

# The Risk of Physical Activity and Smart Phone Addiction in Sports High School Students: An Example of a State School

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## ABSTRACT

The aim of this research is to determine the relationship between physical activity and the risk of smartphone addiction. The sample of the study consists of 236 (n=113 women and n=123 men) volunteer students studying at Aydin Incirliova Sports High School in the 2020-2021 academic year. The International Physical Activity Questionnaire was used to determine the physical activity levels of the students. Whether there is a risk of smartphone addiction in students was determined with the Smartphone Addiction Scale. The data obtained from the questionnaire applications were evaluated in the SPSS 25.0 package program at a 95% confidence interval and a significance level of 0.05. In the statistical analysis, it was determined that there was a significant difference between male and female students in terms of physical activity level by gender and the risk of smartphone addiction ( $p>0.05$ ). In addition, a weak negative relationship was found between the physical activity level of students and the risk of smartphone addiction ( $r=-0.258$ ;  $p<0.05$ ). Based on the findings of the study, it was concluded that male students had higher physical activity levels than female students, and female students had a higher risk of smartphone addiction. Another result of the study is that the physical activity levels of the students slightly affect the risk of smartphone addiction. For this reason, students should be encouraged to participate in physical activities with their close friends and family members, extracurricular physical activities should be frequently included in schools, and students should be directed to sports branches appropriate to their abilities and interests.

**Keywords:** Sports high school, Physical activity, Smartphone addiction.

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## INTRODUCTION

Nowadays, with the introduction of smart mobile phones in our lives, it has become possible to do many things we did with other devices on a single device. These devices have started to be seen as a compulsory tool for calling family members or friends, sending messages, connecting with them wherever possible, connecting to the internet, playing games, and listening to music, in short (Sar & Işıklar, 2012).

Individuals who can easily connect to the internet via their smartphones can download various applications, perform all kinds of updates, message, check their e-mails, listen to music online, watch movies, connect to social networking networks such as Facebook, Twitter, Youtube, surf on search engines such as Google, they can read various news sites, play games, take photos, pay their bills, shop online, and even enjoy many other conveniences such as ordering food (Hoşgör & Tandoğan, 2017).

Smartphones, which are seen as the source of games and entertainment that support the establishment and maintenance of interpersonal relationships, have started to be accepted as one of the biggest non-drug addictions of the 21<sup>st</sup> century (Choliz, 2010). Smartphone addiction can be defined as the problematic use of the phone, the continuous control of the phone, and the disruption of tasks or daily work with the presence of these smartphones. With the increase in the use of smart devices, individuals condemned to the use of smart devices have begun to seek socialization in virtual environments, which they could not catch in their daily lives (Aksoy, 2015). For this reason, individuals live in the virtual world from the moment they wake up from sleep and open their eyes until they close their eyes for sleep, reflecting their own lives as they wish and following the lives of others (Ataman Yengin, 2016). The increase in the use of smartphones has brought along

the excessive and uncontrolled use of the internet. Some individuals disrupt their daily work due to their inability to give up the virtual environment. In addition, they cannot control the time they spend in the virtual environment (Demir & Seferoğlu, 2016).

In addition to neck, spine, and forearm injuries, psychological and physiological disorders such as depression can be seen in people with smartphone addiction (Randler, 2016). In addition, smartphone addiction leads to negative situations such as somnopathy (sleep disturbance), attention deficit, stress, alienation, finger structure deterioration, fatigue, and anxiety (Gezgin *et al.*, 2017).

It is predicted that prolonged smartphone use may cause psychiatric disorders and a decrease in physical activity (Boulos *et al.*, 2011; Kuss & Griffiths, 2011). Because time-consuming functions such as phone calls, sending/receiving messages, updating social media accounts, and browsing the internet are defined as sedentary behaviors (Rosenberg, 2010).

Physical and mental health problems that arise due to smartphone addiction are much more common in young people. Because it is seen as a popular activity among young people to access the internet using smartphones. This situation may cause excessive internet use (Lin & Tsai, 2002). One of the important reasons why internet usage is so widely used among young people is that it can be accessed easily and at any time of the day with the help of smartphones. Because people generally prefer activities that they can access and apply easily in order to make use of their free time (Bayraktutan, 2005, Ilkım & Mergan, 2021, Gündoğdu *et al.*, 2018). For this reason, it is important to determine the risk of smartphone addiction in young people and to take preventive measures.

This research has been planned with the thought that physical activity can be an effective tool in protecting young people from smartphone addiction. Because physical activity increases the joy of living. It contributes to the self-confidence of individuals and increases their self-confidence. Individuals who frequently engage in physical activities cannot find the opportunity to engage in devices such as televisions, computers, and smartphones provided by technology. Thus, smartphone addiction can be prevented in young people. For this reason, it is thought that the importance of physical activity in the fight against smartphone addiction will be better understood in line with the results to be obtained from the study, which aims to determine the relationship between physical activity and the risk of smartphone addiction in students studying at Aydin Incirliova Sports High School.

