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Effect of Digital Screen Usage on Perceived Sports Competence of Sport Sciences University Students

Dijital Ekran Kullanımının Spor Bilimleri Öğrencilerinin Spor Yeterliliklerine Etkisi

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Öz: Bu çalışma, Spor Bilimleri fakültelerinde öğrenim gören öğrencilerde algıladıkları spor yeterlilikleri ile dijital ekran kullanımı arasındaki ilişkiyi araştırmayı amaçlamıştır. Türkiye'de üç üniversitede kesitsel bir araştırma yapılmıştır. COVID pandemisi karantina döneminde 2021 bahar döneminde toplam 219 öğrenci ankete katılım göstermiştir. Katılımcılardan cep telefonu ve bilgisayar kullanımı ile bu cihazlara bağımlılık riski oluşturan sosyal medya ve dijital oyunların kullanımına ilişkin veriler alınmıştır. Çalışma kapsamında, katılımcılardan demografik özellikleri, cep telefonu ve kişisel bilgisayar kullanımları ve dijital ekran kullanımının sportif yeterliklerine etkisi hakkında bir anket doldurmaları istenmiştir. Araştırma sonucu olarak, dijital ekran uygulamalarının sık kullanımının öğrencilerin algılanan spor yeterlilikleri üzerinde olumsuz bir etkisi olduğu bulunmuştur. Ayrıca; cinsiyet, bilgisayar sahibi olma, bölüm, günlük telefon alışkanlıkları, sosyal medya ve dijital ekran kullanımı, günlük fiziksel aktivite ve günlük fiziksel aktivitedeki değişime göre spor yeterlilik puanlarında anlamlı farklılık görülmüştür. Sonuç olarak, dijital ekran uygulamalarının kullanımı spor bilimleri öğrencilerinin algıladıkları spor yeterliliği üzerinde olumsuz bir etkiye sahiptir. Bu etkilerin Covid-19 pandemisi karantina döneminde arttığı görülmüştür

Anahtar Kelimeler: *Dijital oyunlar, sosyal medya, bağımlılık, üniversite öğrencileri*

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Abstract: This study aimed to investigate the association between perceived sports competence and digital screen usage among students in Sport Sciences faculties. A cross-sectional survey was conducted at three universities in Turkey. A total of 219 students were surveyed in the spring term of 2021 during the COVID pandemic lockdown period. Data about the use of mobile phones and computers as well as social media and digital games, which pose a risk of addiction to these devices, was obtained from the participants. They were asked to complete a self-report questionnaire on their demographic characteristics, mobile phone and personal computer usage, and the effect of digital screen usage on their sportive competencies. Results showed that the frequent use of digital screen applications had a negative effect on the students' perceived sports competency. A significant difference was found in the scores according to sex, PC ownership, students' departments, daily phone habits, social media and digital screen usage, daily physical activity, and changes in daily physical activity. In conclusion, the use of digital screen applications had a negative effect on sports science students' perceived sports competence. These effects increased during the Covid-19 pandemic confinement period.

Keywords: *Digital games, social media, addiction, university students*

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INTRODUCTION

The digital revolution started with PCs and rapidly progressed to the use of tablet PCs and mobile phones (Kim et al., 2014). Since 2000, the digital revolution has brought visible changes as it makes daily life more convenient. Despite the advantages of mobile phones, such as enhancing work efficiency, access to information, and social interaction, they also have negative consequences and potential dangers (Zhai et al., 2020). The digital revolution has had many adverse effects on interpersonal relationships, psychological well-being (Park et al., 2015), and physical health (Haripriya et al., 2019; Iannotti et al., 2009). Today's youth are the first generation to grow up with so much exposure to high-tech media, making them more susceptible than older adults to the adverse effects of mobile phones and social media (Kim et al., 2014). In 2019, the number of internet users worldwide increased by 9% annually to approximately 5,112 billion, while the number of social media users reached about 3,484 billion, also an increase of 9%. The American Academy of Pediatrics Committee on Public Education (2001) recommends that screen time (e.g., total time spent on different types of electronic media) should not exceed 2 hours per day. In reality, whereas people spend an average of 6 hours and 43 minutes a day on the internet, they also spend 2 hours and 24 minutes on social media.

