

Relationship between Intrinsic Motivational Climate of PE lessons and physical activity levels of high school female students in Iran

Iráni középiskolás leánytanulók testnevelésórai belső motivációs környezetének és fizikai aktivitásának összefüggései

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Abstract

Motivation is considered to be one of the most essential factors associated with engagement in physical activity throughout childhood and adolescence. The study of motivational processes in sports for adolescents is crucial because their physical activity (PA) level decreases from primary to secondary schools annually by 7%. The aim of this study was to investigate the relationship between IMCPEQ's (the intrinsic motivation climate of PE lessons questionnaire) variables and PA of Iranian female high school students and the differences in motivational components of students' PA. The sample consists of 295 Iranian female students between 13-15 years of age (mean age = 13.86 ± 0.78 yrs). Participants were selected from 5 schools (wealthy, moderate-, and lower-income districts) they filled out IMCPEQ, international physical activity questionnaire (IPAQ), and general information, and demographic data questionnaire online. The results of the Pearson correlation coefficient demonstrated a significant positive relationship between PA levels and the Ego/competitive climate, Task-involving climate, Social-relatedness supporting climate, Autonomy-supporting climate, Enjoyment, and physical activity. Additionally, the one-way analysis of variance (ANOVA) revealed significant differences in students' PA levels influenced by the intrinsic motivational climate in physical education (PE). Furthermore, along with the increase of motivational climate in PE lessons, levels of students' PA increased as well. Post hoc test with Bonferroni corrections indicated significant differences in the variables of ego, task, en-

joyment, and physical activity between low and vigorous levels of PA ($p \leq 0.05$). In summary, based on the findings of the present study, conclusion can be drawn that intrinsic motivational climate in PE, which is examined by the Self-determination Theory and Goal Orientation Theory, is an effective and reinforcing factor for doing PA.

Keywords: physical activity (PA), Iranian female students, IMCPEQ, IPAQ

Összefoglaló

A motiváció az egyik leglényegesebb tényező a gyermek- és serdülőkorban végzett fizikai aktivitás vonatkozásában. A motivációs folyamatok tanulmányozása a serdülők sporttevékenységének esetében kulcsfontosságú, mivel a fizikai aktivitás (FA) szintje az általános iskolától a középiskoláig évi hét százalékkal csökken. A tanulmány célja megvizsgálni az IMCPEQ (a testnevelésórai belső motivációs környezetét vizsgáló kérdőív) változói és az iráni női középiskolás diákok FA-a közötti kapcsolatot, valamint a tanulók FA motivációs komponenseinek különbségeit. A minta 295 iráni, 13-15 éves diákleányból állt (átlagéletkor = $13,86 \pm 0,78$ év). A vizsgálatban résztvevőket öt iskolából, vagyoni helyzet alapján (vagyonos, közepes és alacsonyabb jövedelmű kerületek) választottuk ki. A tanulók az IMCPEQ-t és a nemzetközi fizikai aktivitás kérdőívet (IPAQ), valamint az általános demográfiai adatokra rákérdező kérdéssort online töltötték ki. A Pearson korrelációs együttható eredményei szignifikáns pozitív kapcsolatot mutattak ki a FA szintjei és az *ego/versenyzőcentrikus*, a *feladat-*

centrikus, a társas kapcsolatokat támogató, az autonómiátámogató, az élvezet/élmény és a fizikai aktivitás között. A varianciaanalízis (ANOVA) szignifikáns különbségeket tárt fel a testnevelés belső motivációs környezete által befolyásolt tanulói FA-szintek között. Emellett a testnevelés-órák motivációs légkörének növekedésével a tanulók FA szintje is emelkedett. A Bonferroni post hoc teszt szignifikáns különbségeket mutatott ki az *ego*, a *feladat*, az *élvezet* és a fizikai aktivitás változóinak alacsony és erőteljes FA szintjei között ($p \leq 0,05$). Összefoglalva: e tanulmányban közölt vizsgálati eredményeinkből az a következtetés vonható le, hogy a testnevelésben az önmeghatározás- és a célorientáció elmélettel vizsgált intrinzik motivációs környezet hatékony és megerősítő tényező a FA terén.