## MATERIAL AND METHOD

In this part of the study, information about the sample, data collection tools, and statistical analysis of the data are included.

### Sample

**Sampling:** The sample of the study consists of 236 (n=113 women and n=123 men) volunteer students studying at Aydin Incirliova Sports High School in the 2020-2021 academic year.

**Data Collection Tools:** The data of the study were collected using the face-to-face interview technique, using the Personal Information Form, the International Physical Activity Questionnaire (Short Form) and the Smartphone Addiction Scale (Short Form).

**Personal Information Form:** The Personal Information Form prepared by the researcher consists of two questions questioning gender and class level.

**International Physical Activity Questionnaire:** The International Physical Activity Questionnaire was developed in 1998 by the International Physical Activity Assessment Group in short and long-form. Craig *et al.*, (2003), in their study to determine the validity and reliability of the questionnaire, stated that the criterion validity of the questionnaire was 0.30 for the short form. The validity and reliability study of the survey in Turkey was carried out by Öztürk (2005). It was stated that the short and long forms of the questionnaire could provide repeatable and comparable data. The criterion validity of the questionnaire was determined as  $r = 0.30$  for the short form (Öztürk, 2005). The questionnaire provides information about time spent sitting, walking, and moderate and vigorous activities. In the evaluation of all activities, each activity for at least 10 minutes at a time is taken as a criterion (Craig *et al.*, 2003). MET is a measure of oxygen expended per kilogram per unit time. One MET corresponds to the amount of oxygen consumed at rest (approximately 3.5 ml/kg/min). MET values of individuals can be calculated from the data obtained from the questionnaire. Frequency, duration, and intensity variables are used to calculate MET values. Frequency is how many days a week the activity is done; duration, how long (hours or minutes) the activity was done each time; intensity determines the MET spent in 1 hour during the activity (Craig *et al.*, 2003).

MET minute/week values of the students who constituted the sample of the study were calculated

according to the following formula (Karaca & Turnagöl, 2007):

$$\text{MET/week} = \text{Frequency of the activity} * \text{Duration of the activity} * \text{Intensity of the activity}$$

**Smartphone Addiction Scale:** Smartphone Addiction Scale was developed by Kwon *et al.*, (2013). The Short Form of the scale, which was adapted to Turkish by Noyan *et al.*, (2014), consists of 10 items. The scale is rated from 1 (strongly disagree) to 6 (strongly agree). The lowest score that can be obtained from the scale is 10 and the highest score is 60. As the score obtained from the one-dimensional scale increases, the risk of smartphone addiction increases.

**Statistical Analysis of Data:** The data obtained from the questionnaire to evaluate the relationship between physical activity and the risk of smartphone addiction in students studying at Aydin Incirliova Sports High School in the 2020-2021 academic years was evaluated at a 95% confidence interval and 0.05 significance level in the SPSS 25.0 package program. Since the number of observations was more than 70, it was tested with the Kolmogorov Smirnov Test whether the data showed normal distribution or not. Parametric tests were used in statistical analysis since it was understood that the data showed normal distribution and parametric test assumptions were achieved. The frequency distributions of the students' gender and class level variables were calculated. The significance of the difference between the mean for two groups independent of a continuous variable indicated by measurement was determined by the Independent Sample T-Test. The significance of the means for three or more independent groups was tested by One Way ANOVA. Pearson's correlation coefficient ( $r$ ) was used to determine whether there is a relationship between two or more variables and the direction and severity of the relationship if any.

In the study, the correlation coefficients specified as absolute values below were used to determine the level of relationship between variables (Alpar, 2010):

- 0.00-0.19 Very weak (low) relationship
- 0.20-0.39 Poor (low) relationship
- 0.40-0.69 Moderate relationship
- 0.70-0.89 Strong (high) relationship
- 0.90-100 Very strong relationship

**Findings:** In this part of the research, findings obtained from statistical analysis are included.

**Table 1.** Descriptive statistics of the students

Variables	N	%
<b>Gender (n=236)</b>		
Female	113	47.9
Male	123	52.1
<b>Class Level (n=236)</b>		
9 <sup>th</sup> graders	63	26.7
10 <sup>th</sup> graders	60	25.4
11 <sup>th</sup> graders	64	27.1
12 <sup>th</sup> graders	49	20.8

In Table 1. descriptive statistics regarding the students' constituting the sample can be seen. Of these, 47.9% (n= 113) of the students are female and 52.1% (n=123) of them are male. 26.7% (n=63) of students were

ninth, 25.4% (n =60) were tenth, 27.1% (n=64) were eleventh and 20.8% (n=49) attends the twelfth grade.

