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High School Students' Attitudes Towards Physical Activity Based Games

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ABSTRACT

This study aims to examine high school students' attitudes towards physical activity-based games in line with various variables. Quantitative research method was adopted and survey model was used. While the population of the study includes all high schools in Kütahya, the sample group consists of students studying at Tavşanlı Atatürk Anatolian High School. Using convenience sampling method, 272 students were reached. The Playfulness Scale was used as a measurement tool to evaluate the participants' attitudes towards games involving physical activity. In the statistical analysis process, independent sample *t* test was used to examine the differences between two independent groups, and one-way analysis of variance was used in multiple group comparisons. The results of the analyses revealed that the attitudes of the participants towards games involving physical activity showed statistically significant differences in terms of recreational sport participation status, licensed sport history, and age variables. However, no significant difference was found in terms of gender variable. In conclusion, the findings of the study reveal that attitudes towards games involving physical activity may vary in line with individual differences. The results obtained can be compared with related literature and more comprehensive evaluations can be made and be a guide for future studies.

Keywords: cognition, engagement, enjoyment, lifestyle, socialisation

1. INTRODUCTION

Humans are social and emotional beings and there are many factors affecting their actions. One of these factors is the attitude of the individual. Attitude is accepted as an important psychological structure that shapes the individual's feelings and evaluations towards the environment with its cognitive, affective, and behavioural aspects (Huajian, 2024). Attitudes include an individual's thoughts and evaluations about a particular person, idea, or object and are learnt through direct or indirect experiences (Albarracín et al., 2018). Ajzen and Fishbein's Theory of Planned Behaviour, proposed in 1980, suggests that individuals' attitudes play an important role in shaping their future behaviour. According to this theory, an individual's attitude towards an object or situation is transformed into behaviour through intention. According to Wen & Dubé (2022), attitude consists of cognitive, affective, and behavioural components. An individual's attitude toward a specific object is shaped by the interaction of these three components. Albarracín et al. (2018)

state that an individual's attitudes can change over time by being influenced by various social, cultural, and personal factors and that this change can be directly reflected in behavioural processes. In this context, attitudes become one of the main factors that determine the direction of behaviour by shaping the individual's tendency towards a particular situation.

The relationship between attitude and behaviour remains one of the fundamental topics that continues to attract the interest of researchers today, based on the assumption that individuals' actions are shaped by their attitudes (Kara et al., 2022). Especially in educational processes, students' attitudes appear as a determining factor in many areas, from academic success to social interactions. At this point, the natural relationship between the concept of play and attitude gains importance. Play is an educational and socialising activity that contributes to the mental, emotional, and physical development of the individual. Pellegrini & Smith (2018) state that play strengthens children's cognitive skills, improves their creative thinking processes, and increases their problem-solving skills. Ginsburg et al. (2007) state that play has a critical role in emotional development and supports children's processes of empathising, regulating emotions, and strengthening social relationships. From a physical perspective, McClelland & Cameron (2019) reveal that games improve motor skills and contribute to the general physical health of the individual by increasing balance and coordination. In addition, in terms of educational and socialising aspects, Vygotsky emphasises that play supports learning through social interaction and encourages individuals to establish healthy communication with their environment (Esteban-Guitart, 2018). One of the key factors determining students' level of participation in physical activities is the enjoyment derived from the activity. When physical games are perceived as fun and inclusive by individuals, this perception increases motivation levels and encourages participation (Suvorova, et al., 2023). Social factors, such as peer acceptance and positive interactions with teachers, also play important roles in shaping attitudes (Smith et al., 2006). In order to develop positive attitudes towards physical activity-based games among secondary school students, it is essential that educators design inclusive, diverse, and developmentally appropriate play experiences. Inclusion of student voice in game selection and rule change has been shown to increase engagement and enjoyment (Casey & Goodyear, 2015). Games involving physical activity are a learning process that supports individuals' social and psychological development while improving their physical competences (Kargı, 2007). Games are recognised as one of the important tools that encourage individuals to gain experience, learn by doing, explore and research (Adipat, et al., 2021; Küçükibiş et al., 2022). Physical activity-based games have long been recognised as effective tools to promote physical, cognitive, and social development in adolescents (Bailey et al., 2009). In the context of secondary education, physical activity-based games are often integrated into physical education curricula with the aim of promoting lifelong physical activity habits, increasing motivation and supporting social interaction among students (Dyson et al., 2004). Adolescents' attitudes towards physical activity and related games are influenced by multiple factors, including perceived enjoyment, social environment, self-efficacy, and previous experiences (Cairney et al., 2012). Studies show that students who report positive attitudes towards physical activity-based games are more likely to participate in and enjoy physical education classes and consequently maintain higher levels of physical activity outside of school (Sallis et al., 2000).