Kulcsszavak: fizikai aktivitás, iráni leánytanulók, IMCPEQ, IPAQ

Introduction

The World Health Organization (WHO) recommends that children and adolescents aged 5-17 years should engage in at least 60 minutes of moderate to vigorous-intensity physical activity (PA) daily (WHO, 2022). However, according to a WHO report from 2016, Globally, 81% of adolescents aged 11-17 years were insufficiently physically active. Adolescent girls were less active than adolescent boys, as with 85% and 78% respectively not meeting WHO recommendations of at least 60 minutes of moderate to vigorous intensity physical activity per day. Considering the restricted extent of PA documented among adolescents and a reduction in physical activity levels in comparison to boys, there is a significant emphasis on prioritizing the promotion of PA, particularly targeting girls (Camacho-Minano et al., 2011). While the decrease in PA occurs in both genders, it is more noticeable in girls and found more prominent as they become older (Sherar et al., 2007). A variety of settings have been used to encourage PA in young people, interventions conducted within the school environment have demonstrated the highest effectiveness. (Edwardson et al., 2015). The first encounter with PA for the majority of children often takes place during Physical Education (PE) classes. (Somerset and Hoare, 2018). The impact of school physical education extends significantly to fostering a mentality conducive to lifelong physical activity. This is owing to its ex-

cution by trained educators, enabling the creation of uniformly positive instances of involvement in physical activity throughout the school-age group. (Sallis et al., 2012).

One of the foremost influential factors linked to participation in physical activities throughout childhood and adolescence is motivation. (Hagger and Chatzisarantis, 2007). Motivation is a mental process that brings about and maintains goal-oriented actions (Pintrich and Schunk, 2002). In terms of its conceptual framework, motivation is viewed as comprising the energy that enables individuals to participate in either physical or mental activities, oriented towards specific goals or objectives. The theoretical framework increasingly used to study motivation in physical education is two main theories namely the self-determination theory (Deci and Ryan, 1985) and the achievement goal theory (Nicholls, 1989).

The self-determination theory suggests that autonomy, competence, and relatedness are the fundamental components constructs of psychological well-being and optimal functioning. Environments that satisfy these three needs have a positive impact on well-being. Conversely, environments that limit or constrain the attainment of these needs can negatively influence human functioning and well-being. Each of these needs is essential, and if anyone is unable to be met there is likely to be a detrimental motivational consequence (Deci and Ryan, 1985; 2000). In 1991, Deci and Ryan characterized the need for autonomy as individuals' attempts to control their own actions. The need for competence was outlined as individuals striving to encounter a sense of effectiveness. Lastly, the need for relatedness was defined as individuals' efforts to establish a fulfilling and harmonious connection with others.

Another prominent theory within the realm of research related to the motivational factors impacting children and adolescents is the achievement goal theory (Nicholls, 1989). Achievement goal theory represents two goal perspectives namely task (self-referenced) and ego (other-referenced) and are significant in performance settings. These orientations refer to how success is perceived, and competence evaluated and relate to important differences in behavior (Nicholls, 1989).

In the context of the achievement goal theory, the motivational climate is another crucial com-

