Comparison of Secondary School Students' Digital Addiction Levels and Their Tendencies' Towards Physical Education and Sports

Ortaöğretim Öğrencilerinin Dijital Bağımlılık Düzeyleri ile Beden Eğitimi ve Spora Yönelik Eğilimlerinin Karşılaştırılması

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Abstract: The study aimed to compare the reflections of secondary school students' digital addiction levels and their tendencies towards physical education and sports, physical activity, and physical fitness. A total of 733 voluntary secondary school students participated in the study. Personal information form, digital addiction scale (DBQ), physical activity questionnaire-short form (IPAQ), physical fitness measurements, and some anthropometric measurements were performed. Data were analyzed using min, max, mean, frequency percentages, t-test, and Tukey test. According to the physical activity level scores, significant differences were found in vigorous activity, sitting activity, and total activity level, and according to weekly physical education course hours, there was a significant difference in the variables of being licensed or not. According to the digital addiction scale scores, no significant difference was found in terms of gender and being licensed or unlicensed. According to the physical fitness levels of the students, it was seen that girls were more flexible than boys, boys had better right and left-hand strength and cardiorespiratory endurance data than girls, and students with more weekly physical education class hours and licensed students had higher physical fitness levels. According to the physical activity levels, it was determined that girls had good total activity scores, boys had high vigorous activity and sitting activity scores, licensed students were more active, and those with more weekly physical education class hours had higher physical activity levels. According to the results of digital addiction, it was determined that there was no difference between girls and boys or between licensed and unlicensed students.

Keywords: Digital addiction, physical fitness, physical activity, physical education class hours.

Özet: Araştırma ortaöğretim öğrencilerinin dijital bağımlılık düzeyleri ile beden eğitimi ve spora yönelik eğilimlerinin, fiziksel aktivite ve fiziksel uygunlukla ilgili yansımalarını karşılaştırmayı amaçlamıştır. Araştırmaya ortaöğretim düzeyinde 733 gönüllü öğrenci katılmıştır. Katılımcılara kişisel bilgi formu, dijital bağımlılık ölçeği(DBÖ), fiziksel aktivite anketi-kısa formu(IPAQ), fiziksel uygunluk ölçümleri ile bazı antropometrik ölçümler yapılmıştır. Verilerin analizinde min, max, ortalama, frekans yüzdelikler, t-testi ve tukey testi kullanılmıştır. Fiziksel aktivite düzeyi skorlarına göre şiddetli aktivite, oturma aktivitesi ve toplam aktivite düzeyinde, haftalık beden eğitimi ders saatine göre lisanslı olup olmama değişkenlerinde anlamlı farklılık saptanmıştır. Dijital bağımlılık ölçeği skorlarına göre öğrencilerin cinsiyet ve lisanslı ya da lisanssız olmaları açısından anlamlı bir farklılık bulunmamıştır. Haftalık beden eğitimi ders saatine göre dijital bağımlılık ölçeğinin "oyun bağımlılığı" alt boyutunda anlamlı farklılık olduğu görülmüştür. Yapılan araştırmada, öğrencilerin fiziksel uygunluk düzeylerine göre kızların erkeklerden daha esnek, erkeklerin ise sağ ve sol el kuvveti ve kardiyorespiratuar dayanıklılık verilerinin kızlardan daha iyi olduğu, haftalık beden eğitimi ders saati fazla olan öğrencilerin, lisanslı öğrencilerin fiziksel uygunluk düzeylerinin daha yüksek olduğu görülmüştür. Fiziksel aktivite düzeylerine göre kızların toplam aktivite skorları iyi, erkeklerin şiddetli aktivite ve oturma aktivite skorları yüksek, lisanslı öğrencilerin daha aktif oldukları, haftalık beden eğitimi ders saati fazla olanların fiziksel aktivite düzeylerinin yüksek olduğu tespit edilmiştir. Dijital bağımlılık sonuçlarına göre kızlar ile erkekler arasında, lisanslılar ile lisanssızlar arasında bir fark olmadığı tespit edilmiştir.

Anahtar Kelimeler: Dijital bağımlılık, fiziksel uygunluk, fiziksel aktivite, beden eğitimi ders saati.

INTRODUCTION

The concept of digitalization, which has become an indispensable part of human life with the changing and developing world technology, has an internet-based, modular structure (Allcott et al., 2022; Dresp-Langley & Hutt, 2022). This structure, together with its appeal to people from all age groups, has changed the existing understanding of digitalization and revealed the concept of digital addiction (Meng et al., 2022; Hawi et al., 2019). Digital addiction is defined as a type of addiction caused by excessive use of digital technology (Christakis, 2019).