Social media users are also increasing. For example, Facebook has 1.95 billion active users (Kemp, 2020). Research has shown that various online activities, such as constant online gaming and social media use, can be addictive to particular groups, especially adolescents and adults (Cheng & Li, 2014; Kuss et al., 2014; Ryan et al., 2014). Social media sites are exceedingly popular with millennium college students (Grau et al., 2019). The development of the Wi-Fi network and the increase in the number of young adults having mobile phones, together with a great many applications developed for mobile phones, are factors that cause the stunning growth of social media and digital game usage (Yang et al., 2017). Similarly, in Turkey, adolescents frequently use social media and play digital games, which contributes to the growth of digital screen addiction (Doganer & Akoglu, 2020). Easy access to these technological applications has also increased digital screen usage time. During adolescence, the increment in digital screen usage time has been identified as an important risk factor for poor physical and psychological health (Hallal et al., 2012; Trost et al., 2014).

Digital screen usage, including surfing the Internet and visiting social media sites, is defined as sedentary behavior (Lepp et al., 2013; Teychenne et al., 2010). Sedentary behavior of this kind can reduce energy expenditure, leading to obesity and other metabolic disorders (Haripriya et al., 2019).

These behaviors may also be associated with lower levels of physical activity, as they result in reduced or the cessation of activities such as outdoor play, walking, and other forms of exercise (Kautiainen et al., 2005). As the use of mobile phones increases, physical activity decreases (Joshi et al., 2016), thus making it necessary to analyze the abuse and harm of mobile phones within the scope of a sedentary lifestyle and combating obesity. Studies have shown that lack of physical activity may be one of the main factors leading to addiction among students, and mobile phone use may reduce physical activity and cardiorespiratory fitness (Lepp et al., 2013; Samaha & Hawi, 2017; Venkatesh et al., 2017). Studies have also indicated that adults who engage in insufficient physical activity and spend excessive screen time were more likely to be overweight (Liao et al., 2011). Conversely, regular physical activity and low screen time were associated with a reduced prevalence of depressive problems (Feng et al., 2014). It was found that high screen time was associated with increased risks of mental health problems and poor sleep quality (Ma et al., 2020; Wu et al., 2015; Zhai et al., 2020).

Digital screen usage time is associated with bodily health. Can and Karaca (2019) reported that students who complain about musculoskeletal pain spend more time on mobile phones and computers than students without such complaints. Similarly, problematic internet users had a higher body mass index (Ercan et al., 2021). In addition, the risk of weight gain/obesity in adulthood is expressed as a potential risk factor for decreased academic achievement and self-worth, depression, and eating disorders. (Añez et al., 2018). Research has shown that individuals with problematic internet use experience more impulse control disorders, attention deficit, and forgetfulness in their daily lives (Park et al., 2011). Physical activity, therefore, has been recognized as a key dimension of a healthy lifestyle (Berkey et al., 2000).

Recommended levels of physical activity are associated with numerous health benefits (Carlson et al., 2015; Warburton & Bredin, 2017). The World Health Organization (2010) has recommended that to reduce the risk of various chronic diseases in adults aged 18-64, they should do at least 150 minutes of moderate-intensity physical activity or at least 75 minutes of vigorous-intensity physical activity per week, or a combination equivalent to moderate and vigorous-intensity physical activity. Also, in the 2005 National College Health Assessment carried out with the participation of 43,499 college students aged 18 to 25, with different ethnicities (e.g., 76.3% white, 9.9% Asian, 5.2% Hispanic, 3.8% African American, 0.9% American Indian, and 3.9% other) it was declared that students who did physical activity once a week were less likely to be depressed than their inactive schoolmates (Taliaferro et al., 2009).

Many children and young people tend to withdraw from physical activity and sports (Slater & Tiggemann, 2010; Cengiz & Tilmaç, 2018). They can easily turn to more sedentary and/or unhealthy choices (Silva et al., 2018). The Covid-19 pandemic also negatively influenced physical activity. Currently, Korkmaz et al. (2020) reported that 65% of secondary school students stated that their physical activity levels decreased during the Covid-19 outbreak.

