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Effects of Social Support and Physical Self-efficacy on Physical Activity of Adolescents

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Abstract

Background: Today, there are many concerns about the level of physical activity of students and due to its importance in students' health; many studies have attempted to investigate the factors affecting the levels of physical activity among the students. This study also seeks to investigate the role of peer's social support in the students' physical activity behavior with the mediating role of physical self-efficacy.

Methods: The present study enjoys a cross-sectional descriptive-correlational design. The statistical sample included 384 high school students in Azadshahr city (Golestan province, Iran) in 2019. Three standard questionnaires including peer social support, physical self-efficacy and physical activity behavior were used to measure the research variables. Structural equation modeling was used to analyze the data.

Results: Descriptive data showed that 191 students had at least three sessions of physical activities per week. Furthermore, the mean scores of the peers' social support, physical self-efficacy and physical activity behavior were 3.60, 3.60 and 3.28, respectively, which were above the average. The findings demonstrated a significant relationship between the peer's social support and students' physical self-efficacy (T=55.711). The results also revealed that there is a positive and significant relationship between peer social support and the students' physical activity behavior (T=3.285). Moreover, physical self-efficacy has a positive and significant relationship with the students' physical activity behavior (T=4.295). Finally, the mediating role of physical self-efficacy was confirmed (T=3.302).

Conclusion: The results of this study show the importance of peer's social support in increasing physical self-efficacy and physical activity behavior of students in the school environment.

Key Words: School, Social support, Peers, Physical activity, Physical self-efficacy.

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1. INTRODUCTION

Today, with the increasing use of new technologies in modern life, significant changes have been made in people's lifestyles (1). The existence of such conditions has raised concerns about human health. As such, the increasing inactivity among different groups of society, including children and adolescents, has become one of the most important consequences of modern life (2). According to the World Health Organization, inactivity, as a global problem, poses many risks for the individuals and is the fourth leading cause of death in the world (3). Type 2 diabetes, coronary heart disease, and various cancers are just some of the negative consequences of inactive lifestyle, which impose huge costs on people and governments each year (4); these costs are estimated at $ 67.5 billion by 2020 (5).

While the rate of inactivity and its negative consequences are increasing among people in different countries, regular physical activity is essential for the health and well-being of all age groups, including children and adolescents (6). Having a proper level of physical activity improves musculoskeletal, heart, metabolic, psychosocial and cognitive health and increases the cardiorespiratory and muscular fitness of children and adolescents (7). Regular participation in physical activity can also lead to weight loss and obesity (8). To promote good health, the World Health Organization recommends that people aged 5 to 17 years should engage in at least 60 minutes of moderate-to-vigorous physical activity per day (9). However, according to worldwide statistics, approximately 81% of 5 to 17 years' children do not follow the guidelines and subsequently do not have enough regular physical activity (10). The results of research conducted in Iran are in line with global statistics in this regard and show the inadequacy of daily physical activity among Iranian children and adolescents (11). Lack of regular physical activity and inactivity during adolescence can endanger the health and well-being of people now and in the future; because physical activity behavior performed during childhood can also be transmitted to adulthood (12). Since the decrease in the level of physical activity among adolescents is an increasing problem, it is necessary to study the factors affecting adolescent's physical behavior and perform interventions aimed at encouraging adolescents to remain physically active (13).

One of the factors that can play an important role in increasing adolescents' physical activity is the context and environment of schools (14). The school environment includes social factors such as the support of teachers and peers, which can play an important role in increasing the physical activity of students (15). According to the Social Cognition Theory, receiving appropriate social support from others, including peers, increases people's self-efficacy in overcoming barriers of participating in physical activities. Physical self-efficacy indicates a person's confidence in his or her physical abilities and capabilities to perform physical activities (16). Furthermore, according to the Theory of Socialization, peer social support increases adolescents' competence, causing them to engage in a specific behavior such as physical activity (17). Previous research findings have shown that a set of decisions made by children and adolescents about their participation in physical activities, i.e., starting, continuing, stopping and quitting physical activities, is influenced by social support received from others such as their peers (18). However, the results of some studies have shown that peer support alone cannot increase the level of participation in physical activities; rather the peers' social support affects their participation in physical activities through increasing

physical self-efficacy (19). Receiving social support from peers who actively participate in physical activities can also increase the adolescents' willingness and self-efficacy to engage in such activities by changing their attitudes toward physical activity (20). In this regard, the results of some studies have shown that the effects of peer social support on the adolescents' physical self-efficacy and their level of physical activity are greater than the effects of social support they receive from their parents (21). However, researchers do not agree on the direct and indirect effects of social support on individuals' level of physical activity and its mechanisms (18).