While digital addiction has become an important activity today, this situation has caused many negative situations for individuals in terms of obesity, inactivity, and affective, cognitive, and social aspects (Woessner et al., 2021). Situations such as excessive internet use and preference for digital games instead of traditional games are situations resulting from uncontrolled digitalization (Royakkers et al., 2018; Lee et al., 2024). This situation may cause the movement needs of individuals not to be met (Modi et al., 2020). It can be said that inactivity can lead to serious health problems such as cardiovascular diseases, diabetes, and obesity, reaching dimensions that can threaten health (Balwan & Kour, 2021; Lopez-Jimenez et al., 2022). Individuals who do not regularly engage in physical activity, especially young individuals, are at risk of encountering various health problems in their later ages due to lack of physical activity (Bull et al., 2020; McDowell et al., 2019; Laddu et al., 2021). This situation negatively affects not only the physical but also the mental and spiritual development of individuals (Nowak et al., 2019; Rasulovna, 2021). In order to prevent these problems and improve the quality of life, individuals are recommended to do physical activity (Oliveira et al., 2019). Physical activity refers to all physical movements that increase energy expenditure on skeletal muscles, increase the activity of the circulatory system, and cause fatigue (Saghiv et al., 2020). A worldwide study states that 80% of children and adolescents aged 13-18 years do not participate in physical activity (Sluijs et al., 2021; Qi et al., 2020). Individuals whose movement needs are not met cannot maintain healthy development compared to individuals who engage in regular physical activity and participate in sportive activities (Tashpulatov, 2022).

It is stated that the type of addiction that causes concern about the level of physical activity, which is important in child and adolescent health in today's life, is game addiction (Nopiana et al., 2022; Almourad et al., 2020). Digital games have become a danger for the future of societies as they have started to be perceived as a threat in virtual environments that children and young people can easily access (Halldorsson et al., 2021; Farič et al., 2024). Negative situations such as staying in front of the screen for long periods of time, not being able to quit the game, forgetting or neglecting real-life responsibilities, having difficulty in communication, putting gaming at the center of life, and not allocating time for other activities can be experienced (Kol & Topgul, 2022; Schmidt et al., 2022). In addition, many negative effects such as reluctance to talk, isolation from the social environment, and psychological and sociological problems can be observed in individuals with gaming addiction (Lopez-Fernandez et al., 2019).

Based on this information, it can be thought that it is inevitable for children with digital addiction to remain inactive and therefore to stay away from sports-oriented tendencies. In the existing studies, no study was found in which the factors affecting digital addiction and physical activity attitudes and behaviors were examined together and compared in terms of physical fitness. Therefore, it is thought that this study will have a unique value and contribute to the literature. It is important to make various evaluations for adults working with young people, families, educational institutions, managers who shape and plan education, teachers, and ministries in order to direct the physical, emotional, and social development of students of this age group in the future. In this research, the digital addiction and physical fitness levels of secondary school students and their tendencies towards physical activity, physical education, and sports will be compared and will help young people to be guided in order to be healthy individuals.

METHODS

Research Model: The research was designed in accordance with the relational screening model, one of the general screening models. Relational survey models are research models that aim to determine whether there is a change between two or more variables and to determine the degree, if any (Karasar, 2019).

Purpose of the Research: The aim of this study is to compare and analyze the digital addiction levels of secondary school students and their tendencies towards physical education and sports.

Research Group: The power analysis of the research was conducted. The sample is representative of the population. The sample of the research consists of 733 high school students, 332 girls and 401 boys, aged between 14 and 17, who were selected by an easy (accessible) sampling method and who were studying in the 1st, 2nd, and 3rd grades of high school in Kırıkkale Province in 2022-2023. Before

starting the study, ethical approval permission was obtained from the Gazi University Institute of Educational Sciences Ethics Committee on 21.06.2022 with the meeting number 2022/12 on 21.06.2022. After obtaining the necessary permissions from the Kırıkkale Provincial Directorate of National Education, school principals, physical education teachers, and students were interviewed and informed about the purpose of the study, method, questionnaires, tests, and possible negative situations that may be encountered during the tests. Voluntary consent forms and parental permission forms were given to the students. The students who completed and returned the parental consent form and voluntary consent form in the following week were included in the study. The study started in the 1st week by filling out the questionnaires. In the 2nd week, physical fitness measurements were made within the scope of the physical education course. Students with illness, disabled students, mainstreaming students, students who did not participate in physical education classes, and students whose parents did not give permission were not included in the study.

Data Collection: In this study, personal information form, digital addiction scale, physical activity questionnaire, and flexibility, hand grip strength, and 1000m run-walk test measurements were performed as data collection tools. The measurements were carried out in each school's own facilities. The test sessions were completed at the same time of the day. No strenuous exercise was allowed for at least 24 hours before the tests.

1- Personal Information Form: * In the personal information form: gender, age, height, body weight (kilos), and body fat percentage.

* Weekly Physical Education Course Hours—Physical Education Course Hours, - Elective Physical Education Course Hours, - Undergraduate Status.

2- Digital Addiction Scale: The scale was completed by the students in their own classrooms in the first week. The scale was used in the study titled Digital Addiction, developed by Arslan, Kırık, Karaman, and Çetinkaya in 2015 and tested on high school and university students. Arslan et al. determined the Cronbach's alpha reliability coefficient of this scale as 0.89. The scoring of the scale was developed as a 5-point Likert scale as "1: Strongly Disagree," "2: Disagree," "3: Undecided," "4: Agree," and "5: Strongly Agree." The scale has 29 questions and 3 sub-dimensions. These are "game addiction," "social media," and "impact on daily life."