Physical activity and exercise play a critical role in the prevention of obesity and other health-related problems (Chakraborty et al., 2009). Ekinci et al. (2017) found a significant relationship between over-indulgence in digital games with engagement in physical activity. It was determined that the level of digital game dependency of students not playing sports was higher than those who played sports. Moreover, there was a statistically significant difference according to leisure time activities, the time spent on leisure time, and digital game dependency. Hence, students neglecting beneficial leisure time activities were inclined towards digital game addiction.

Cihan and Ilgar (2019) found that cognitive, emotional psycho-motor, social, and psychological positive and negative aspects of digital sports games were determined in athletes. They examined the cognitive effects of digital games on athletes and stated the positive impacts on high-level cognitive skills. They also mentioned that while digital sports were a good learning tool and a source of motivation to attend the physical activity of athletes, digital sports were also responsible for athletes exhibiting various negative behaviors such as time-wasting and inability to socialize. As a result of the literature review mentioned above in which digital screen applications and sports activity studies are examined, it is seen that the studies conducted are generally based only on the duration of use of digital screen applications and participation in physical activities. Also, these studies generally focused on just one application in social media or digital games. In addition, it was seen that the effects of digital screen applications on health problems such as sleep and obesity were examined in these studies but scarce research was found comparing perceived sports competence with the use of digital screen applications, with a focus on athletes and athletics in the context of sports science students.

Perceived competence is an individual's judgment of his or her ability in a particular area (Abney, 2007). Weiss (2000) stated that young people with high perceived competence enjoy the activities in which they are involved to a greater extent. Perceived competence may be central to self-esteem and self-efficacy (Abney, 2007; Barnett et al., 2008). Harter describes self-esteem as a multidimensional and hierarchical construct with the self-composed of different domains (i.e., social, physical, cognitive) that sit under a construct of global self-esteem (Harter, 1982). Harter's

model proposes that actual competence precedes perceived competence, and that perceived competence influences motivation more directly than true competence (Harter, 1978). Identifying perceived sports proficiency as a key mediating variable may inform the design of interventions to promote physical activity and fitness among youth (Barnett et al., 2008).

There are limited tools to measure the effect of digital screen applications on perceived sports competence. Therefore, we developed a scale to examine the perceived sports competence of university students as a function of the usage status of digital screen applications. The main research question was: "What is the effect of digital screen usage on the perceived sports competence of sports science faculty students?", with the following sub-questions: (a) What is the duration and purpose of sports science students' mobile phone and PC usage? (b) What is the duration of sports science students' playing of digital games, what games do they play, and how did the Covid pandemic affect their gameplay and physical activity? (c) What is the effect of sports science students' digital screen usage, daily physical activity, and change in daily physical activity on their perceived sports competence? (d) What is the effect of sports science students' digital screen usage, daily physical activity, and change in daily physical activity on their perceived sports competence?

METHOD

The ethics committee of Canakkale Onsekiz Mart University approved this study on March 30th 2021 (No: 06-43). The participants participated in the study voluntarily and all filled in the voluntary participation form individually.

Research Model

This research is a cross-sectional survey design (Büyüköztürk et al., 2012) aimed at determining the digital screen application usage levels and the perceived sports competence of sports science faculty students. The functions include the students' PC and mobile phone usage, social media, digital game usage, and duration of daily physical/sportive activity.

Participants

The participants of the study consisted of 219 students from the sports science faculty of three state universities in the 2020-2021 academic year. A purposive sampling method (Büyüköztürk et al., 2012) was used to determine the participants. The purposive sampling method is used to select respondents that are most likely to yield appropriate and useful information (Kelly, 2010) and is a

way of identifying and selecting cases that will use limited research resources effectively (Palinkas et al., 2015). The data were obtained voluntarily through Google Forms. The participants were all full-time university students older than 18 years old. Demographic information about the participants is given in Table 4. From these data, it is seen that the proportion of male and female participants and the distribution of sports science students, according to their departments, are similar. In addition, the average daily physical activity periods are between 1 and 2 hours and most of the students have personal computers.