ponent that refers to a situational psychological perception of the activity that directs the goals of action (Ames, 1992). The examination of the role of motivational climate in children and adolescent PA has been suggested as one of the top ten research questions in PE domain (Chen, 2013). The motivational climate in school PE impacts students' self-experience, motivation, and attitudes toward engaging in physical activity. The social situation created by influential others differs in terms of the achievement goals emphasized (Duda and Balaguer, 2007). From the framework of the achievement goal orientation, the motivational climate encompasses two viewpoints: namely a task-involving and an ego-involving climate. An ego-involving climate stresses performance outcomes and social comparison between students. This leads to increased external motivation and anxiety, as well as diminished interest (Duda and Whitehead, 1998). In a task-involving climate, students reflect their performance on their personal growth, are rewarded for trying and effort, and set their personal goals themselves (Ames, 1992). Previous studies have indicated combining achievement goal (Nicholls, 1989) and self-determination theories (Deci and Ryan, 1985) to be valuable in understanding students' intra-individual motivation (Ciani et al., 2011; Ommundsen and Kvalø, 2007). When considering the theories of achievement goals and self-determination simultaneously, it becomes evident that they include similar elements, both involving social and cognitive factors. The primary contrast between the two models is that the achievement goal theory operates only with perceived competence, which is divided into task- and ego-oriented approaches. Although the self-determination theory also involves the perception of competence it includes perceptions of autonomy and social relatedness as supplementary elements.

Recognizing the persistent need for improving the quality of physical education and advancing associated theoretical perspectives, it is essential to have the ability to assess perceptions of the motivational climate within the PE setting. Hence, with a focus on the Self-Determination Theory and Achievement Goal Theory, we aimed to investigate the relationship between Ego/competitive climate, Task-involving climate, Social-relatedness supporting climate, Autonomy-supporting climate, Enjoyment, and Physical activity variables with the physical activity of high

school female students. Additionally, we aimed to examine differences between levels of physical activity (low intensity, moderate intensity, and vigorous intensity) among female students and intrinsic motivation climate variables.

Material and Methods

Participants and Procedures

This study utilized a cross-sectional design and was conducted during the academic year 2022-2023. The sample included 295 Iranian female students between 13-15 years of age (mean age = 13.86 ± 0.78 yrs). Participants (mean height = 160.29 ± 6.31 cm, mean weight = 51.60 ± 12.39 kg) were selected from 5 schools, located in Tehran and a suburb of Tehran, wealthy, moderate, and lower-income districts. Students' 89.5% were living with their parents. 54.6% of them have four other members in their families. Additionally, 93.6% of them had access to the internet on their mobile phones. As for simple physical activity facilities, 50.8% had a garden at home, 63.1% had bicycles, 34.2% had skateboards, and 41% had skates. After having obtained approval from the Research Ethics Committee at the Hungarian University of Sports Science and receiving permission from the Ministry of Education in Iran, and with the endorsement of the school principals and consultation with physical education teachers, the questionnaires were made available to volunteer students online. The questionnaires were translated from English to Persian by the researcher and subsequently confirmed by the Translation and Cultural Affairs Department of the Ministry of Education in Iran. Students filled out the Intrinsic Motivational Climate of PE Lessons Questionnaire (IMCPEQ), International Physical Activity Questionnaire (IPAQ), and General Information Demographic Data Questionnaire online for about 1 hour. They were also told that their responses would be kept confidential. The research ethics committee of the Hungarian University of Sports Science granted permission for this study under letter number TE-KEB/27/2022. All the high school students were invited to participate, and parental consent and student assent were obtained. Participation was completely voluntary, therefore participants had the right to withdraw from the study at any time, and without giving any reason.

Measures

Intrinsic Motivational Climate of PE lessons (IMCPEQ)