Since the physical activity behavior of individuals in childhood and adolescence can play an important role in their tendency to continue such behaviors in adulthood, investigating the factors affecting the children and adolescents' level of physical activity has attracted the attention of many researchers (22). Moreover, paying attention to the students' level of physical activity as well as the factors affecting it can play an important role in promoting their physical health. Therefore, due to the importance of the subject, some studies have examined the factors affecting the physical activity behavior of students in Iran (11, 23-26). However, no research has been executed on the role of the peers' social support on students' physical self-efficacy and physical activity behavior, which indicates a scientific gap in this area and the importance of this study. Therefore, according to the mentioned issues, the purpose of this study was to investigate the role of peer social support in students' physical activity behavior with the mediating role of physical self-efficacy.

2- MATERIALS AND METHODS

The present field study is a descriptive-correlational survey that is analyzed based on structural equations.

2-1. participants

The statistical sample size consisted of 384 male and female high-school students from Azadshahr, Golestan, Iran, in 2019 that were selected based on the guidelines Krejcie and Morgan cited in Hosseini et al. (23). The statistical sample was chosen by cluster random sampling method from the regular schools of Azadshahr. To do this, we initially divided the population (regular high schools of the city) into smaller regions (clusters). Afterwards, from each region, one of the schools was randomly selected and ultimately, the students were randomly selected from each school.

2-2. Instruments

2-2.1. Peer social support

This questionnaire consists of 7 items. It is designed based on a Likert five-point scale (1=strongly disagree to 5=strongly agree). Cronbach's alpha of this questionnaire was reported to be 0.91 (27). In this study, the validity of this scale was reviewed and confirmed by nine experts (CVI=0.90, CVR=0.92). Moreover, the reliability of this questionnaire was evaluated in a pilot study with a Cronbach's alpha of 0.76.

2-2.2. Physical self-efficacy

This 8-item questionnaire was used to measure the students' physical self-efficacy (28). This questionnaire is scored in a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). Cronbach's alpha of this questionnaire was reported to be 0.78 (28). In this study, the validity of this questionnaire was reviewed and confirmed by nine experts (CVI = 0.92, CVR = 1.00); and its reliability was evaluated in a pilot study, indicating a Cronbach's alpha of 0.79.

2-2.3. Physical activity behavior

This 3-item questionnaire (29) was used to assess students' physical activity behavior. This questionnaire is scored from zero to 7, based on a 8-point Likert scale. The

Cronbach's alpha coefficient of this scale has been reported by its designers as 0.93 (29). Its validity, in the current study, was reviewed and confirmed by nine experts (CVI = 0.88, CVR = 1.00). In addition, the reliability of this questionnaire was evaluated in a pilot study, showing a Cronbach's alpha of 0.80.

2-3. Data analysis

Data analysis was performed in two parts: descriptive and inferential. Descriptive statistics included items such as frequency, mean and standard deviation, which were used to describe the participants' demographic characteristics and the research variables. In the inferential section, Cronbach's alpha test was used to evaluate the reliability of the research instruments. The distribution of the collected data was examined by Kolmogorov-Smirnov test. Structural equation modeling was used to investigate the research model and test the hypotheses. Finally, the Sobel test was used to investigate the mediating role of the physical self-efficacy variable. For this purpose, two softwares including SPSS version 26 and Smart PLS version 3 were used. The significance level was set at $P < 0.05$.