3- Physical Activity Questionnaire (IPAQ): Data were collected by questionnaire method in the 1st week in the students' own classrooms. International Physical Activity Questionnaire (IPAQ) - The short form was developed by Craig et al. (2003) to determine the physical activity levels of individuals in the study. The validity and reliability study in Turkey was conducted by Öztürk in 2005. The questionnaire aimed to measure the physical activity level of the individual in the last seven days. It is a short-scale form

consisting of seven questions that collect information about the time period during which walking (3.3 METs), moderately vigorous activities (4 METs), and vigorous activities (8 METs) were performed. In the evaluation of all activities in the questionnaire, at least 10 minutes of that activity must be performed at a time. In order to determine the level of physical activity, minutes, days, and metabolic equivalence (MET) are multiplied for each physical activity separately, and the MET minutes/week value is obtained. Physical activity levels are determined in 3 categories: high level (very active): above 3000 MET-min/week; medium level (minimally active): between 600 and 3000 MET-min/week; and low level (inactive): below 600 MET-min/week.

4- Anthropometric Measurements: A Eurofit measuring battery was used in some of the anthropometric measurements.

* Soehnle Ultrasonic Professional Height Measurer was used for the height of the participants in the study. After taking the anatomical posture on a flat surface, barefoot, heels together, arms hanging to the side, the height was measured by adjusting the height measuring device above the head, and the values were recorded in centimeters.

* For body weight measurements, an electronic scale (with a sensitivity of 10 gr-150 kg) with a human weighing height scale printer with a sensitivity of 0.01kg produced by Hüray Scale was used. During the measurements, the participants were weighed in anatomical position, barefoot and in sportswear. All weighing result data were read from the electronic display and recorded in 'kg' on the computer.

* Body Mass Index (BMI) was calculated by using the body weight measurements and height measurements of the students. BMI = Weight / /Height² was calculated from the ratio.

* Body fat ratio was measured with the Tanita Body Composition Analyzer TBF Professional brand body analyzer. After their height was measured, their personal information was recorded on the analyzer. They were made to stand on the analyzer in bare feet and shorts, with the electrodes touching the soles of the feet , in an upright position and motionless, until the results appeared on the screen. Body weight (kg), body fat percentage (%F), body fat content (%FM), lean body mass (kg-LBM), body water content (kg-TW), and body mass index (BMI) were determined automatically and electronically by using the bioimpedance device.

5- Fitness Health-Related Performance Tests: * The width of 45 cm, the length of 35 cm, and the height of 32 cm The BASELINE brand coffee table (extension platform) was used for the Sit and Reach Test (Flexibility). While preparing for the measurement, the students were told not to bend their knees and to touch the soles of their feet exactly to the measurement table. The students were asked to touch the table with both arms, push the ruler on the table with both hands nervously, move slowly to the distance they could reach, and wait 1-2 seconds at the last point. This application was repeated 2 times for each student. The best result for each student was recorded in centimeters.

* (1000 Metre) Run-Walk Test A 1000-meter run-walk test was performed to measure cardiorespiratory endurance. Since the group participating in the study was not a homogeneous group (athlete, non-athlete, sedentary, etc.), the 1000-meter run-walk test was preferred because the distance was at least 800 meters above the distances that can measure endurance and because it is the test used in athlete training centers to measure the health and performance profiles of athletes (Prime Ministry GSGM Health Affairs Directorate, 2010). When the students were ready for the test, they entered the test from the starting point of the photocell, created a tempo that could finish the test, preferred to run and walk where they had difficulty, and completed the test by passing through the end point of the photocell and showing their best performance. Measurements were made in each school's own asphalt garden. A 200-meter track was created in the garden, which was previously measured and determined with funnels and strips. Students completed this track in 5 laps.

* Hand grip strength was evaluated using a digital hand dynamometer (T.K.K.5401 Grip-D, Takei, Japan). After warming up for 5 minutes, 2 measurements were taken by squeezing the hand dynamometer with the feet shoulder-width apart and arms slightly open from the body position without bending the arms at the elbows, and the dynamometer was reset after each squeeze. The measurements were repeated for both hands, and the best result was recorded in kilograms (kg).

Analysis of Data: The results of the participants' digital game addiction, physical activity questionnaire, anthropometric measurements, and performance tests were determined, and the data obtained were analyzed in the IBM SPSS 25.0 program. Mean, standard deviation, minimum, and maximum descriptive statistics of all data were calculated. The "Kolmogorov-Smirnov" test was used to analyze whether the data were normally distributed, and it was found that the variables were normally distributed. The significance level was chosen as 0.05, and the significance level of 0.01 was also specified in comparisons with lower significant differences. As a result of the statistics, the difference between two different variables was determined by a paired t-test, and in case of a significant difference between the groups, Tukey post-hoc test results are also included in the tables to determine the groups that reveal the difference.

Ethical Declaration: Ethical approval permission was obtained from Gazi University Institute of Educational Sciences Ethics Committee with the meeting number 2022/12 on 21.06.2022.

RESULTS

Table 1. Demographic information of participants

Variables		n	%
Total number of participants		**733**	**100**
Age	14	139	19.0
	15	257	35.1
	16	205	28.0
	17	132	18.0
Gender	Girl	332	45.3
	Male	401	54.7
Participants' Schools	Vocational High School	147	20.1
	Sports High School	90	12.3
	Imam Hatip High School	251	34.2
	Anatolian High School	112	15.3
	Science High School	133	18.1

The study included 733 students. The statistical information of the students aged 14-17 years and from 5 different high school types in the province is shown in Table 1.