Table 1. Demographic Features of Participants

Sex	n	%
Female	98	44.7
Male	121	55.3
Age	n	%
19 and below	52	23.7
Between 20 and 21	76	34.6
22 and above	52	23.7
Department	n	%
Coaching & Training	58	26.5
Physical Education and Sports Instructor	83	37.9
Sports Management	78	35.6
Daily Physical / Sportive Activity	n	%
Less than 1 Hour	69	31.5
Between 1 and 2 Hours	106	48.4
More than 2 Hours	44	20.1
PC ownership	n	%
Yes	151	68.9
No	68	31.1
Total	219	100

Data Collection Procedure

The digital screen usage and perceived sports competence scale and the personal information form were created and surveyed using Google Forms. Participation was voluntary. Only participation announcements were made to the students by the academic staff in the sports sciences faculties of the three state universities. In the first part of the questionnaire, sex, PC and mobile phone usage, digital screen applications usage, and physical activity status questions were applied for demographic information. The other 20 questions (Table 1) concerned the impact of digital screen applications on sports science students' perceived sports competence.

Data Collection Tools

The digital screen usage and perceived sports competence scale and a personal information form (sex, PC and phone usage status, digital screen applications usage status, sportive activity status) were developed by the researchers. The digital screen usage and perceived sports competence scale is a 5-point Likert-type (1: Completely Disagree, 5: Completely Agree) with 20 items. The highest score that can be obtained from the scale is 100, and the lowest score is 20. Scale items and component matrix of items are given in Table 2. While component 1 can be categorized as a cognitive sub-dimension, component 2 can be categorized as an affective sub-dimension.

Table 2. Scale Items and Component Matrix of Items

	Items	Component 1	Component 2
1.	The time I spend on digital screen applications (social media and games) negatively affects my sleep pattern.	.671	.056
2.	The time I spend in digital screen environments disrupts my physical activity (sports, training).	.765	.152
3.	Digital screen environments negatively affect my physical state mentally.	.761	.230
4.	Digital screen environments shorten my physical activity time.	.784	.356
5.	Digital screen environments often cause me to take short breaks in my physical activity.	.674	.421
6.	My mobile phone usage frequency is a subject of discussion with my trainers and teammates.	.418	.725
7.	I prefer spending time in digital environments to physical activities.	.221	.637
8.	Digital screen environments adversely affect mealtime arrangements.	.625	.431
9.	Digital screen environments negatively affect my diet and food preferences.	.636	.471
10.	Digital screen environments negatively affect my team training.	.540	.597

	Items	Component 1	Component 2
11.	Digital screen environments negatively affect my own training.	.703	.504
12.	Digital screen environments negatively affect my decision-making.	.692	.463
13.	My friends in the digital screen environment value me more than my physical activity friends.	.198	.850
14.	I prefer to spend time with my friends in digital screen environments rather than my physical activity friends.	.111	.867
15.	Digital screen environments negatively affect my concentration in matches and competitions.	.436	.708
16.	I perceive myself as lazy and reluctant due to the digital screen environments.	.666	.256
17.	I am anxious that I will have health problems due to the usage of digital screen environments.	.707	.269
18.	I am worried that digital screen environments will negatively affect my sports skills.	.744	.328
19.	Digital screen environments negatively affect my mental preparation for match and competition environments.	.590	.532
20.	When my usage of digital screen environments is prolonged, I postpone my training plan.	.631	.314

The scale consists of two sub-dimensions (cognitive and affective). The cumulative variance explanation ratios of the scale components were 63.021 (Table 3). While the cognitive sub-dimension consists of items about the effect of digital screen applications on mental state, decision-making, and planning skills, the affective sub-dimension consists of items about the effect of concentration, psychological state, and communication with the coach and teammates.

Table 3. Variance Ratios of Scale Components

Component	Eigenvalues	% of Variance	Cumulative %
1	11.037	55.186	55.186
2	1.567	7.835	63.021

Scale items and component matrix of items are given in Table 3. The data suggests that the scale has acceptable fit values (Koyuncu & Kılıç, 2019; Olufadi, 2015).

Table 4. Scale Items and Component Matrix of Items

Fit Measures	Good Fit Values	Acceptable Fit Values	Recommended Fit Values
RMSEA	0.00<RMSEA<0.05	0.05<RMSA<0.10	0.071
SRMR	0.00<SRMR<0.05	0.05<SRMR<0.10	0.064
NFI	0.95<NFI<1.00	0.90<NFI<0.95	0.912
CFI	0.95<CFI<1.00	0.90<CFI<0.95	0.952
RFI	0.90<RFI<1.00	0.85< RFI <0.90	0.889

Data Analysis

In the analysis of the data obtained, an independent sample t-test and ANOVA test were used to determine the differentiation status of perceived sport competence according to descriptive statistics and demographic features of the research group. Before the data analysis, the normal distribution assumption was checked with kurtosis-skewness values. The results were determined to be between +2.0 and -2.0, which was the normal distribution range of the data. Since the assumption of normal distribution was provided, it was appropriate to use independent sample t-test and ANOVA test.