3- RESULTS

3-1. Descriptive findings

The results showed that the means and standard deviations (SD) of the male and female students' age were 16.79±0.83 and 16.58±0.77, respectively. It was also found that most participants (191 students) had at least three sessions of physical activity, during a week. **Table 1** presents the mean and standard deviation of research variables. The results showed that the mean of peer social support, physical self-efficacy and physical activity behavior were 3.60, 3.60 and 3.28, respectively, which were above average.

Table-1: Means and SDs of the research variables

Variable	Number	Mean	SD
Peer Social Support	384	3.60	0.73
Physical Self-Efficacy	384	3.60	0.77
Physical Activity Behavior	384	3.28	0.89

3-2. Data distribution

We used the Kolmogorov-Smirnov test to examine the data distribution of each of the research variables. The results are presented in **Table 2**. According to the results of this table, it can be stated that the distribution of data is not normal in the research variables.

Table-2: Results of the data distribution

Variable	Z	Sig.
Peer Social Support	3.348	0.001
Physical Self-Efficacy	2.867	0.001
Physical activity behavior	2.115	0.001

3-3. Structural equation modeling

Structural equations method was used to test the research model. To evaluate the goodness of fit of the research model, three criteria of reliability, divergent validity and convergent validity were used. In order to evaluate the reliability, three indicators of

composite reliability (CR), average variance extracted (AVE) and factor loadings were used which are presented in **Table 3**. The results in **Table 3** show that the composite reliability of the research variables is more than 0.7, average variance extracted for each variable is more than 0.5 and the factor loadings on all items are more than 0.5. These results indicate that the reliability of the research model is appropriate and acceptable.

Table-3: Indices for assessing the reliability of the research constructs

Items	Variable	AVE	CR	Cronbach' Alpha	Factor Load	t
1	Peer Social Support	0.551	0.895	0.862	0.577	9.839
2					0.755	34.466
3					0.751	25.735
4					0.745	25.112
5					0.771	31.750
6					0.800	36.391
7					0.775	28.681
8	Physical Self-Efficacy	0.567	0.912	0.889	0.785	31.320
9					0.771	30.346
10					0.802	32.336
11					0.785	31.819
12					0.633	15.644
13					0.844	45.671
14					0.627	13.412
15					0.749	27.526
16	Physical Activity Behavior	0.718	0.883	0.799	0.919	95.937
17					0.910	108.909
18					0.694	19.598

Moreover, the results of the divergent validity are demonstrated in **Table 4**. According to the results, it can be said that the constructs of this study have an appropriate and acceptable divergent validity. Also, in the structural equations method by Smart PLS, we used construct cross validated communality index to check the quality or goodness of fit of the research model. To examine this index, the sum of the squares of the observations for each block (SSO) of the latent variable and the sum of the squares of the prediction errors (SSE) for each block of the latent variable are considered. Positive values of this index indicate the appropriate quality of the measuring instruments. According to the results of **Tables 4** and **5**, it can be said that the questionnaires used in the research are of good quality.

Table-4: Results of the diagnostic validity of research constructs

Construct	1	2	3
1. Peer Social Support	0.742		
2. Physical Self-Efficacy	0.663	0.753	
3. Physical Activity Behavior	0.614	0.622	0.847

Table-5: Results of the survey on the construct cross validated communality

Construct	SSO	SSE	1-SSE/SSO
Peer Social Support	2688	1618.165	0.398
Physical Self-Efficacy	3072	1757.006	0.428
Physical Activity Behavior	1152	660.724	0.426

As can be seen in **Table 6** and **Fig. 1** and **2**, peer social support has a positive and significant relationship with students' physical self-efficacy (β=0.863, T=55.711). Moreover, the relationship between peer social support and students' physical activity was positive and significant (β=0.301, T=3.285). Furthermore, the relationship between physical self-efficacy and students' physical activity is positive and significant (β=0.363, T=4.295). Finally, the results of the Sobel test showed that the relationship between peer social support and students' physical activity behavior with the mediating role of physical self-efficacy is positive and significant (β=0.417, T=3.302).