Table 2. Comparison of physical fitness data according to gender variables

Variables	Girl (n=332)	Male (n=401)	t-test	
Physical Fitness Tests			t	*p*
1000 M	8,98 ± 2,5	6,71 ± 1,5	15,300	**0,001***
Right hand grip strength (kg)	21,6 ± 5,3	32,3± 8,3	-20,214	**0,001***
Left hand grip strength (kg)	19,8 ± 5,2	30,2 ± 8,3	-19,728	**0,001***
Sit and reach (cm)	26,1 ± 7,0	24,4± 6,9	3,295	**0,001***

*p< 0,001

When the scores in the table were examined, a significant difference was found in favor of male students in 1000 m, right-hand grip strength (kg), and left-hand grip strength (kg) scores and in favor of female students in sit and reach (cm)scores.

Table 3. Comparison of physical fitness data according to weekly physical education class hours variable

Variables	1 hour (n=105)	2 hours (n=538)	12h (n=23)	13 hours (n=46)	16h (n=21)	F	p	Tukey
Physical Fitness Tests								
1000 M	7,8± 1,4	8,0± 2,4	6,3± 1,0	6,1± 1,7	5,7± 1,5	15,486	**0,001***	16<12=13<1=2
Right hand grip strength (kg)	26,5 ± 7,0	27,1 ± 9,1	27,6 ± 6,4	30,8 ± 8,5	35,8±10,1	7,031	**0,001***	16>13>1=2=12
Left hand grip strength (kg)	24,5 ± 7,2	25,0 ± 8,7	26,5 ± 8,0	28,1 ± 8,8	35,1± 10,1	8,524	**0,001***	16>1=2=12=13
Sit and reach (cm)	25,9 ± 7,6	24,2 ± 6,7	29,5 ± 3,9	31,5 ± 6,0	28,2 ± 5,9	16,575	**0,001***	13>12=16=1=2

*p< 0,001

When the scores in the table were examined, it was found that there was a significant difference in the 1000m, right-hand grip strength (kg), left-hand grip strength (kg), and sit and reach (cm) scores of high schools with 1 hour, 2 hours, 12 hours, 13 hours, or 16 hours of weekly physical education classes.

Table 4. Comparison of physical fitness data of licensed and unlicensed students

Variables	Licenced (n=160)	n=573	t-test	
Physical Fitness Tests			t	*p*
1000 M	6,56 ± 1,8	8,07 ± 2,3	-7,678	**0,001***
Right hand grip strength (kg)	29,8 ± 8,8	26,9± 8,8	3,679	**0,001***
Left hand grip strength (kg)	27,6 ± 9,4	24,9 ± 8,5	3,560	**0,001***
Sit and reach (cm)	28,4 ± 6,9	24,3± 6,8	6,755	**0,001***

*p< 0,001

When the scores in the table were examined, a significant difference was found in favor of licensed and unlicensed students in 1000 m, right-hand grip strength (kg), left-hand grip strength (kg), and sit-and-reach (cm) scores among physical fitness variables.

Table 5. Comparison of physical activity scale (ipaq) data according to gender variable

Variables			t-test	
	(n=332)	**(n=401)**		
Physical Activity			t	*p*
Walking activity	1396,81±1057	1493,02±1098	-1,200	0.230
Moderately vigorous activity	508,66±626,7	442,79±610,23	1,437	0.151
Severe activity	686,31±1040	1439±1745	-6,912	**0.001***
Total	600,45±199,7	511,1±178,6	-4,547	**0.001***
Sitting activity	2591,8±2026,1	3375,6±2542	6,396	**0.001***

*p< 0,001

In the table, no significant difference was found in walking activity or moderately vigorous activity among the physical activity variables of female and male students. A significant difference was found in vigorous activity, sitting activity, and total scores according to gender. While male students had higher scores in vigorous activity and sitting activity, female students had higher scores in total.

Table 6. Comparison of physical activity scale (IPAQ) data according to weekly physical education class hours variable

Variables	1 hour (n=105)	2 hours (n=538)	12h (n=23)	13 hours (n=46)	16h (n=21)	F	p	Tukey
Physical Activity								
Walking activity	1168± 883	1432±1113	1980±1078	1818±1041	2892 ± 645	5,543	**0,001***	1=2<13<12<16
Moderately vigorous activity	331±454	456 ± 602	1217± 1058	537 ± 523	622 ± 527	10,782	**0,001***	1=2=13=16<12
Severe activity	438 ± 787	1041±1391	2046± 1851	2053±2385	2729±1987	19,949	**0,001***	1<2<12<13<16
Total	1939±198	2930±2240	5244±2644	4409±2690	5244±2708	21,778	**0,001***	1<2<13<12=16
Sitting activity	594 ± 163	563 ± 200	438 ± 122	363 ± 86	357 ± 88	15,823	**0,001***	16<13<12<2=1

*p< 0,001

In the table, it was determined that the scores of the students who received 16, 13, or 16,13,12 hours of weekly physical education lessons were higher than the students who received 1 or 1,2 hours of weekly physical education lessons in all activities except sitting activity. It was determined that the students with the highest scores in the sitting activity were the students with fewer weekly class hours.

Table 7. Comparison of physical activity scale (IPAQ) data of undergraduate and unlicensed students

Variables	Licenced (n=160)	Unlicensed (n=573)	t-test	
Physical Activity			t	*p*
Walking activity	1849± 1146	1337± 1035	5,102	**0,001***
Moderately vigorous activity	645 ± 729	424 ± 575	3,538	**0,001***
Severe activity	2040 ± 2070	835 ± 1195	7,037	**0,001***
Total	4535± 2761	2597± 2037	8,269	**0,001***
Sitting activity	464 ± 163	575 ± 194	-6,611	**0,001***

*p< 0,001

In the table, it was determined that licensed students had better walking activity, moderately vigorous activity, vigorous activity, sitting activity scores among the physical activity variables compared to unlicensed students and a significant difference occurred.