The effective use of games in the field of education contributes to the development of healthy living habits while shaping students' attitudes towards physical activity. The current study makes an original contribution to the literature by examining the attitudes of secondary school students toward physical activity-based games. The limited number of studies targeting this age group increases the importance of this research; moreover, the multidimensional assessment of attitudes through their affective and behavioural components adds theoretical depth. Furthermore, by examining the effects of demographic variables on attitudes, it reveals how individual differences are shaped; in this respect, it has the potential to develop evidence-based recommendations for educational policies and practices. The aim of this study is to evaluate the attitudes of secondary school students towards physical activity-based games in terms of various demographic variables and to comprehensively evaluate the effects of these variables on students' interest in games and motivation to participate.

2. METHODS

Research design

This study was conducted to examine the

attitudes of secondary school students towards games involving physical activity. In the research, the survey model, which aims to describe the current situation as it is, was used. The survey model enables a systematic analysis of the opinions and tendencies of individuals by enabling the collection of large-scale data on a particular phenomenon (Karasar, 2020).

Participants

While all high schools in Kütahya constitute the population of the study, the sample group includes students studying at Tavşanlı Atatürk Anatolian High School in Tavşanlı district. In the study, the convenience sampling method was preferred, and a total of 272 students were reached. This sampling method provides speed and practicality to the research process and allows the researcher to select a close and easily accessible group (Yıldırım & Şimşek, 2013). The students participating in the study were included in the research on a voluntary basis.

The sample group for this study consists of students aged 14–18 who are enrolled in public high schools in Turkey, participated voluntarily, and obtained parental consent. Participants were required to complete the survey administered during the data collection process in a complete and valid manner as a basic condition for evaluation. On the other hand, individuals who did not receive high school education, those whose participation in physical activity was limited due to physical or mental disabilities, those without parental consent, and participants who filled out the questionnaire incompletely or incorrectly were excluded from the study. These inclusion and exclusion criteria were established to ensure the homogeneity of the sample group and to increase the scientific validity of the data obtained.

To ensure the statistical validity of the study and the generalisability of the findings, a priori power analysis was performed using G*Power 3.1 software before determining the sample size. For the planned independent samples *t* test for two-group comparisons: effect size (Cohen's d) 0.30, significance level (α) 0.05, and statistical power (1–β) 0.80. Accordingly, a minimum sample size of 176 participants was determined, with at least 88 participants required for each group. Similarly, for the one-way ANOVA analysis planned for multiple comparisons, such as age groups: effect size (f) 0.25, number of groups – 3, $\alpha = 0.05$, and power = 0.80; a minimum sample size of 159 participants was deemed sufficient. In this context, the total of 272 participants in the study exceeds the required sample size for both the *t* test and ANOVA analysis, and the findings obtained are considered statistically reliable and representative.

Data collection tool

The measurement tool used in this study consists of two parts. The first part is aimed at determining the demographic characteristics of the students and consists of four questions including gender, recreational sport participation, licensed sport history, and age variables. The second part includes the Playfulness Scale, which was developed to measure students' attitudes towards physical activity-based games. This scale, developed by Hazar (2014), is a five-point Likert-type scale and consists of two sub-dimensions, Affective Dimension of Game and Behavioural Dimension of Game, and a total of 23 items. In order to evaluate the reliability of the scale, Cronbach's alpha (Crα) internal consistency coefficient was calculated and the Crα value for the whole scale was found to be 0.85. This value shows that the scale is highly reliable.

Data analysis

The data obtained in the study were firstly edited using Excel programme and the participants with missing data were excluded from the study. The corrected data set was transferred to the SPSS 23.0 programme for statistical analyses. When the data distribution was analysed, it was determined that the Skewness and Kurtosis values were in the range of –3 to +3; accordingly, it was assumed to show normal distribution (Jondeau & Rockinger, 2003).