RESULTS

Results are presented based on the research questions.

RQ 1. What is the duration and purpose of sports science students' mobile phone and PC usage?

The findings obtained from the PC and mobile phone usage status of the participants are given in Table 5. While the percentage of the participants using a computer for 3 hours or more a day was 28.8%, the percentage of the participants using a mobile phone for 3 hours or more was 76.3%. Playing digital games was the priority of both PC (23.7%) and mobile phone (46.6%) use by participants.

Table 5. PC and Mobile Phone Usage Status of Participants

Daily PC Usage Time	n	%
Not using this device	53	24.2
Less than 1 hour	44	20.1
Between 1 and 3 hours	59	26.9
More than 3 hours	63	28.8
Daily Mobile Phone Usage Time	**n**	**%**
Less than 1 Hour	4	16
Between 1 and 3 Hours	48	15.6
Between 3 and 5 Hours	95	8.2
Between 5 and 7 Hours	46	21.0
More than 7 Hours	26	11.9
Mobile Phone Usage Priority	**n**	**%**
Communication	67	30.6
Mobile Games	102	46.7
Messaging	44	20.1
Watching Movies/TV series	53	24.2
(Lessons/Homework/Research)	16	7.4
Total	219	100

RQ 2. What is the duration of sports science students' playing of digital games, what games do they play, and how did the Covid pandemic affect their gameplay and physical activity?

The descriptive findings obtained from the digital games and social media usage of the participants are given in Table 6. According to the data in the table, the proportion of those who stated that they played computer-based games was 26.9%, and the proportion of those who reported that they played mobile-based games was 38.8%. The proportion of participants stating they did not use social media platforms was only 3.2%. Participants used social media platforms for an average of 1-3 hours a day. During the Covid pandemic, those who stated that their daily digital screen usage time (including social media and digital games) increased was 69.9%. In the same period, the proportion of students who stated that their duration of daily sportive activity increased was only 23.7%.

Table 6. Social Media and Digital Game Usage of Participants

Status	Playtime	n	%
Average PC-based digital game playtime per day	Not Playing	160	73.1
	Less than 1 Hour	17	7.8
	Between 1 and 3 Hours	28	12.7
	Between 3 and 5 Hours	10	4.6
	Between 5 and 7 Hours	3	1.4
	More than 7 Hours	1	0.4
Status	Playtime	n	%
Average mobile game playtime per day	Not Playing	134	61.2
	Less than 1 Hour	42	19.2
	Between 1 and 3 Hours	33	15.1
	Between 3 and 5 Hours	5	2.3
	Between 5 and 7 Hours	3	1.4
	More than 7 Hours	2	0.8
Status	Usage Time	n	%
Average social media usage per day	Not Using	7	3.2
	Less than 1 Hour	21	9.6
	Between 1 and 3 Hours	104	47.5
	Between 3 and 5 Hours	57	26.0
	Between 5 and 7 Hours	24	11.0
	More than 7 Hours	6	2.7
Status	Change Status	n	%
Change of Status in Daily Social Media and Digital Game Usage Period	Decrease	5	2.2
	No Change	61	27.9
	Increase	153	69.9
Status	Change Status	n	%
Change of Status in Daily Physical/Sportive Activity	Decrease	119	54.3
	No Change	48	21.9
	Increase	52	23.8

The descriptive findings obtained from the digital game and social media preferences of the participants are given in Table 7 whether they are the first choice or any choice in the selection list. According to the data, the most popular PC-based games were PUBG, Counter-Strike, and LoL. Similarly, in mobile digital games, the most popular game was PUBG. LoL and FIFA were other popular games. According to the data in Table 7, the most-used social media application by the participants was Instagram. This application is followed by WhatsApp, Twitter, and Facebook.