Table 8. Comparison of digital addiction scale data according to gender variable

Variables	Girl (n=332)	Male (n=401)	t-test	
Digital Addiction			t	*p*
Game connection	27,4 ± 7,4	27,9 ± 7,2	-0,893	0,370
Social media	36,4 ± 10,6	35,1 ± 8,9	1,770	0,073
Daily life	14,4 ± 5,5	14,4± 5,4	0,139	0,889

*p< 0,001

In the table, no significant difference was found in the scores of female and male students in the sub-dimensions of digital addiction such as game addiction, social media, and its effect on daily life.

Table 9. Comparison of digital addiction scale data according to weekly physical education class hours variable

Variables	1 hour (n=105)	2 hours (n=538)	12h (n=23)	13 hours (n=46)	16h (n=21)	F	p	Tukey
Digital Addiction								
Game connection	27,4 ± 7,81	28,2 ± 7,19	24,3 ± 6,74	24,0 ± 6,88	26,7 ± 5,58	5,038	**0,001***	1=12=16=13<2
Social media	34,6 ± 9,95	36,2 ± 9,81	32,8 ± 5,49	33,5 ± 8,41	34,7 ± 12,68	1,894	1,894	-
Daily life	13,8 ± 5,22	14,6 ± 5,52	13,1 ± 4,62	13,6 ± 4,59	15,0 ± 5,22	1,064	1,064	-

*p< 0,001

In the table, a significant difference was found in the sub-dimension of "game addiction" among the digital addiction sub-dimensions of high schools with 1-hour, 2-hour, 12-hour, 13-hour and 16-hour weekly physical education classes. No significant difference was found in the sub-dimensions of social media addiction and its effect on daily life.

Table 10. Comparison of digital addiction scale (das) data according to licensed and unlicensed status

Variables	Licenced (n=160)	Unlicensed (n=573)	t-test	
Digital Addiction			t	*p*
Game connection	27,1 ± 7,7	27,8 ± 7,2	-1,087	0,256
Social media	35,2 ± 9,7	35,8 ± 9,8	-0,674	0,501
Daily life	13,7 ± 4,9	14,6± 5,5	-1,817	0,055

*p< 0,001

In the table, no significant difference was found in the scores of licensed and unlicensed students' digital addiction sub-dimensions of game addiction, social media addiction, and its effect on daily life according to being licensed and unlicensed.

DISCUSSION AND CONCLUSIONS

Today, in many countries and in our country, the digital environments that children and young people are unconsciously or unconsciously exposed to uncontrollably affect their development. In this study, it is aimed to investigate the digital addiction and physical fitness levels of students studying at the secondary (high school) level in our country and their tendencies towards physical education and sports and to interpret the research in the light of the findings obtained and the information gathered from other relevant literature studies.

When the findings obtained from the study were evaluated, it was observed that the scores of 1000 m run-walk (min, sec.), right-hand grip strength (kg), and left-hand grip strength (kg) were higher in favor of male students, while the scores of female students were higher in sit and reach (cm) scores. The reason for this is thought to be due to the fact that physical development that starts at birth shows differences in favor of genders over time. The results of the research show that girls develop physically at higher scores than boys in certain periods, and in the following process, male students aged 14 years and older at the high school level surpass female students in terms of strength. For this reason, it is thought that there are differences between genders in terms of the physical fitness of adolescents in this age group. When the literature is examined, there are studies similar to the findings of this research (Saygın, Karacabey, Saygın, 2011; Haslofça, Kutlay, & Haslofça, 2017; Buzdağlı & Tamer, 2022). In addition, in addition to cardiorespiratory fitness (CRF), national and international physical fitness levels should be included in future studies (Lang, Smith, & Tomkinson, 2020). Musculoskeletal fitness in childhood and adolescence is increasingly attracting attention as an important marker of current and future health. It will be important to maintain and monitor physical fitness parameters in order to be healthy individuals for all ages.

When the physical fitness parameters were analyzed according to the weekly physical education class hours variable, a significant difference was found in the 1000m, right-hand grip strength (kg), left-hand grip strength (kg), and sit and reach (cm) scores of high schools with 1-hour, 2-hour, 12-hour, 13-hour, and 16-hour weekly physical education classes. It was observed that the physical fitness parameters of the students with more weekly physical education class hours had higher scores than the students with fewer weekly physical education class hours (a lower score in 1000m means a better score). This situation shows us that more physical education classes given in schools can support students in increasing their physical fitness scores. It is thought that students' awareness should be increased for a healthy body; physical education lessons should be planned in a way to ensure their development in accordance with their age in terms of physical fitness; and physical education lesson hours should be increased. No study on physical fitness was found in the literature according to weekly physical education class hours.