In the statistical analysis process, independent sample *t* test was used to evaluate the differences between two independent groups, and one-way analysis of variance (ANOVA) was used for multiple group comparisons. To ensure the validity of the ANOVA analysis, the necessary assumptions were tested prior to the analysis. The assumption of homogeneity of variances was assessed using Levene's test, and it was determined that there were no significant differences in variances between groups ($p > .05$). Cohen's d values were calculated and reported for independent samples *t* tests, while partial Eta-Squared (Partial η^2) values were calculated and reported for analyses of variance (ANOVA). Effect size measures were used to reveal the practical significance of the findings and to enhance the interpretability of the results (Cohen, 1988; Lakens, 2013). The results obtained were interpreted based on $p < 0.05$ significance level and statistically significant differences were determined.

3. RESULTS

In this section, it is aimed to determine statistically significant differences by analysing students' attitudes towards games based on physical activity. In the light of the data obtained, the effect of individual differences on the perception towards games will be discussed in detail.

Table 1. **Descriptive analysis of demographic information of the participants**

Demographical	Category	N	%
Gender	Male	171	62.9
	Female	101	37.1
Recreational sport	Yes	133	48.9
	No	139	51.1
Licenced sport	Yes	107	39.3
	No	165	60.7
Age	15 and under	50	18.4
	16–17 years	168	61.8
	18 and over	54	19.8

When the demographic distribution of the participants is analysed (Table 1), male participants constitute 62.9% of the majority, while female participants are represented by 37.1%. In terms of recreational sports, the rate of individuals who do sports is 48.9%, while the rate of those who do not do sports is 51.1%, which indicates that participation in physical activity shows a balanced distribution. Participants with a licenced sport background constituted 39.3% of the participants, while those without a licence constituted a larger group with 60.7%. When the age distribution was analysed, it was determined that the 16–17 age group constituted the largest proportion with 61.8%, the 15 years-old and under group was 18.4%, and the 18 years-old and over group was 19.8%, which shows that the majority of the individuals participating in the study are in the young age group.

Table 2. ***t* test results for gender variable**

Dimension	Gender	N	$\bar{X}$	SS	*t*	p value	Cohen's d
Affective Dimension of Game	Male	171	42.26	7.82	.032	.974	.004
	Female	101	42.23	7.58			
Behavioural Dimension of Game	Male	171	39.1	9.26	–.515	.607	–.064
	Female	101	39.7	9.80			
Total points	Male	171	81.3	15.9	–.290	.773	–.038
	Female	101	81.9	16.0			

* $p < 0.05$.

In the study (Table 2), independent sample *t* test was applied to determine whether students' attitudes towards games involving physical activity differed according to gender variable. As a result of the analyses, no statistically significant difference was found between the mean score of male students ($\bar{X} = 42.26$) and the mean score of female students ($\bar{X} = 42.23$) for the Affective Dimension of Game ($t = .032$, $p = .974$). In terms of Behavioural Dimension of Game, there was no significant difference between the mean score of male students ($\bar{X} = 39.1$) and the mean score of female students ($\bar{X} = 39.7$) ($t = –.515$, $p = .607$). When the total score was analysed, no significant difference was found between the mean score of male students ($\bar{X} = 81.3$) and the mean score of female students ($\bar{X} = 81.9$) ($t = –.290$, $p = .773$). All Cohen's d values are below 0.1, indicating that the effect sizes are very small. These results reveal that students' attitudes towards games involving physical activity do not change depending on the gender variable, and male and female students show similar tendencies.

Table 3. ***t* test results for the variable of doing sports for recreational purposes**

Dimension	Recreational sport	N	$\bar{X}$	SS	*t*	p value	Cohen's d
Affective Dimension of Game	Yes	133	43.5	7.34	2.682	.008*	.329
	No	139	41.0	7.90			
Behavioural Dimension of Game	Yes	133	40.3	9.05	1.673	.046*	.199
	No	139	38.4	9.77			
Total points	Yes	133	83.8	15.4	2.292	.023*	.278
	No	139	79.4	16.1			

* $p < 0.05$.