Table 7. Social Media and Digital Game Preference of Participants

Status	Name of Game	First Choice		Any Choice	
		f	%	f	%
PC-Based Digital Game Preference List	LoL	16	7.3	30	13.7
	Counter-Strike	17	7.8	41	18.7
	PUBG	18	8.2	31	14.2
	Mine Craft	12	5.5	23	10.5
	Dota 2	13	5.9	18	8.2
	Grand Theft Auto	10	4.6	23	10.5
	FIFA	11	5.0	23	10.5
	Tom Clancy's Rainbow	10	4.6	20	9.1
	GTA 5	15	5	47	15.6
	Valorant	6	2.9	8	3.7
Mobile Digital Game Preference List	PUBG	33	15.1	52	23.7
	LoL	20	9.1	30	13.7
	Clash Royale	13	5.9	23	10.5
	Candy Crush	11	5.0	17	7.8
	Kafa Topu 2	11	5.0	22	10.0
	Among Us	11	5.0	19	8.7
	FIFA	15	6.8	26	11.9
	Social Media Platform Name	First Choice		Any Choice	
		f	%	f	%
Social Media Platform Preference List	Clubhouse	37	16.9	50	22.8
	Facebook	62	28.3	98	44.7
	Instagram	57	26.0	209	95.4
	SnapChat	42	19.2	87	39.7
	TicToc	39	17.8	57	26.0
	Twitter	33	15.1	145	66.2
	WhatsApp / Tangram / Signal, etc.	39	17.8	202	92.2

RQ3. What is the effect of sports science students' digital screen usage, daily physical activity, and change in daily physical activity on their perceived sports competence?

The findings obtained from the differentiation status of the digital screen sports competence affect (DSSCA) scores of university students according to the sex and PC ownership variables were evaluated with an independent sample t-test and the results are given in Table 8. According to the data in the table, while there was a significant difference in the cognitive sub-dimension (t=-1.023, p<0.05) of DSSCA scores according to sex, there was no significant difference in DSSCA scores according to PC-Ownership.

Table 8. T-test values of DSCCA scores in terms of sex

Sub-dimension	Sex	n	$\bar{X}$	SD	df	t	p
Affective	Female	98	12.694	5.247	217	-1.023	0.064
	Male	121	13.479	5.958			
Cognitive	Female	98	42.143	13.015	217	2.550	0.011*
	Male	121	37.463	13.893			
Total	Female	98	54.837	17.392	217	1.570	0.118
	Male	121	50.942	18.911			
Sub-dimension	PC Ownership	n	$\bar{X}$	SD	df	t	p
Affective	Yes	151	12.669	5.166	217	-1.800	0.073
	No	68	14.147	6.532			
Cognitive	Yes	151	38.623	13.335	217	-1.511	0.132
	No	68	41.632	14.289			
Total	Yes	151	51.291	17.388	217	-1.686	0.093
	No	68	55.779	19.992			

(*p<0,05; **p<0,01; ***p<0,001)

The findings obtained from the differentiation status of the perceived sports competence of university students according to their education departments, daily mobile phone usage, and daily social media usage were evaluated by one-way analysis of variance (ANOVA). Results are given in Table 9. According to the data in the table, there was a significant difference in the affective sub-dimension of DSSCA scores according to the department of education ($F_{(2\text{-}216)}$=-3.190, p<0.05) and daily social media usage ($F_{(4\text{-}106)}$=-3.014, p<0.05). Also, there was a significant difference in the cognitive sub-dimension of DSSCA scores according to daily mobile phone usage time ($F_{(4\text{-}214)}$=4.240, p<0.01).

Table 9. One-Way ANOVA results of digital screen sports competence scores in terms of the department of education, daily mobile phone usage, and social media usage