**Table 2.** Comparison of physical activity level according to gender

Physical activity level	Gender	N	Mean	Std. Dev.	t	p
MET (min/week)	Female	113	1396,2	1376,5	-6,347	0,002
	Male	123	2372,0	2367,4		

When Table 2. is examined, it is understood that there is a statistically significant difference between male and female students in terms of physical activity level ( $p < 0.05$ ). When the MET (minute/week) values are examined, it is seen that the physical activity levels of male students are higher than female students.

**Table 3.** Comparison of physical activity level according to class level

Physical activity level	Class level	N	Mean	Std. Dev.	F	p
MET (min/week)	9 <sup>th</sup> grade	63	1868,4	2084,5	1,489	0,256
	10 <sup>th</sup> grade	60	1769,9	1986,2		
	11 <sup>th</sup> grade	64	1543,2	1581,5		
	12 <sup>th</sup> grade	49	1582,1	1567,9		

In Table 3. it is seen that there is no statistically significant difference between the students studying at the 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup>, and 12<sup>th</sup> class levels in terms of physical activity level ( $p > 0.05$ ).

**Table 4.** Comparison of smartphone addiction risk according to gender

Physical activity level	Gender	N	Mean	Std. Dev.	t	p
MET (min/week)	Female	113	28,07	10,94	-3,246	0,001
	Male	123	31,96	12,78		

**Table 5.** Comparison of smartphone addiction risk according to class level

Smartphone addiction level	Class level	N	Mean	Std. Dev.	F	p
Smartphone addiction scale score	9 <sup>th</sup> grade	63	27,96	11,02	2,367	0,096
	10 <sup>th</sup> grade	60	28,42	12,06		
	11 <sup>th</sup> grade	64	30,16	11,81		
	12 <sup>th</sup> grade	49	29,96	10,83		

**Table 6.** The relationship between physical activity level and the risk of smartphone addiction

	N		Physical activity level / Smartphone addiction risk
Female	113	r	-0,174
		p	0,007
Male	123	r	-0,278
		p	0,001
Total	236	r	-0,258
		p	0,003

As seen in Table 4, there is a statistically significant difference between male and female students in terms of smartphone addiction risk ( $p < 0.05$ ). It can be said that the

risk of smartphone addiction in female students is higher than in male students.

In Table 5. it is seen that there is no statistically significant difference between the students studying at the 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup>, and 12<sup>th</sup> class levels in terms of smartphone addiction risk according to class level ( $p > 0.05$ ).

Table 6. shows that there is a weak negative relationship between physical activity level and the risk of smartphone addiction ( $r = -0.258$ ;  $p < 0.05$ ). According to the correlation analysis made according to gender, it was found that there is a very weak negative correlation between physical activity level and smartphone addiction risk in female students ( $r = -0.174$ ;  $p < 0.05$ ); In male students, it is understood that there is a weak negative relationship between physical activity level and the risk of smartphone addiction ( $r = -0.278$ ;  $p < 0.05$ ).

## DISCUSSION AND CONCLUSION

The increasing use of smartphones brings along many negative situations that have psychological and social effects such as addiction (Bian & Leung, 2015; Cholz, 2012). Especially in children, stress, insomnia, physical, mental development disorders/disorders, etc. It can cause various health problems (Thomee *et al.*, 2011). On the other hand, although smartphone addiction is seen as similar to addiction to other technology-based tools such as internet and computer addiction (Kim, 2013); In the literature, it is claimed that smartphone addiction is more dangerous because smartphones are portable and easy to connect (Demirci *et al.*, 2014). For this reason, it is very important to identify those at risk of smartphone addiction, especially among young people, and to take protective measures. In this study, which was carried out with the idea that physical activity can be used as an effective tool in preventing smartphone addiction in young people, it was found that the physical activity levels of men were higher than women.

When the literature is examined, it is possible to come across studies that support this research. *Alper et al.*, (2017) reported that males participated in more physical activities compared to females in their study, in which they examined the effect of change in nutrition and physical activity habits of Balıkesir Science High School students on weight gain. In a similar study, Geçkil and Yıldız (2006) stated in their study to determine the health behaviors and problems of students studying at Malatya High School (n=610), that the physical activity levels of male students were higher than female students. In the study conducted by Bebiş *et al.*, (2015) in a secondary education institution in Ankara with the participation of students between the ages of 13-19 (n=932) with the aim of determining the health promotion behaviors of adolescents; They stated that male students' scores of nutrition and exercise sub-dimension of Adolescent Health Development Scale were higher than female students. Christofaro *et al.*, (2016) in their study aims to evaluate the relationship between television viewing time, eating habits, physical activity, and overweight among students aged 14-17 (n=515 males and n=716 females); They stated that the level of physical activity of female students is lower than that of men and that the time spent by female students watching television is higher than that of male students. In a study conducted

by Gümüş *et al.*, (2014) in order to examine the reasons that limit the participation of students (n=750) in physical activities in their free time in secondary education institutions in Afyonkarahisar; he reported that female students' leisure-time physical activity restrictor scale scores (2.44±0.87) were higher than male students' leisure-time physical activity restrictor scale scores (2.20±0.91).