The intrinsic motivational climate of PE lessons questionnaire was designed by Jarmo Liukkonen, Timo Jaakkola and Markus Soini in 2004. This questionnaire consists of 24 questions and four main subscales comprising Ego/competitive climate, Task involving climate, Social relatedness supporting climate, Autonomy supporting climate and also two factors (enjoyment and physical activity in PE lessons) that are not part of the motivational climate scale on a 5-point Likert scale (anchored from not at all important=1 to extremely important=5). The ego involvement dimension measures the degree to which the class emphasizes social comparison, competition, and winning (four items, e.g. "During the PE lessons students compete with each other in their performance"). The task involvement dimension measures the degree to which the PE class emphasizes skill development, effort, and self-improvement (five items, e.g. "Learning new things makes me want to learn more"). The social relatedness dimension measures the degree to which students feel connected to their classmates and the teacher (four items, e.g. "Pupils really "work together" as a team."). The autonomy dimension measures the degree to which students feel that they have choices and control over their learning (five items, e.g. "Pupils have significant freedom to make choices during PE lessons."). The enjoyment dimension measures the degree to which students feel that they are engaging in enjoyable and pleasurable activities (four items, e.g., "I like PE lessons."). Additionally, it assesses students' participation in physical activity during PE lessons (two items, e.g., "I generally give it my best effort during PE lessons."). Cronbach alphas ranged from 0.78 to 0.88. The questionnaire was translated from English to Persian by the researcher and subsequently confirmed by the Translation and Cultural Affairs Department of the Ministry of Education in Iran.

International Physical Activity Questionnaire (IPAQ)

IPAQ is a standardized self-reported measure of physical activity developed in 1998 by an international group of researchers from several countries. The questionnaire has been widely

utilized in numerous studies, and its validity and reliability have been reported (Craig et al., 2003). The purpose of the questionnaire is to provide a simple, reliable, and valid instrument for assessing physical activity levels. IPAQ short form is a simplified version of the original IPAQ long form questionnaire. It consists of seven questions, which assess the frequency and duration of physical activity in three different intensity levels: walking, moderate-intensity, and vigorous-intensity. The specific types of activity that are assessed are walking, moderate-intensity activities and vigorous intensity activities; frequency (measured in days per week) and duration (time per day) are collected separately for each specific type of activity. The items were structured to provide separate scores on walking, moderate-intensity, and vigorous-intensity activity as well as a combined total score to describe overall level of activity. Computation of the total score requires summation of the duration (in minutes) and frequency (days) of walking, moderate-intensity, and vigorous-intensity activity. Respondents are asked to report the number of days per week and the amount of time (in minutes) spent on each activity level. Another measure of volume of activity can be computed by weighting each type of activity by its energy requirements defined in Metabolic Equivalents (METs). METs are multiples of the resting metabolic rate) to yield a score in MET-minutes. A MET-minute is computed by multiplying the MET score by the minutes performed. These following values to be used for the analysis of IPAQ data: Walking=3.3 METs, Moderate PA=4.0 METs and Vigorous PA=8.0 METs. The questionnaire provides estimates of total physical activity (in metabolic equivalent minutes per week or MET min/week) and the time spent in each intensity level separately. To calculate physical activity scores, only the activities lasting at least 10 minutes at the time were considered. There are three levels of physical activity to classify the results of the respondents: low, moderate, and vigorous. The algorithms for the classification of the data are defined in the scoring protocol (Guidelines for Data Processing and Analysis of the IPAQ 2005). According to the total physical activity score, participants are classified as "Low" if the physical activity levels are below 600 MET-minute/week, "Moderate" if 600-3 000 MET-minute/week, and "Vigorous" if above 3 000 MET-minute/week.

Table 1. Measurements of minimum, maximum, means, standard deviations, and variance of PA levels and IMCPEQ's variables**1. táblázat.** A FA szintek és az IMCPEQ változóinak minimum, maximum, átlag, szórás és variancia mérés adatai

	PA levels	Ego/competitive climate	Task involving climate	Social relatedness supporting climate	Autonomy supporting climate	Enjoyment	Physical activity in PE lessons
Minimum	1	1	1	1	1	1	1
Maximum	3	5	5	5	5	5	5
Mean	2.43	4.07	4.29	4.05	4.06	4.46	4.16
Std. Deviation	0.65	0.83	0.77	0.96	0.91	0.82	0.90
Variance	0.42	0.69	0.59	0.93	0.84	0.67	0.82

Table 2. Level of physical activity of female students**2. táblázat.** A leánytanulók fizikai aktivitás szintje

