



ORIGINAL ARTICLE

The Relationship Between Healthy Nutrition and Digital Game Play Attitude through Sports Individuals

Mehmet Şirin Güler¹, Ergün Çakır²

¹School of Physical Education and Sport, Kafkas University, Sarikamis, Turkey

²School of Physical Education and Sport, Bitlis Eren University, Turkey

Study Area: Sarikamis, Turkey

Coordinates: 40°20'17"N 42°34'23"E

Key words: Lifestyle, Game, Addiction, Awareness, Sports

Abstract

To conduct this study a questionnaire form including three parts has been used to collect the data. In the first part, the personal information form is used. The Attitude Scale for Healthy Nutrition (ASHN) in the second part and the Digital Gaming Attitude Scale (DGAS) in the third part are used. In the results of the difference analysis according to the demographic characteristics of the total scores of ASHN and DGAS, it is understood that scores of ASHN have significant differences regarding gender, mother education and sports frequency. However, there is no statistically significant difference in the score of DGAS according to demographic characteristics. The results obtained in the research proves that individuals' awareness of healthy nutrition increases thanks to sports. Consequently, their interest in a digital game decreases. Studies in the literature on digital games indicate that there are undesirable problems in individuals who are connected to these games at the level of addiction.

Introduction:

The main purpose of the world health organization is to constitute healthy generations including healthy individuals. Healthy living is possible with an active and conscious lifestyle. Researches present us that human beings have been born with certain abilities since their creation. The emergence of these abilities also varies depending on the individual's interests and attitudes. As long as the talents existing in the individual are used, they develop and combine the missing elements with the skill factors and form the capacity of the individual. If there are sports activities that are healthy, strong, and provide physical, spiritual, and motor raft development of the individual, which arises with the combination of all abilities and skill factors, the interest of the individuals' to sports activities increases. On the other hand, computer technology, which has a great role referring to today's technological society, affects daily life in many ways, especially with the developing internet technology and causes them to be interested in technological tools instead of sports activities. All the researches show that healthy nutrition is done through activities such as sports and exercise. For each individual to live a healthy life, behavioral patterns such as physical activity, sports, and healthy nutrition should become a lifestyle. Team sports are based

on the intermittent high-intensity activity but are among the sports branches that can change the basic features of the game even within the same team. This condition also causes differences in the nutritional and physiological requirements of the athletes within the same team (Mujika & Burke, 2010). Proper nutrition, on the other hand, increases the muscle's ability to contract and strengthen and helps regeneration after training (Szczepanska & Spalkowska, 2012). Sports is also useful in preventing bad habits as it is a way of evaluating free time (Aygün & Öztasyonar, 2019; KarakKüçük, 2002). Healthy nutrition is the pleasure of the food, eating various and balanced nutrition, eating all the nutrients in the amount required by the individual, and maintaining the ideal body weight. The goal of healthy nutrition is to ensure adequate and balanced nutrition (Besler & Rakıcıoglu, 2015).

Attitude is defined as a tendency that is attributed to an individual and creates his thoughts, feelings, and behaviors about a psychological concept (Kagitçibasi, 2004). Attitude shows our tendency to accept or reject objects, ideas, and groups. Also, this object reflects our feelings for or against these ideas or groups (Gay & Airasian, 2000). In other words, attitude can be expressed as the possible behavior that the individual is expected to show in the face of any case or situation (Inceoglu, 2010). The concept of attitude is

*Corresponding author: mehmeto910@hotmail.com

accepted by social psychologists and is defined as having an idea about the direction of the attitude towards a case by observing an individual, (Tavsanci, 2014). The emergence of attitudes, its source, effects on the movements of individuals, and the change of attitudes over time have always attracted the attention of the scientific world and it has been the subject of a large amount of research (Demir *et al.*, 2017). Attitude, mood, and environment are the orientation of the world, and the level of knowledge, emotional approach, and attitudes are intertwined about this subject. Accordingly, an individual's attitude and his/her information about the case or situation come into view as knowledge (cognitive), positive and negative emotions (emotional), and various discourses and actions (behavioral) on the subject.