When the physical fitness scores of licensed and unlicensed students were examined, a significant difference was found in favor of licensed students in 1000m, right-hand grip strength (kg), left-hand grip strength (kg), and sit and reach (cm) scores. The reason for this is thought to be that doing sports contributes to physical development. The studies conducted support this research. Bilim, Çetinkaya, and Dayı (2016) stated that the physical fitness levels of the students who do sports are higher than the students who do not do sports in their study on 12-17-year-old students. Togo and Saygın (2016) stated that there is a significant difference in the physical fitness levels of students who do sports

compared to those who do not do sports. Asma and Işık (2020) stated that students who do active sports have higher physical fitness values than those who do not. The variable of the research shows us that everyone who does sports will make progress in physical fitness levels.

When the scores obtained from the physical activity questionnaire were analyzed, there was no significant difference in walking activity and moderately vigorous activity scores of male and female students. A significant difference was found in favor of male students in the scores of vigorous activity and sitting activity. It was determined that female students were significantly better than male students in terms of doing physical activity and their sitting activity was at a low level. It can be said that male students have a high tendency for vigorous physical activity and a low tendency for activities with a slow rhythm. In the study, it was determined that those with low physical activity had low sitting activity and those with high physical activity had high sitting activity. According to these scores, it was observed that the sitting activity of male students was high. It is thought that the reason for this may be related to the coincidence of adolescence processes, due to the fact that rest periods may be long because of their high levels of vigorous activity and that male students of this age may exhibit introverted behaviors due to the fact that they are pre-adolescents or adolescents and may want to deal with digital tools. It is thought that the reason for the high total scores of female students' tendency to physical activity may be related to the desire to protect their bodies, which have entered puberty and are prone to weight gain, and the desire to be liked by everyone in their social environment in terms of appearance, and that they do walking and moderately vigorous activity, although not vigorous activity. In the study conducted by Aksoydan and Çakır (2011) on primary and secondary school students, it was determined that the rate of physical activity was low, physical activity decreased with age, primary school students were more active than secondary school students, and male students were more active than female students. Memiş and Yıldıran (2008) stated that there was a difference between the physical activity levels of males and females. It was stated that male students' participation in physical activity was higher than female students. In other studies, it was observed that male students had higher physical activity levels (Çifçi & Ballıkaya, 2023; Erkek, et al., 2022; Gülbetekin, et al., 2021; Gülü & Yapıcı, 2022; Konar, Örsek, & Kurtoğlu, 2023; Yıldırım & Bayrak, 2019).

When the physical activity scores were analyzed according to the weekly physical education lesson hours variable, a significant difference was found in the walking activity, moderately vigorous activity, vigorous activity, and sitting activity scores of high schools with 1 hour, 2 hours, 12 hours, 13 hours, and 16 hours of weekly physical education lessons. When the walking activity, moderately vigorous activity, and vigorous physical activity data were analyzed, it was seen that the lowest scores belonged to students with fewer class hours and the highest scores belonged to students with more weekly physical education class hours. When the sitting activity data were analyzed, it was seen that the scores of the students with less weekly class hours were high, and the students with more weekly physical

education class hours performed sitting activity less. No related study was found among other studies.

When the physical activity scores of licensed and unlicensed high school students were examined, a significant difference was found in favor of licensed students in all of the walking activity, moderately vigorous activity, vigorous activity, and sitting activity scores. According to the research data, it was observed that the physical activity scores of licensed high school students were higher than those of unlicensed students, while the sitting activity was lower. It was determined that the sitting time of high school students who did more physical activity was low, while the sitting time of students who did less physical activity was high.

When the scores obtained from the digital addiction scale were examined, no significant difference was found in the scores of "game addiction," "social media addiction," and "impact on daily life," which are the sub-dimensions of digital addiction of female and male students. The reason for this is thought to be due to the fact that both genders have equal or far accessibility to digital tools. It is also thought that gender does not make a difference in digital addiction. Similar to our study, Irmak and Erdoğan (2016) stated in their study that digital game playing time increased among young people according to gender, but only game content preferences changed according to gender. Ünal and Korkmaz (2023) stated that there was no difference between the digital addiction levels of male and female students. There are studies that conclude that boys have more "game addiction" or "digital addiction" than girls, which is not similar to our research. Eryılmaz and Çukurluöz (2018) stated that boys have more digital addiction than girls and that boys have higher scores than girls in terms of game addiction and its effects on daily life, while girls have higher social media addiction scores than boys. When the studies are evaluated as game addiction or digital addiction, Arslan, Kırık, Karaman, and Çetinkaya (2015) found that high school students reached higher scores than university students in terms of game addiction, and there was no difference between high school and university students in the dimension of social media addiction and impact on daily life. Kaya and Vangölü (2023) stated in their study that the level of commitment was higher in female students, while the scores of male students were higher in "game addiction" and "social media addiction." In addition, Arslan (2019) stated that female students had higher scores in "game addiction" and "social media addiction" than male students. Bülbül, Tunç, and Aydil (2018) stated that male students had higher game addiction (Altınok, 2021; Arıkan & Öztürk, 2020; Arslan & Bardakçı, 2020; Aydın & Horzum, 2015; Bayram & Gündoğmuş, 2016; Bonanno & Kommers, 2005; Cengiz, Peker, & Demiralp, 2020; Çakır Balta & Horzum, 2008; Demirel, Cicioğlu, & Dilci et al., 2019; Dursun & Çapan, 2018; Ekinci et al., 2016; Gökçearslan & Durakoğlu, 2014; Karataş, 2021; Li & Wang, 2013; Şahin & Tuğrul, 2012; Şimşek & Yılmaz, 2020; Üzgü et al., 2023). In our study, it was observed that there was no statistically significant difference between male and female students, and the digital addiction scores of both sexes were similar.