Physical activity level	Frequency	Percent
Low (<600 METmin/week)	26	8.8
Moderate (600-3 000 METmin/week)	116	39.3
Vigorous (>3 000 METmin/week)	153	51.9
Total	295	100

Table 3. Correlation between PA levels (from IPAQ variables) and IMCPEQ's variables**3. táblázat.** A FA szintek és az IMCPEQ változói közötti korreláció

	1	2	3	4	5	6	7
PA levels	-						
Ego/competitive climate	0.18	-					
Task involving climate	0.17	0.65	-				
Social relatedness supporting climate	0.15	0.51	0.64	-			
Autonomy supporting climate	0.18	0.62	0.68	0.65	-		
Enjoyment	0.25	0.54	0.67	0.59	0.61	-	
Physical activity in PE lessons	0.20	0.59	0.64	0.52	0.51	0.62	-

Statistical Analyses

For data processing IBM SPSS v. 26. software was used. Descriptive statistics indicators (frequencies, mean and standard deviation) were reported. Furthermore, in order to determine the relationships and differences between variables, Pearson correlation coefficient, as well as One-way analysis of variance (ANOVA) were performed respectively. Additionally, to assess the differences between the groups, Post hoc test with Bonferroni corrections were employed. The data were analyzed at a significance level of ($p \leq 0.05$).

Results

Table 1. displays measurements of minimum, maximum, mean, standard deviation, and vari-

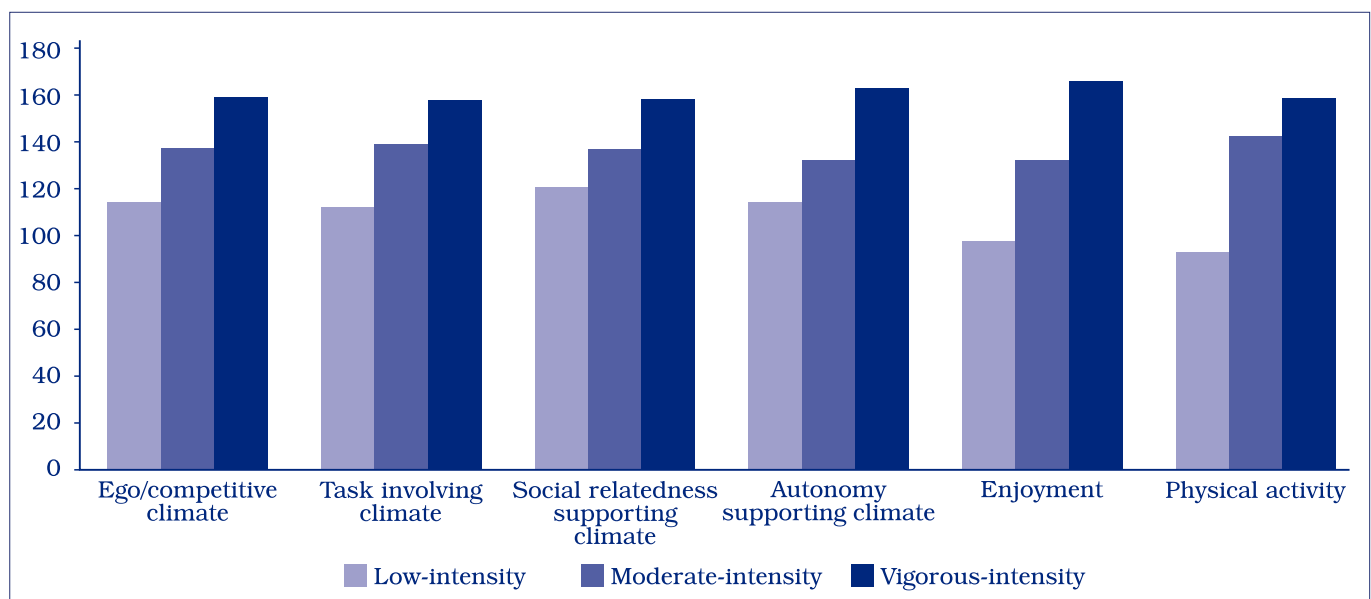
ance of research variables, including PA levels, Ego/competitive climate, Task involving climate, Social relatedness supporting climate, Autonomy supporting climate, Enjoyment, and Physical Activity.