Computer technology, which has a great role in today's age of technology, affects daily life in many ways. Digital games have become one of the most important pursuits of the new generation called digital natives in today's world. Children play these games intensely at home, at school, on trips, and in many other living areas, and even disrupt many tasks and needs that they have to fulfill to play these games. At the beginning of these duties and needs, situations such as not fulfilling homework and responsibilities are ranked besides primary needs such as nutrition, sleep, toilet, etc. One of the important issues to be questioned is why children play digital games so intensely. Although this question can be analyzed under various headings: digital games offer a surreal world to the players and that the players have extraordinary power and abilities and accomplish many things that they cannot achieve in real life in these games are the important factors that attract children. Other important factors are the sense of uncertainty, curiosity, and excitement in these games, and the game scenarios that are designed to pass the level constantly, the motivation of players to reach better and better (Demir & Hazar, 2018).

Our young people who were born and grew up in the technology era known as digital natives have different mental structure, relevance, and habits than the previous generation (Prensky, 2001). If the knowledge that an individual has about a subject provides a positive view of the subject (cognitive element), the attitude towards the subject is positive (emotional element). S/he shows this with various discourses and actions (behavioral element) (Hazar & Demir, 2018). While Dogu (2006) explains the reasons that force individuals to play digital games intensely, he states that individuals have many things that cannot have in real life in this game world and they think these games are a way to get rid of real-life responsibilities.

There is a strong link between healthy nutrition and sports. Thanks to this relationship, people can maintain their health, lead a quality life, and increase their productivity by getting rid of digital game addiction and

active physical activity, and ensuring their physical, spiritual, and motor development. In this context, analyzing the relationship between healthy nutrition and digital game attitude through individuals who do sports can contribute to this field of literature.

Materials and Methods:

A survey model was the research approach whose aim was to describe a situation that exists in the past or still (Karasar, 2012). The study group of the research included 213 athletes (97 males and 116 females) studying at Kafkas University School of Physical Education and Sports and Atatürk University Faculty of Sport Sciences in 2019-2020.

In the research, a questionnaire form including three parts was used to collect the data. The scale of demographic features prepared by the researcher; the Attitude scale for Healthy Nutrition; Digital Gaming Attitude Scale had been used. The scale consisting of 21 items and 4 sub-dimensions developed by Tekkursun Demir & Cicioglu (2019) was used to determine the attitudes of individuals towards healthy nutrition. The sub-dimensions of ASHN was Information About Nutrition (IAN); Feelings About Nutrition (FAN); Positive Eating Habits (PEH) and Negative Eating Habits (NEH). The items regarding these sub-dimensions are such: Information About Nutrition (IAN) 1., 2., 3., 4., 5.; Feelings About Nutrition (FAN) 6., 7., 8., 9., 10., 11.; Positive Eating Habits (PEH) 12., 13., 14., 15., 16.; and Negative Eating Habits (NEH) 17., 18., 19., 20., 21. It is a 5 point likert scale (1= Strongly Disagree and 5= Strongly Agree) and the negative items of the scale are 6., 7., 8., 9., 10., 11., 17., 18., 19., 20. and 21. The lowest score that was obtained from ASHN is 21, and the highest score is 105.

As a result of the explanatory factor analysis (EFA) on the scale developed by Demir & Bozkurt (2019), a three-dimensional structure consisting of 18 items has been obtained. The scale involves Cognitive (first 5 items), Affective (5 items), and Behavioural (last 8 items) sub-dimensions. Following the Exploratory Factor Analysis, Confirmatory Factor Analysis (CFA) was performed and evidence had been provided that the fit indices of the scale obtained according to CFA were within the acceptable range. Then, item and reliability analyzes of the scale had been made. In this context, the variance ratio explained by Cognitive is 42.68, and Cronbach Alpha was 90. The variance ratio explained by Affective is 16.83 and Cronbach Alpha was 81. The variance ratio explained by Behavioural was 5.59 and Cronbach Alpha was 91. The total variance ratio explained by the scale is 65.11% and the Cronbach Alpha value was 82. The lowest points and multiples that the participants can get from the scale had been graded. Concordantly, the scores of the participants are labeled as such regarding digital game attitude: "1-18 very low; 19-37 low; 38- 54 medium; 55-72 high; 73-90 very high".