Moreover, in the study (Table 3), independent sample *t* test was applied to determine whether students' attitudes towards games involving physical activity differed according to the variable of doing sports for recreational purposes. As a result of the analyses, a statistically significant difference was found for the Affective Dimension of Game ($t = 2.682$, $p = .008$) when the mean score of the students who did recreational sports ($\bar{X} = 43.5$) was compared with the mean score of the students who did not ($\bar{X} = 41.0$). In terms of the Behavioural Dimension of Game, there was a significant difference between the mean score of the students who engaged in recreational sports ($\bar{X} = 40.3$) and the mean score of the students who did not ($\bar{X} = 38.4$) ($t = 1.673$, $p = .046$). Also, when the general attitude score was analysed, a significant difference was found when the mean score of the students who did recreational sports ($\bar{X} = 83.8$) was compared with the mean score of the students who did not ($\bar{X} = 79.4$) ($t = 2.292$, $p = .023$). Students who engage in recreational sports showed a significant difference in their attitudes toward physical activity-based games; Cohen's d values indicate a small effect size. These results reveal that the attitudes towards games of students who do sports for recreational purposes involving physical activity are more positive, and the differences observed especially in Affective and Behavioural Dimensions of Game reveal that students who do sports show a stronger interest and motivation to participate in games.

Table 4. ***t* test results for the variable of doing licensed sports**

Dimension	Licenced sport	N	$\bar{X}$	SS	*t*	p value	Cohen's d
Affective Dimension of Game	Yes	107	43.4	7.67	1.980	.043*	.247
	No	165	41.5	7.68			
Behavioural Dimension of Game	Yes	107	40.8	9.44	2.083	.038*	.267
	No	165	38.3	9.37			
Total points	Yes	107	84.2	16.0	2.199	.029*	.276
	No	165	79.8	15.6			

* $p < 0.05$.

Finally, in the study (Table 4), independent sample *t* test was applied to determine whether students' attitudes towards games involving physical activity differed according to the variable of doing licensed sports. As a result of the analyses, a statistically significant difference was found for the Affective Dimension of Game ($t = 1.980$, $p = .043$) when the mean score of the students who did licensed sports ($\bar{X} = 43.4$) was compared with the mean score of the students who did not ($\bar{X} = 41.5$). In terms of the Behavioural Dimension of Game, there was a significant difference between the mean score of the students who played licensed sports ($\bar{X} = 40.8$) and the mean score of the students who did not ($\bar{X} = 38.3$) ($t = 2.083$, $p = .038$). When the general attitude score was analysed, a significant difference was found when the total score of the students who did licensed sports ($\bar{X} = 84.2$) was compared with the total score of the students who did not ($\bar{X} = 79.8$) ($t = 2.199$, $p = .029$). Cohen's

d values range from 0.247 to 0.276, indicating that these differences have a small effect size. These results reveal that the attitudes of students who do licensed sports are more positive towards games involving physical activity, and that students who do sports show a higher interest and motivation to participate in games.

Table 5. **One-way ANOVA results for age variable**

Dimension	Age	N	$\bar{X}$	SS	F	p value	Partial η^2
Affective Dimension of Game	15 and under	50	44.8	7.63	7.018	.001*	.049
	16–17 years	168	43.9	7.54			
	18 and over	54	40.9	7.49			
Behavioural Dimension of Game	15 and under	50	41.8	9.58	5.178	.006*	.037
	16–17 years	168	41.4	8.79			
	18 and over	54	37.9	10.5			
Total points	15 and under	50	86.2	15.9	6.901	.001*	.048
	16–17 years	168	85.8	15.0			
	18 and over	54	78.8	16.8			

* $p < 0.05$.

As a result of the analyses, it was seen that there was a significant difference between age groups in terms of the Affective Dimension of Game ($F = 7.018$, $p = .001$) (Table 5). While 15 years-old and younger students had the highest mean score ($\bar{X} = 44.8$), 18 years-old and older students had the lowest mean score ($\bar{X} = 40.9$). When evaluated in terms of the Behavioural Dimension of Game, it was determined that there was a statistically significant difference between age groups ($F = 5.178$, $p = .006$). While the mean score of 15 years-old and younger students ($\bar{X} = 41.8$) was found to be higher than the other groups, it was found to be lower in 18 years-old and older students ($\bar{X} = 37.9$). When the general attitude score was analysed, it was determined that there was a significant difference according to the age variable ($F = 6.901$, $p = .001$). While students aged 15 years and younger ($\bar{X} = 86.2$) and 16–17 age group ($\bar{X} = 85.8$) had higher attitudes, the total score of students aged 18 years and older ($\bar{X} = 78.8$) was found to be lower. The values obtained across all dimensions are in the range of approximately .04–.05, indicating that these differences have an effect size ranging from small to medium. It shows that attitudes towards games involving physical activity may differ with increasing age, and especially the interest of students aged 18 and over towards games is lower.