Independent Variable	Sub-dimension		Sum of Squares	df	Mean Square	F	p
Department of Education	Affective	Between groups	199.788	2	99.894	3.190	0.043*
		Within groups	6764.632	216	31.318		
		Total	6964.420	218			
	Cognitive	Between groups	335.391	2	167.696	0.896	0.410
		Within groups	40442.645	216	187.234		
		Total	40778.037	218			
	Total	Between groups	1052.850	2	526.425	1.579	0.209
		Within groups	72024.410	216	333.446		
		Total	73077.260	218			
Independent Variable	Sub-dimension		Sum of Squares	df	Mean Square	F	p
Daily Mobile Phone Usage Time	Affective	Between groups	242.463	4	60.616	1.930	0.107
		Within groups	6721.957	214	31.411		
		Total	6964.420	218			
	Cognitive	Between groups	2994.383	4	748.596	4.240	0.003**
		Within groups	37783.654	214	176.559		
		Total	40778.037	218			
	Total	Between groups	4904.409	4	1226.102	3.849	0.005**
		Within groups	68172.852	214	318.565		
		Total	73077.260	218			
Independent Variable	Sub-dimension		Sum of Squares	df	Mean Square	F	p
Daily Social Media Usage	Affective	Between groups	339.348	4	84.837	3.014	0.021*
		Within groups	2983.643	106	28.148		
		Total	3322.991	110			
	Cognitive	Between groups	598.611	4	149.653	0.789	0.535
		Within groups	20111.083	106	189.727		
		Total	20709.694	110			
	Total	Between groups	1707.613	4	426.903	1.331	0.263
		Within groups	34005.360	106	320.805		
		Total	35712.973	110			

(*p<0,05; **p<0,01; ***p<0,001)

RQ4. What is the effect of sports science students' digital screen usage, daily physical activity, and change in daily physical activity on their perceived sports competence?

The findings obtained from the differentiation status of perceived sports competence of the university students according to the change in digital screen usage, daily physical activity, and change in daily physical activity were evaluated by one-way analysis of variance (ANOVA) and the results are given in Table 10. The data shows a significant difference in the cognitive sub-dimension of DSSCA scores according to the change in digital screen usage ($F_{(2-216)}$=.919, p<0.001), daily physical activity ($F_{(4-214)}$=.919, p<0.05) and daily physical activity ($F_{(2-216)}$=-3.014, p<0.01).

Table 10. ANOVA results of digital screen sports competence regarding students' daily PA scores in terms of the department of education, daily mobile phone, and social media usage.

Independent Variable	Sub-dimension		Sum of Squares	df	Mean Square	F	p
Change in Digital Screen Usage	Affective	Between groups	58.754	2	29.377	.919	0.401
		Within groups	6905.666	216	31.971		
		Total	6964.420	218			
	Cognitive	Between groups	3359.172	2	1679.586	9.695	0.000***
		Within groups	37418.865	216	173.235		
		Total	40778.037	218			
	Total	Between groups	4191.791	2	2095.896	6.572	0.002**
		Within groups	68885.469	216	318.914		
		Total	73077.260	218			
Independent Variable	Sub-dimension		Sum of Squares	df	Mean Square	F	p
Daily Physical Activity	Affective	Between groups	140.096	4	35,024	1.098	0.358
		Within groups	6824.324	214	31,889		
		Total	6964.420	218			
	Cognitive	Between groups	1982.382	4	495.596	2.734	0.030*
		Within groups	38795.654	214	181.288		
		Total	40778.037	218			
	Total	Between groups	2847.297	4	711.824	2.169	0.074
		Within groups	70229.963	214	328.177		
		Total	73077.260	218			
Independent Variable	Sub-dimension		Sum of Squares	df	Mean Square	F	p
Change in Daily Physical Activity Period	Affective	Between groups	7.071	2	3,536	.110	0.896
		Within groups	6957.349	216	32.210		
		Total	6964.420	218			
	Cognitive	Between groups	1778.180	2	889.090	4.924	0.008**
		Within groups	38999.856	216	180.555		
		Total	40778.037	218			

		Between groups	1819.925	2	909.963	2.758	0.066
	Total	Within groups	71257.335	216	329.895		
		Total	73077.260	218			

(*p<0,05; **p<0,01; ***p<0,001)

DISCUSSION

This research aimed to examine the perceived sports competence of university students according to their usage of digital screen applications. In this context, a reliable scale with two sub-dimensions (cognitive and affective) was developed by the researchers with good and acceptable fit values. It is expected that this scale will contribute to future studies on perceived sports competence and digital screen applications. According to the results of the current research, the most important findings are summarized below.