In the study, it was determined that the type of school the students attended did not affect their physical activity level. Today, most students have a smartphone that can easily access the internet regardless of the economic situation of their school and their families. In fact, many students have tools that limit physical activity in their homes, where they can play desktop computers, laptops, tablets, and digital games. A significant portion of the students who do not have the aforementioned digital tools can access these tools and spend hours sitting in internet cafes and game arcades. Although schools host children from families with different social structures and economic levels, similar behavior patterns can be observed in most of the students regardless of the school type. Therefore, it can be accepted as a natural situation that the physical activity levels of the students are similar according to the type of school.

The risk of smartphone addiction in female students participating in this study is higher than in male students. When the literature is examined, it is possible to reach studies with similar results. As a matter of fact, it has been reported in many studies that nomophobia behaviors called "fear of being deprived of a smartphone" are observed more frequently in women. Kaur and Sharma (2015) reported that gender is associated with the risk of nomophobia; Tavalacci *et al.*, (2015) reported that the risk of nomophobia is higher in female students than in males. Gezgin and Çakır (2016) stated that more nomophobia behaviors are observed in female students compared to males. In the study of Erdem *et al.*, (2016), it was concluded that women spend more time on smartphones than men. Gezgin *et al.*, (2018) reported that female students are more prone to nomophobia behaviors compared to male students. In another study, Doğan and Tosun (2016) found that the frequency of problematic smartphone use among high school female students was higher than that of men.

In this study, it was determined that the class level of education does not affect the risk of smartphone addiction. Supporting this research, it is possible to find studies that report that students' smartphone usage habits do not differ according to class level (Gezgin & Çakır, 2016; Adnan & Gezgin, 2016; Gezgin *et al.*, 2018, Akyürek, 2020). However, in the literature, there are also studies in which there are differences among students in terms of smartphone usage habits according to the level of education. In the study conducted by Bağcı (2018) with the aim of determining the smartphone addiction levels of high school students (n=133), it was found that the smartphone addiction levels of the 11<sup>th</sup>-grade students were higher than the students at the 9<sup>th</sup> and 10<sup>th</sup> grade. In the study conducted by Hayırcı and Sarı (2020) with the participation of high school students (n=284), it was determined that tenth-grade students were more smartphone-addicted than eleventh-grade students.

In this study, it was found that there is a low-level relationship between physical activity and the risk of smartphone addiction. Accordingly, it can be said that depending on the increase in the physical activity levels of the students, the risk of smartphone addiction in students may decrease, albeit at a low level. It was determined that the relationship between physical activity and the risk of smartphone addiction in male students was slightly higher than in female students. It is predicted that this may be due to the fact that male students' physical activity levels are higher than female students. There are studies in the literature that indicate that physical activity is associated with smartphone addiction.

In the study by Kim *et al.*, (2015) evaluating the relationship between physical activity and excessive smartphone use in students between the ages of 19-25 and studying at Hanseo University in South Korea, they stated that there was a decrease in the number of daily steps and the calorie expenditure of the students who use the smartphone excessively.

Erdoğanoglu and Arslan (2019) found in their study with university students between the ages of 18-25 that 67.8% of those who use smartphones have decreased their physical activity levels.

Devran Muharremoglu (2019) stated in his study to investigate the factors associated with smartphone addiction among tenth-grade students studying at high schools in Pursaklar district of Ankara, and that students who spend their time outside of school with sports are less smartphone-addicted.

In line with the findings obtained in this study, the following conclusions were reached:

- Male students have a higher physical activity level than women.
- Class level of education does not affect the level of physical activity.
- Female students are at higher risk of smartphone addiction than men.
- Class level does not affect the risk of smartphone addiction.
- There is a low-level negative relationship between physical activity and the risk of smartphone addiction. As the physical activity level of students' increases, it is expected that the risk of smartphone addiction in students will decrease slightly.

Based on the results of this study, the following suggestions can be made:

- More physical activities should be included during the day.
- Participation in physical activities with close friends and family members should be ensured.
- Schools should frequently include extracurricular physical activities.
- Students should be directed to sports branches appropriate to their abilities and interests.
- Students who are at risk of smartphone addiction should be provided with psychological support.
- School counseling services should organize physical activities to combat the risk of smartphone addiction.

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