According to the weekly physical education lesson hours variable, a significant difference was found in the sub-dimension of game addiction among the digital addiction

sub-dimensions of high school students. No significant difference was found in social media and daily life sub-dimensions. This significant difference was found to be at high scores in the game addiction sub-dimension of students with 2 hours of weekly physical education lessons. It can be said that students with low weekly physical education class hours have more addiction to playing digital games. There are no studies on weekly physical education class hours in the literature.

There was no significant difference between licensed and unlicensed high school students in the scores of "game addiction," "social media addiction," and "effect on daily life" from the sub-dimensions of digital addiction. The conclusion we can draw from here is that the interest and interest in digital addiction of students who are licensed or unlicensed at the high school level are similar to each other. Hazar, Özpolat, and Hazar (2020) stated that there was no significant difference in the digital addiction levels of secondary school students according to whether they were licensed or unlicensed. Delebe and Hazar (2022) stated that there is a difference between licensed and unlicensed students in the digital addiction levels of secondary school students.

Conclusions

In the light of the results obtained from the research, the main purpose of this study is to determine the digital addiction levels of 733 students studying at the secondary education level (high school), the physical fitness status of the students, and the level of physical activity status and to reveal the positive and negative effects of physical education lessons on digital addiction and their contribution to physical activity and physical fitness level. In the study, a comparison was made according to the data obtained from the digital addiction scale, physical activity questionnaire, and physical fitness parameters of the students' gender, the number of hours of physical education lessons per week, and whether they were licensed or not. As a result, according to the scores of 1000m (cardiorespiratory endurance), right and left hand grip strength (muscle strength), and sit-reach (flexibility), it was observed that male students had higher 1000m and right and left hand grip strength than female students, and female students had higher sit-reach scores than male students. According to the weekly physical education course hours, it was seen that the physical fitness values of high school students with the highest course hours were at better scores, while the physical fitness data of high school students with low weekly physical education course hours were low. It was seen that the physical fitness parameter scores of licensed students were higher than those of unlicensed students.

According to the data obtained from the physical activity questionnaire, it was concluded that the walking, moderately vigorous activity, and total physical activity scores of female students were higher than the scores of male students in terms of gender, and the vigorous activity and sitting activity scores of male students were higher than the scores of female students. The results obtained from the physical activity questionnaire according to weekly physical education class hours showed that the highest scores in walking activity and vigorous activity were found in

students with 16 hours of weekly physical education class hours. The highest scores in sitting activity were observed in students with low weekly physical education class hours. However, it is thought that students with more weekly physical education class hours may be the ones who do the sitting activity the most in order to rest their bodies and recover for the next day in order to replace the energy spent. According to whether they were licensed or unlicensed, it was seen that the scores of licensed students were higher than the scores of unlicensed students in all dimensions of physical activity.

When the scores obtained from the digital addiction scale were examined, no significant difference was found in the scores of "game addiction," "social media addiction," and "impact on daily life," which are the sub-dimensions of digital addiction of high school-level female and male students according to the gender variable. Digital addiction levels of both genders are similar. It is thought that the reason for this is that every young person can now easily access digital tools in some way, solve their educational affairs digitally, and do their jobs, such as shopping and social communication, in a digital environment. It was seen that there was no difference in the sub-dimensions of the digital addiction scale of being licensed and unlicensed.

As seen in the study, it was observed that there were differences in physical fitness and physical activity levels between the genders of secondary school students. It was concluded that the physical fitness levels and physical activity levels of students with more weekly physical education lesson hours and licensed students were better. In addition, it is possible to say that digital addiction does not make a difference between genders, whether they are licensed or not, and that students are equally intertwined with digital. With the rapid integration of digital tools into our lives, it suggests that the differences between the students will increase even more in the future. Depriving students of the use of digital tools that are so integrated into their lives and expecting them to move away from digital will not bring healthy results, as prohibitions will attract their attention more due to their age, and moving away from digital will not lead to physical health. Knowing that we cannot keep them away from digital, we should direct them to use digital tools in the right, beneficial way and ensure that they use the gap that may arise from digital to improve their physical fitness levels, to direct them to do physical activity, or to raise awareness about the use of digital tools. The education system should also make plans for the creation of healthy programs; just as efforts are made to teach a child reading, writing, mathematics, science, and social studies to increase academic success, efforts should be made to eliminate the situations that prevent our physical health. Considering that each student grows up in a different culture, the education of using digital, improving physical fitness, and raising awareness about physical activity should not be left to individuals or families. In order to raise healthy generations in the society, it is thought that courses that will create awareness, such as physical education courses, physical activity hours or sports hours, exercise courses, and healthy life, should be added in the education system, and serious importance should be given in schools to raise this awareness from an early age. Studies show that the

awareness gained at an early age is adopted and maintained at a later age. As a result, it has been observed that the increase in digitalization has a significant negative effect on the tendencies towards physical education and sports. However, it can be said that with the high number of physical education lesson hours in schools, it can be said that it can create a balance in terms of both physical fitness development, increasing awareness about the relationship between physical activity and health, and planning time.