Results of participants' physical activity levels were examined, and it was observed that 51.9% of them had a vigorous level of physical activity, 39.3% of them had a moderate level, and 8.8% had a low level of physical activity (**Table 2**).

In order to examine the relationship between PA levels and IMCPEQ's variables, the Pearson correlation coefficient was utilized (**Table 3**). Correlation between the variables of IMCPEQ and PA levels variables are weak, with only the enjoyment variable exhibiting a slightly stronger relationship. This correlation is expected to strengthen with a larger study population.

Table 4. Results of One-way analysis of variance (ANOVA)**4. táblázat.** A varianciaanalízis (ANOVA) eredményei

		Sum of squares	df	Mean square	F	Sig.
Ego/competitive climate	Between groups	6.64	2	3.32	4.93	0.008
	Within groups	196.70	292	0.67		
	Total	203.35	294			
Task involving climate	Between groups	5.71	2	2.86	4.91	0.008
	Within groups	169.92	292	0.58		
	Total	175.64	294			
Social relatedness supporting climate	Between groups	7.46	2	3.73	4.05	0.018
	Within groups	268.65	292	0.92		
	Total	276.11	294			
Autonomy supporting climate	Between groups	9.50	2	4.75	5.81	0.003
	Within groups	238.69	292	0.81		
	Total	248.19	294			
Enjoyment	Between groups	13.36	2	6.68	10.48	0.000
	Within groups	186.06	292	0.63		
	Total	199.42	294			
Physical activity in PE lessons	Between groups	10.91	2	5.45	6.91	0.001
	Within groups	230.45	292	0.78		
	Total	241.36	294			

**Figure 1.** Results of mean rank between PA levels and IMCPEQ's variables**1. ábra.** A FA szintjei és az IMCPEQ változói közötti rangsor eredményei

As it can be observed, the results showed a significant positive relationship between PA levels and ego, task, social, autonomy, enjoyment, and physical activity.

An evaluation the difference between the levels of physical activity among students and the variables of the IMCPEQ, One-way analysis of variances (ANOVA) was performed (Table 4).

There were significant differences in the levels of students' PA influenced by intrinsic motivational climate in PE. In addition, with the increase of motivational climate in PE lessons, levels of students' PA increased as well ($p \leq 0.05$) (Figure 1).

As observed in Table 5, a significant difference in the levels of physical activity among students and IMCPEQ's variables was noted. In order to

Table 5. Post hoc test with Bonferroni corrections' results for different levels of physical activity among students**5. táblázat.** A Bonferroni teszt eredményei a tanulók különböző szintű fizikai aktivitásának vonatkozásában