4. DISCUSSION

How students' attitudes towards games based on physical activity are shaped in line with various demographic variables is an important research topic in the field of education and sport sciences. The findings of our study reveal that students' attitudes towards games involving physical activity do not show a significant difference depending on the gender variable. The fact that there is no statistically significant difference between the attitudes of male and female students shows that physical activity is more affected by individual motivation and environmental factors. In Ataol's (2024) study conducted on middle school students, the relationship between attitudes toward physical education classes and attitudes toward physical activity was examined. The findings of the study revealed that students' attitudes toward physical activity did not show a significant difference based on the gender variable. However, some studies suggest that women have lower rates of participation in physical activity compared to men, which may affect

their attitudes towards games (Guthold et al., 2018; Kaya et al., 2021). Socio-cultural factors such as family support and community values further influence students' attitudes. For example, students from families that value sport and physical activity are more likely to develop positive attitudes towards physical activity-based games (Pearson et al., 2009). Research consistently shows that boys tend to report more positive attitudes towards physical activity-based games and higher participation rates than girls (Duncan et al., 2004; Koca et al., 2005). Boys are often socialised to view physical activity and sport as congruent with masculine norms, leading to greater confidence and motivation in physical education settings (Hardin & Greer, 2009). In contrast, girls may face barriers such as social stigma, lower perceived competence, and lack of positive role models, all of which may result in less positive attitudes towards physical activity-based games (Flintoff & Scraton, 2001; Cairney et al., 2012).

It shows that students who do sports for recreational purposes have more positive attitudes towards games involving physical activity. This can be explained by Deci & Ryan's (2008) Self-Determination Theory, which suggests that individuals' intrinsic motivation directly affects their level of participation in physical activity and their attitudes towards games. The fact that recreational sports students exhibit more positive attitudes towards games is also consistent with the findings in the literature that physical activity increases an individual's psychological well-being (Teuber et al., 2024). Temel and Mamak (2023) evaluated different teaching models such as Sports Education Model (SEM), Physical Activity Cards (PAC) and Traditional Children's Games (TCG) in influencing students' attitudes. Their quasi-experimental design with 91 seventh grade students found that SEM and TCG approaches significantly improved students' value perceptions and positive attitudes towards physical education.

In the study, it is seen that students who are engaged in licensed sports exhibit more positive attitudes towards games involving physical activity. This result coincides with the findings in the literature that sport improves an individual's discipline, self-regulation, and social interaction skills (Cachón-Zagalaz et al., 2023). The higher interest and motivation to participate in games among students who are engaged in licensed sports can be explained by the contributions of sports to the physical and psychological development of the individual.

It shows that attitudes towards games involving physical activity may change with increasing age. In particular, it is seen that students aged 18 years and older have lower interest in games. This suggests that individuals' academic, social, or professional responsibilities may limit participation in physical activity (Ramírez-Granizo et al., 2020). However, some studies suggest that physical activity is associated with age-related motivational factors and that young individuals' interest in games is shaped by social interaction and entertainment factors (Do Carmo et al., 2013; Norris et al., 2016). Alıncak (2016) conducted a large-scale descriptive study involving 895 Turkish secondary school students to investigate how gender and age influence students' attitudes towards physical activity-based games. The findings showed that boys generally had more favourable attitudes than girls. However, girls' attitudes improved with age, especially in aspects such as passion and desire to play. These results emphasise the necessity of gender-sensitive approaches in physical education curriculum design (Alıncak, 2016). A large-scale study by Koca et al. (2005) found that Turkish adolescent girls expressed significantly less enjoyment and motivation towards physical activity-based games compared to boys, which was attributed to gender stereotypes and societal expectations. Similar findings showed that girls generally felt less capable and perceived physical education classes as less enjoyable, especially in competitive or skill-based games (Lyu & Gill, 2011).

5. CONCLUSIONS

Research findings show that attitudes towards games involving physical activity may vary in line with individual differences. In particular, the more positive attitudes towards games among students who participate in recreational and licensed sports can be explained by the contributions of physical activity to the psychological and social development of the individual. The change in attitudes towards games with increasing age can be associated with the academic and social responsibilities of the individual. In this context, it is recommended that games involving physical activity should be integrated into the education system more effectively and programmes that encourage students to participate in physical activity should be developed.

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