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GENİŞLETİLMİŞ ÖZET

Çalışmanın Amacı: Araştırma ortaöğretim öğrencilerinin dijital bağımlılık düzeyleri ile beden eğitimi ve spora yönelik eğilimlerinin, fiziksel aktivite ve fiziksel uygunlukla ilgili yansımalarını karşılaştırmayı amaçlamıştır.

Araştırma Problemleri: Ortaöğretim öğrencilerinin yaş, cinsiyet, antropometrik ölçümleri, fiziksel uygunluk ölçümleri, beden eğitimi ders saatleri, haftalık fiziksel aktivite düzeyleri ile dijital bağımlılık düzeyleri açısından oluşan farklılıklar nelerdir?

Literatur Araştırması: Araştırma cinsiyet değişkeni göre fiziksel uygunluğa bakıldığında 1000m koş-yürü (dk, sn.), sağ el kavrama kuvveti (kg), sol el kavrama kuvveti (kg)skorlarına göre erkek öğrenciler lehine yüksek iken, otur uzan eriş (cm) puanlarında kız öğrencilerin puanlarının daha yüksek olduğu görülmüştür. Literatür göre araştırma bulguları ile örtüşen çalışmalar bulunmaktadır (Saygın, Karacabey, Saygın, 2011; Buzdağlı ve Tamer, 2022; Haslofça, Kutlay, Haslofça, 2017). Haftalık beden eğitimi ders saati çok olan öğrencilerin fiziksel uygunluk skorları haftalık beden eğitimi ders saati az olan öğrencilerden daha yüksek skorlara sahip (1000m'de derece düşük ise skor daha iyi anlamına gelir) olduğu görülmüştür. Lisanslı ve lisanssız öğrencilerin fiziksel uygunluk skorları incelendiğinde 1000m, sağ el kavrama kuvveti (kg), sol el kavrama kuvveti (kg) ve otur uzan eriş (cm) skorlarında lisanslı öğrenciler lehine anlamlı düzeyde farklılık tespit edilmiştir. Bilim, Çetinkaya ve Dayı (2016) ''da 12-17 yaş öğrencilere yaptıkları çalışmada spor yapan öğrencilerin spor yapmayan öğrencilere göre fiziksel uygunluk düzeylerinin daha yüksek olduğunu belirtmiştir. Togo ve Saygın (2016) çalışmasında spor yapan öğrencilerin spor yapmayanlara göre fiziksel uygunluk düzeylerinde anlamlı farklılık olduğunu belirtmiştir. Asma ve Işık (2020), aktif spor yapan öğrencilerin yapmayanlara göre fiziksel uygunluk değerlerinin yüksek olduğunu belirtmiştir. Araştırmanın değişkeni bize spor yapan herkesin fiziksel uygunluk düzeylerinde ilerleme kaydedeceğini göstermektedir. Aksoydan ve Çakır (2011)'ın ilköğretim ve ortaöğretim öğrencilerine yaptığı çalışmada fiziksel aktivite oranının düşük olduğunu, yaşla birlikte fiziksel aktivitenin azaldığını, ilköğretim öğrencilerinin ortaöğretim öğrencilerine göre daha aktif olduğunu ve erkek öğrencilerin kız öğrencilerden daha aktif olduğunu belirlemiştir. Memiş ve Yıldıran (2008) erkek ve bayanların fiziksel aktivite düzeyleri arasında fark olduğunu belirtmiştir. Erkek öğrencilerin fiziksel aktiviteye katılımlarının kız öğrencilerden daha yüksek olduğunu belirtmiştir.

Yöntem : Katılımcılara kişisel bilgi formu, dijital bağımlılık ölçeği (DBÖ), fiziksel aktivite anketi-kısa formu (IPAQ), fiziksel uygunluk ölçümleri ile bazı antropometrik ölçümler yapılmıştır.

Sonuç ve Değerlendirme: Fiziksel aktivite düzeyi skorlarına göre şiddetli aktivite, oturma aktivitesi ve toplam aktivite düzeyinde, haftalık beden eğitimi ders saatine göre lisanslı olup olmama değişkenlerinde anlamlı farklılık saptanmıştır. Dijital bağımlılık ölçeği skorlarına göre öğrencilerin cinsiyet ve lisanslı ya da lisanssız olmaları açısından anlamlı bir farklılık bulunmamıştır. Haftalık beden eğitimi ders saatine göre dijital bağımlılık ölçeğinin "oyun bağımlılığı" alt boyutunda anlamlı farklılık olduğu görülmüştür. Yapılan araştırmada, öğrencilerin fiziksel uygunluk düzeylerine göre kızların erkeklerden daha esnek, erkeklerin ise sağ ve sol el kuvveti ve kardiyorespiratuar dayanıklılık verilerinin kızlardan daha iyi olduğu, haftalık beden eğitimi ders saati fazla olan öğrencilerin, lisanslı öğrencilerin fiziksel uygunluk düzeylerinin daha yüksek olduğu görülmüştür. Fiziksel aktivite düzeylerine göre kızların toplam aktivite skorları iyi, erkeklerin şiddetli aktivite ve oturma aktivite skorları yüksek, lisanslı öğrencilerin daha aktif oldukları, haftalık beden eğitimi ders saati fazla olanların fiziksel aktivite düzeylerinin yüksek olduğu tespit edilmiştir. Dijital bağımlılık sonuçlarına göre kızlar ile erkekler arasında, lisanslılar ile lisanssızlar arasında bir fark olmadığı tespit edilmiştir**.**