	PA levels	PA levels (J)	Mean difference (I-J)	Std. Error	Sig.	Lower bound	Upper bound
Ego-competitive climate	Low activity levels	Moderate	-0.24	0.17	0.524	-0.671	0.186
		Vigorous	-0.46*	0.17	0.023	-0.888	-0.495
	Moderate activity levels	Low	0.24	0.17	0.524	-0.186	0.671
		Vigorous	-0.22	0.10	0.077	-0.469	0.016
	Vigorous activity levels	Low	0.46*	0.17	0.023	0.049	0.888
		Moderate	0.22	0.10	0.077	-0.016	0.469
Task involving climate	Low activity levels	Moderate	-.027	0.16	0.308	-0.669	0.127
		Vigorous	-0.45*	0.16	0.015	-0.848	-0.694
	Moderate activity levels	Low	0.27	0.16	0.308	-0.127	0.669
		Vigorous	-0.18	0.09	0.139	-0.414	0.381
	Vigorous activity levels	Low	0.45*	0.16	0.015	0.069	0.848
		Moderate	0.18	0.09	0.139	-0.038	0.414
Social relatedness supporting climate	Low activity levels	Moderate	-0.10	0.20	1.000	-0.607	0.395
		Vigorous	-0.39	0.20	0.151	-0.889	0.901
	Moderate activity levels	Low	0.10	0.20	1.000	-0.395	0.607
		Vigorous	-0.29*	0.11	0.040	-0.578	-0.009
	Vigorous activity levels	Low	0.39	0.20	0.151	-0.090	0.889
		Moderate	0.29*	0.11	0.040	0.009	0.578
Autonomy supporting climate	Low activity levels	Moderate	-0.05	0.19	1.000	-0.527	0.416
		Vigorous	-0.40	0.19	0.109	-0.865	0.586
	Moderate activity levels	Low	0.05	0.19	1.000	-0.416	0.527
		Vigorous	-0.34*	0.11	0.006	-0.615	-0.798
	Vigorous activity levels	Low	0.40	0.19	0.109	-0.058	0.865
		Moderate	0.34*	0.11	0.006	0.079	0.615
Enjoyment	Low activity levels	Moderate	-0.28	0.17	0.289	-0.706	0.128
		Vigorous	-0.63*	0.16	0.001	-1.040	-0.225
	Moderate activity levels	Low	0.28	0.17	0.289	-0.128	0.706
		Vigorous	-0.34*	0.09	0.002	-0.580	-0.107
	Vigorous activity levels	Low	0.63*	0.16	0.001	0.225	1.040
		Moderate	0.34*	0.09	0.002	0.107	0.580
Physical activity in PE lessons	Low activity levels	Moderate	-0.46*	0.19	0.050	-0.928	-0.000
		Vigorous	-0.67*	0.18	0.001	-1.126	-0.218
	Moderate activity levels	Low	0.46*	0.19	0.050	0.000	0.928
		Vigorous	-0.20	0.10	0.174	-0.471	0.055
	Vigorous activity levels	Low	0.67*	0.18	0.001	0.218	1.126
		Moderate	0.20	0.10	0.174	-0.055	0.471

*The mean difference is significant at the 0.05 level.

determine which groups these significant differences pertain to; Post hoc test with Bonferroni corrections were employed were employed. The results are reported in **Table 5**. As you can see, significant differences were observed in the variables of ego, task, enjoyment, and physical activity between low and vigorous levels of physical activity in PE lessons. Furthermore, in the vari-

ables of social and enjoyment, significant differences were observed between moderate and vigorous levels of physical activity. Finally, in the variable of physical activity, there was also a significant difference between moderate and low levels of physical activity. With an increase of the sample size in the study, differences in all levels of physical activity are likely to be observed.

Discussion and conclusions

The purpose of this study was to investigate the relationship between intrinsic motivational climate of PE lessons and physical activity among Iranian female students aged 13 to 15 (mean age = 13.86 ± 0.78 yrs) and the differences in the intrinsic motivational climate components of students' PA levels, based on two prominent theories of motivation in physical education classes, (Self-Determination Theory and Achievement Goal Theory). Components of self-determination theory are autonomy, competence, and relatedness, and components of achievement goal theory are task (self-referenced) and ego (other-referenced).

Descriptive results showed that the highest mean was related to the enjoyment and task involving climate. These findings are consistent with previous studies (Soini et al., 2014; Jaakkola et al., 2015; Gil-Arias et al., 2020; Huhtiniemi et al., 2022). These results indicate that students are inclined to exert greater educational endeavors to actively engage with task involving values like their personal growth, putting in significant effort, and establishing their individual objectives, alongside experiencing enjoyment during physical education classes. Numerous researchers have demonstrated that a motivational climate that prioritizes task involvement within the context of physical education and sports is connected to more positive behavioral, emotional, and cognitive results. Conversely, an ego-oriented climate is associated with less favorable outcomes. This has been confirmed by studies conducted by Braithwaite et al. (2011), Ntoumanis and Biddle (1999), and Papaioannou et al. (2012).