Table-6: Direct and indirect effects of the latent research variables

Path	β	T	Sig.
Peer Social Support -> Physical Self-Efficacy	0.863	55.711	0.001
Peer Social Support -> Physical Activity Behavior	0.301	3.285	0.001
Physical Self-Efficacy -> Physical Activity Behavior	0.363	4.295	0.001
Peer Social Support -> Physical Self-Efficacy ->Physical Activity Behavior	0.417	3.302	0.001

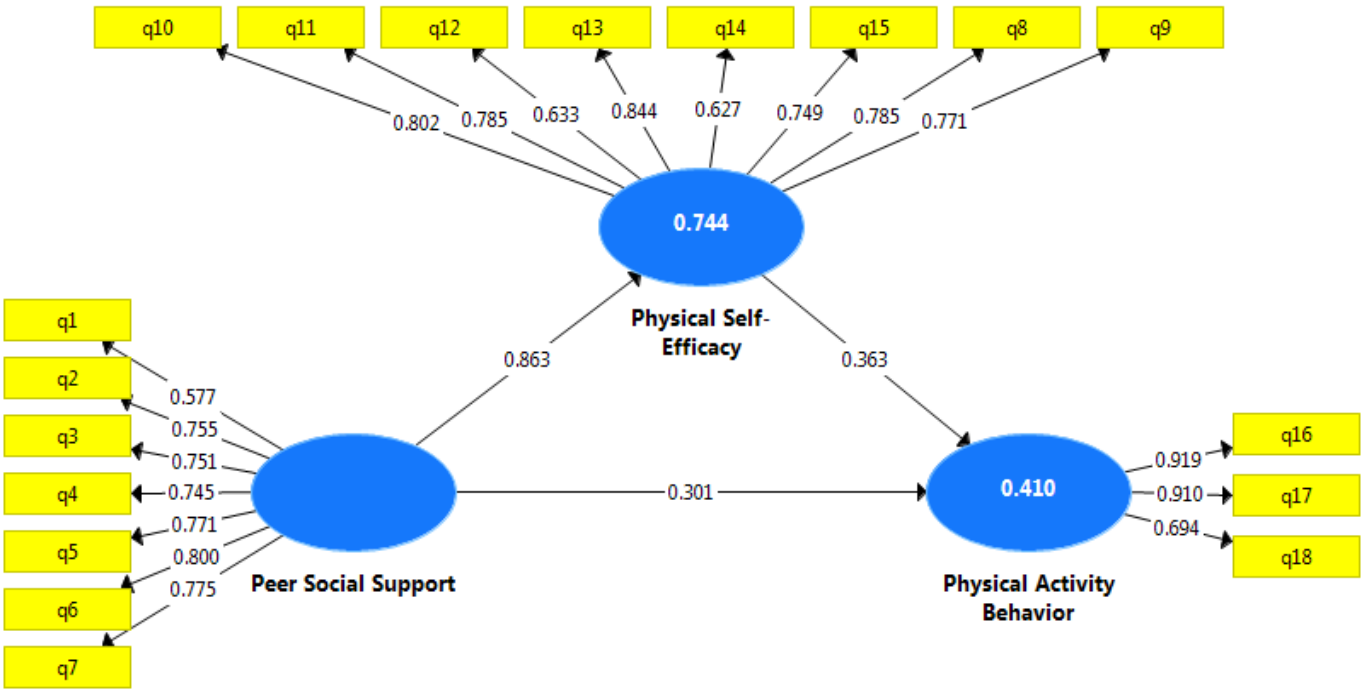

Fig. 1: The tested model in the standard estimation mode

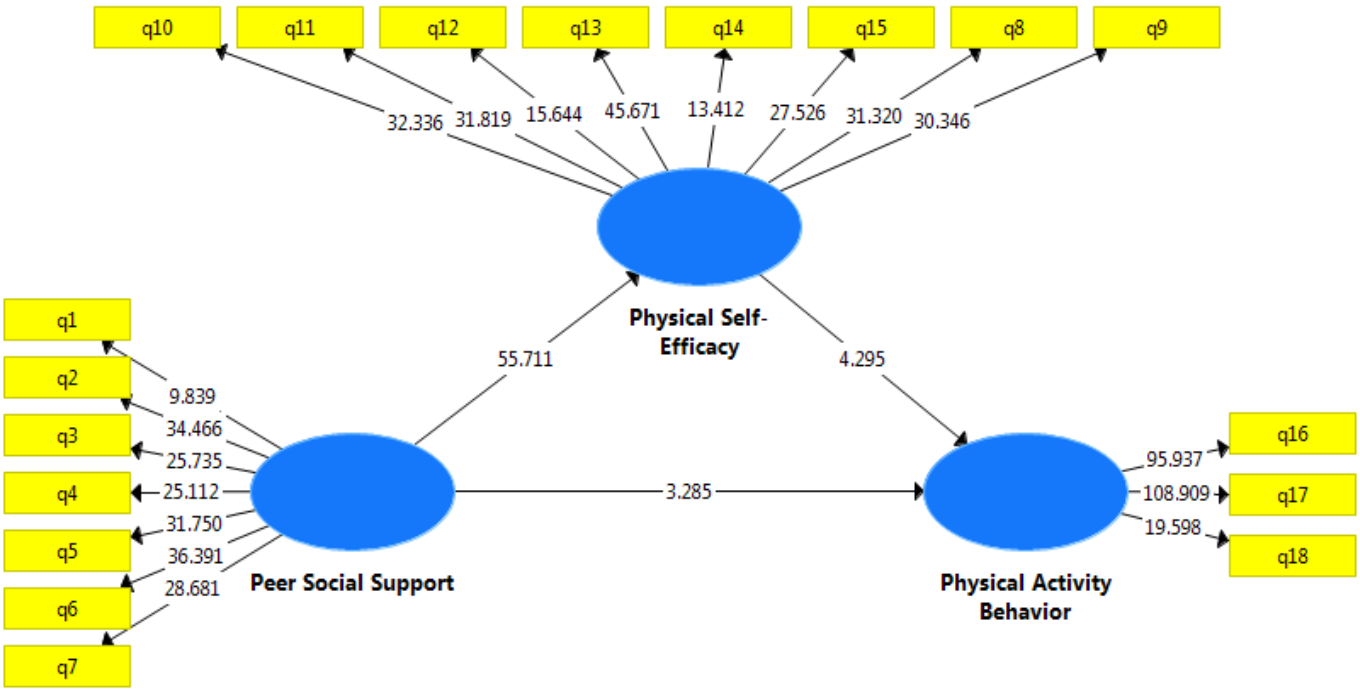

Fig. 2: The tested model of the research in case of significance

4- DISCUSSION

Undoubtedly, the health of school-students at all ages is a very important issue in school health, and encouraging students to engage in regular physical activity inside and outside the school can play an important role in increasing their mental and physical health (30-31). Accordingly, a large number of studies have been conducted in this regard to identify the role of factors that exist within the school environment and can affect the students' level of physical activity. In this regard, we have attempted to examine the relationship between peer social support and physical activity behavior of high school students, considering the mediating role of physical self-efficacy.

The results revealed a positive and significant relationship between peer social support and the students' physical self-efficacy, which is in line with the results of previous studies (15, 18-19). Children and adolescents are usually surrounded with a lot of peers, and as they enter school, the amount of interaction between them and their peer's increases. In such situations, social and emotional interactions are strengthened, which can increase the students' impact on each other's behavior. Children and adolescents observe and accept their peers' behaviors, including the type and amount of physical activity, through social learning processes such as modeling and social comparison. On the other hand, as peer communication increases in environments such as schools, the source of children's social support can be changed from parents to peers. As perceived social support increases, the individual becomes more attached to his or her peers, which in turn increases the person's motivation to engage in physical activities with their peers and attempts to overcome the barriers of physical activity. In addition, being with peers allows the students to receive more feedback from their peers about their physical performance and abilities, and to be encouraged by their peers to do more

physical activities, which can increase their physical self-efficacy.

