity can be considered an obstacle to willingness for PA [21]. In this study, it has been reported that perceived self-efficacy, as well as pros and cons, are significantly different in the SOC.

Moreover, a positive correlation between SOC and positive self-concept along the SOC has been reported. This has a positive effect on the tendency to engage in PA and as a result, leads to improving self-efficacy [19]. Accordingly, this finding is confirmed by Charkazi et al., (2011) study on the effective role of reinforcing management on the PA SOC [22]. Moreover, the findings of the study show that the pros along the SOC are significantly different. According to the TTM, this increase from the precontemplation stage to the maintenance stage was expected [23].

So, students in lower stages such as precontemplation and contemplation are less aware of the benefits of PA include the feeling of success, improvement of strength and physical power, improvement of health status, reduction of stress and anxiety, and improvement of academic performance. In other words, it can be said that people experience these benefits in the stages of action and maintenance, and as a result, have a better understanding, insight, and enthusiasm for maintaining this PA behaviour. These results have been reported by Rostami et al., (2017), [19]. Regarding the improvement of self-efficacy along the transition from SOC, there are similar results in other studies. For example, it has been reported in the study by Kim et al., [24] that self-efficacy can have an increasing trend along the passage from the SOC towards higher stages [24]. Furthermore, the study by Jalilian et al., (2012) also reported similar results about the self-efficacy along the SOC [25].

In conclusion, according to the PA SOC, about 70% of the students were physically active, and about 30% were in the stages preceding PA, which means they are still inactive. Thus, it is necessary to design and conduct further interventional studies to improve PA in students. Moreover, the results of the study showed that about 30% of the students have a BMI higher than the normal level, and this points to the importance of planning for the improvement of PA and reduction of BMI in this group through designing suitable interventions. Moreover, Designing and implementing interventional programs emphasising the role of self-efficacy, and the inclusion of parents in the programs can promote regular PA in students [1].

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