Pearson correlation coefficient results demonstrated that variables of intrinsic motivational climate of PE lessons (including ego/ competitive climate, task involving climate, social relatedness supporting climate, autonomy supporting climate) and even enjoyment and physical activity that are not part of intrinsic motivational climate of PE lessons have a significant positive relationship with physical activity among Iranian female high school students. While the correlation between the IMCPEQ and PA levels variables is currently weak, there is a slightly stronger relationship observed with the enjoyment variable. It is anticipated that this correlation will become more pronounced with a larger study population. These findings are supported by both the

Self-Determination Theory and Achievement Goal Theory. According to the Self-Determination Theory, there is an innate human tendency to seek three needs: autonomy, competence, and social relatedness. This indicates that individuals become motivated when their fundamental psychological needs for autonomy (feeling of control), competence (feeling of ability), and relatedness (feeling of connection with others) are met. Additionally, the Achievement Goal Theory explains how individuals' goals affect their behaviour and achievements in various settings (here, the sports environment). It differentiates between two types of goals: task-oriented, focused on skill improvement and learning, and ego-oriented, focused on demonstrating competence to others and competition.

The results also showed that with the increase in PA levels of the students, the amount of intrinsic motivational climate of PE lessons' variables increased, and a significant difference was observed between intrinsic motivational climate of PE lessons' variables and PA of the students. To identify which groups these significant differences pertain to, the Post hoc test by Bonferroni results were utilized. Significant differences were detected in the variables of ego, task, enjoyment, and physical activity between students with low and vigorous levels of physical activity. Furthermore, significant differences in the variables of social and enjoyment were also observed between those with moderate and vigorous levels of physical activity. Lastly, a significant difference in the variable of physical activity was found between students with moderate and low activity levels. As the study population increases, it is probable that distinctions in all levels of physical activity will become more apparent. The results were consistent with previous research in this order. With the increase in variables task and ego (MC David et al., 2014; Jaakkola et al., 2015; Kokkonen et al., 2020), social relatedness (Chatzisarantis and Hagger, 2009; Kokkonen et al., 2020), autonomy (Chatzisarantis and Hagger, 2009; Frikha et al., 2022), and enjoyment (Dishman et al., 2005; Hashim et al., 2008; Berki and Tarjányi, 2022) physical activity also increased.

In summary, based on the findings of the present study, the conclusion can be drawn that the intrinsic motivational climate of PE lessons, which is examined by the Self-determination Theory and Theory of Goal Orientation, is an effective and reinforcing factor for doing PA. In addition, considering the research findings and

the higher mean of enjoyment and task involving climate, it is recommended to prioritize nurturing personal growth, goals, mastery of skills, and enjoyable activities of students as the main focus.

Limitations and Future goals

Our study was correlational, and as such, we cannot infer causal relationships between variables. Additionally, we focused our research on Iranian female students aged 13 to 15, whose results may differ in other societies due to changes in norms, culture, values, and traditions. Furthermore, the male group may exhibit differences, given their generally higher activity levels compared to the female group.

Further research is recommended, especially in different communities, including male students, students from other educational levels, and non-school sports environments. The current study was also conducted in a cross-sectional manner, so conducting longitudinal and experimental research can be beneficial for creating a more comprehensive perspective.

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Köszönet lektorainknak

Ezúton szeretnénk köszönetet mondani a 2023-ban megjelent számaink lektorainak, akik kiváló felkészültségükkel, építő jellegű bírálatukkal és lelkiismeretes, esetenként többszöri munkájukkal lehetővé tették, hogy a Magyar Sporttudományi Szemlében megjelenő tanulmányok és műhelymunkák megfeleljenek a sporttudomány szakmai elvárásainak.

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Kedves Olvasóink!

Felhívjuk figyelmüket, hogy az új közlési feltételek az újság 77. oldalán és a honlapunkon is olvasható.