In addition, the results indicated that there is a positive and significant relationship between peer social support and students' physical activity behavior. This result is in line with the results of previous studies (15, 17-20, 22). The school environment has motivating forces that can affect the level of student participation in physical activities in the school environment and even outside. Among the most important motivational factors, formed in the context of schools, are the peer groups. Peer groups are a valuable source of social support, and research has shown that peer social support is more effective than groups such as parents (19). Social and communication networks as well as emotional bonds formed in the peer group increase the social support of the group members for each other, which can encourage adolescents to perform regular physical activities together along with influencing each other's thoughts, attitudes and behaviors. Furthermore, during adolescence, people become more dependent on their peers and spend more time with peers; so positive peer support can lead them to choose a healthy lifestyle with more physical activities (22). And since adolescents perform many of their physical activities in a social context created by peers, increasing social support in such contexts can lead to the increased repetitions of the physical activities.

The results, further, showed a positive and significant relationship between physical self-efficacy and the students' physical activity behavior, which is consistent with the results of some previous studies (15, 18). Because regular physical activity is a factor affecting the health of different age groups, including young people, it is important to identify individual, interpersonal and environmental factors that affect the behavior of physical activity. One of the personal factors that can encourage adolescents to perform more physical activities is physical self-efficacy. Physical self-efficacy reflects a person's belief in his or her ability to perform a physical activity and overcome its limitations. Faced with the problems, limitations, and challenges of physical activity, the adolescents with greater physical self-efficacy can regulate their emotions on a regular basis, change their attitudes toward physical activity in a positive way, and overcome problems and challenges with more effort. Therefore, it is predictable that the level of physical activity of adolescents will increase in such conditions. Adolescents with low levels of physical self-efficacy, on the other hand, easily exaggerate problems and develop negative emotions such as anxiety when faced with stress and exercise problems, so they are expected to reduce their physical activities (18).

Finally, our results demonstrated that the relationship between peer social support and students' physical activity behavior with the mediating role of physical self-efficacy is positive and significant, which is consistent with the results of previous studies (15, 18-19). The effect of social support perceived by others such as parents and peers on an adolescent's physical activity has been proven in previous studies (11, 17, 22). However, social support through factors such as physical self-efficacy and pleasure can affect the level of physical activity behavior (15), while the role of physical self-efficacy as a mediating variable has been less considered (19). Individual self-efficacy often develops in environments with high levels of social support. Increasing the quality of friendship between peers, observing the success of peers in physical activity, experiencing physical activity with peers, being encouraged by peers during physical activity and getting feedback from peers on how to do the physical activity are some of the factors that can motivate the

individuals and make them more self-efficient to increase their physical activity. Therefore, it can be expected that with increasing social support from peers, the adolescents' physical self-efficacy will increase, and the adolescents with high physical self-efficacy will be more inclined to perform physical activities.

4-1. Limitations of the study

This research has some limitations that are suggested to be considered in future studies. First, this study used a cross-sectional design which creates limitations for examining causal influences of peers on the adolescents' motivation and participation in sports and physical activities. A longitudinal approach would allow researchers to address additional questions. Second, this research has been done only on high school students and it is necessary that the students of different educational levels be included in the statistical sample. Finally, since data on students' physical activity behavior have been collected by the use of a self-report questionnaire, it is suggested that in future research, students' physical activity be assessed by more precise instruments such as pedometers or accelerometers.

5- CONCLUSION

Based on the results of this study, it can be concluded that the peers' social support positively influences physical activity behavior of adolescents. Moreover, physical self-efficacy can play a mediating role in the relationship between peer social support and physical activity behavior. The results of our study can also have practical implications. According to the findings of this study, the sport teachers should use the social support from peers to increase physical self-efficacy and physical activity of adolescents. It is also suggested that the teachers and trainers attempt to increase the quality of the adolescents' friendships by increasing the participation of students in the physical education class.

6- ETHICAL CONSIDERATIONS

This paper is extracted from the PhD dissertation of the first author. The process and method of conducting this research have been approved by the Ethics Committee of Aliabad Katoul Islamic Azad University with the code of IR.IAU.AK.REC.1398.001. It is noteworthy that the students voluntarily participated in the research and their parents completed a consent form regarding their children's participation in the research.

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9- CONflICTS OF INTEREST

None.

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