The results of this study showed that while the average computer usage time of the participants was between 1 and 3 hours, the average mobile phone usage was between 3 and 5 hours. Sports Science students spend an average of 4-8 hours daily with their digital devices. Similarly, Sevil Serrano et al. (2018) found that adolescents spend an average of 407 minutes (6-7 hours) a day using different technological devices. Also, adolescents and pre-adolescents spend more time with mobile phones and therefore exhibit more sedentary behavior than younger children (Joshi et al., 2016). Likewise, the research carried out by Lepp et al. (2013) and Barkley and Lepp (2016) found that university students spent an average of age 300-380 minutes (5-6 hours) per day on mobile phones. As an even higher usage result, college-age students in the US spent an average of 8–10 hours per day on a mobile phone (Roberts et al., 2014). Fennell et al. (2019) found that the mean mobile phone use of adults aged between 18 and 80 was 239 ± 224 min/day. These findings indicate intensive use of mobile phones and computers by adolescents. This coincides with the current literature. Excessive digital screen usage should be considered an issue that needs to be seriously appraised.

While the participants in our study stated that they mostly use the computer for educational purposes, they reported that they primarily use mobile phones for games. Männikkö et al. (2015) found out that only 7.5% of Finnish adolescents and young adults had not played digital games at all. In contrast, Siddiquah and Salim (2017) indicated that university students spent more time on PCs for recreational purposes other than educational. Višnjić et al. (2018) found that university students in Serbia and Italy generally use mobile phones for internet browsing and listening to

music more than playing mobile games. According to this finding, entertainment rather than educational purposes takes priority in mobile phone use.

In the present study, while the proportion of those who report that they play computer-based games is 26.9%, those who state that they play mobile-based games is 38.8%. According to these results, the proportion of playing digital games is not at a high level among sports science students. The most popular PC-based games were PUBG, Counter-Strike, and LoL among Turkish students. Similarly, in mobile digital games, the most popular game was PUBG. LoL and FIFA were other popular digital games. These mobile games are also in the Top 10 multiplayer games (Narwal & Aggarwal, 2022).

The proportion of the participants who stated that they do not use social media platforms is only 3.2%. Participants use social media platforms for an average of 1-3 hours a day. A higher proportion of sports science students use social media compared to digital games. The most-used social media application by the participants was Instagram. This was followed by WhatsApp, Twitter, and Facebook. Similar findings reported by Knight-McCord et al. (2016) found that Instagram is the most popular social media application among university students.

About 70% of the Sports Science students reported that their use of social media and digital games increased during the pandemic. The proportion of those who stated that their sportive activities decreased in the same period was 54.3%. This is important in terms of showing the negative effects of the pandemic on our lives and the alternative activities being pursued. It is thought that these data are an indication of the transition from an active life to inactive during the pandemic. Similarly, Boursier et al. (2020) and Singh et al. (2020) found that Covid-19 caused a surge in our social media usage during this period.

Digital screen sports competence effect scores differed significantly as a function of the duration of mobile phone usage, change in daily social media/digital game usage, and physical/sportive activity in the pandemic period. Male participants stated that their perceived sports competence in the cognitive sub-domain due to digital screen applications was more affected than female participants. Participants using mobile phones extensively (7 hours or more per day) had higher digital screen sports competence scores than the other participants. The scores of the digital screen sports competence effect of the participants that stated their daily digital game and social time usage in the pandemic period increased also increased. It was concluded that the sports competence

scores of the participants, who stated that the duration of their sportive activity decreased during the pandemic, were higher than the other groups.

CONCLUSION

In conclusion, the use of digital screen applications clearly had negative effects on the sports science students' perceived sports competence, which increased with the Covid-19 pandemic. For this reason, it is of great importance to take measures to reduce young people's exposure to digital screen applications. Many research studies affirm that the extensive use of digital screen applications causes physical and psychological health problems by causing a sedentary lifestyle (Alshehri & Mohamed, 2019; Ercan et al., 2021; Gómez et al., 2020; Górnicka et al., 2020; Tao et al., 2020). Therefore, to reduce and put an end to these problems, studies that direct people toward a healthy life by reducing their digital addiction are of great importance.

As a result of this study, which was conducted to examine the perceived sports competence of sports science faculty students according to the usage of digital screen applications, the following may be suggested: (a) Research to develop interventions on the effects of digital screen addiction, both for students and parents, (b) research on the effect of digital screen addiction on health problems, such as obesity, and (c) qualitative research on the experience and perspective of participants related to digital screen usage.

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