In the research, while frequency analysis was used to describe nominal and ordinal data, average and standard

ORIGINAL ARTICLE

deviation values have been used for defining measurement data. Before the gap analysis of the average of the scale, the Kolmogorov Smirnov test was used to analyze the normality of the distribution. Independent Sample T-test was used for a different analysis of total scale averages with normal distribution for dual groups and ANOVA test was used for difference analysis between more than two groups. Levene test was used for variance homogeneity in the tests. Welch statistics were used in case of non-homogeneous variance as a result of the Levene test. Pearson's correlation was used in the relational screening analysis. It was found that all analyses were within the 95% confidence interval.

Results:

Table 1. Demographic characteristics of the participants

Particulars	N	%	Particulars	N	%
Age					
20 yr & below	101	47.4	21 yr & above	112	52.6
Gender					
Female	116	54.5	Male	97	45.5
Branch					
Individual	130	61.0	Team	83	39.0
Monthly Income					
Low	26	12.2	Medium	73	34.3
High	114	53.5			
Education Level of the Mother					
Illiterate	10	4.7	Primary School	68	31.9
Second. School	55	25.8	High School	51	23.9
Undergraduate	21	9.9	Postgraduate	8	3.8
Education Level of the Father					
Illiterate	9	4.2	Primary sch.	39	18.3
Second. School	35	16.4	High School	69	32.4
Undergraduate	46	21.6	Postgraduate	15	7.0
Frequency of doing sports					
Twice a week	107	50.2	3 times a week	79	37.1
4 times a week & above	27	12.7			

Table 2: Average values of the answers given to the sub-dimensions of the research scales and reliability analysis results

Parameter	Cron-back α	Low-est	High-est	Average	SD
Information on nutrition	0.904	5.00	25.00	19.65	4.43
Feelings about nutrition	0.753	6.00	30.00	21.91	4.71
Positive eating habits	0.700	5.00	25.00	17.43	4.11
Negative eating habits	0.809	5.00	25.00	13.99	5.07
ASHN Total	0.678	40.00	100.00	72.98	9.23
DGAS Cognitive	0.778	5.00	25.00	13.98	5.00
DGAS Affective	0.758	5.00	25.00	15.40	4.76
DGAS Behavioural	0.891	8.00	40.00	24.06	8.43
DGAS Total	0.826	18.00	90.00	53.45	12.43

All scale sizes are above 0.60 level accepted in the literature. When the average values are analysed, the total score of the ASHN is above average (between 40-100) and a score of DGAS (between 18-90) is closer to the average. Demir & Bozkurt (2019) stated that the value of 38-54 as a medium for DGAS. Tekkürsun Demir and Cicioglu (2019) qualifies the total score of ASHN as 64-84 as high.

Table-3: Difference analysis results of ASHN and DGAS total scores according to demographic characteristics

	ASHN Total			DGAS Total		
	Average	SD		Average	SD	
Age						
20 yr & below	72.90	8.88	t=-0.113	54.93	12.94	t=1.663
21 yr & above	73.04	9.57	p=0.910	52.11	11.84	p=0.098
Gender						
Female	71.32	9.08	t=-2.917	52.72	12.72	t=-0.938
Male	74.96	9.05	p=0.004*	54.32	12.08	p=0.349
Branch						
Individual	73.14	8.56	t=0.320	54.36	12.33	t=1.348
Team	72.72	10.24	p=0.749	52.01	12.52	p=0.179
Monthly Income						
Low	71.27	8.49	F=2.236	49.50	17.11	F=3.056 ^(w)
Medium	71.66	7.74	p=0.109	56.10	10.40	p=0.054
High	74.21	10.11		52.65	12.14	
Education Level of the Mother						
Illiterate	67.80	9.32	F=5.442	55.00	10.26	F=1.034
Primary Sch.	170.62	8.42	p=0.000*	51.29	12.13	p=0.398
Second. Sch.	71.71	7.81		53.80	12.26	
High School	76.71	9.01		56.06	12.38	
Undergrad.	73.95	11.15		51.62	11.21	
Postgrad.	81.88	9.14		55.50	20.14	
Education Level of the Father						
Illiterate	77.22	10.50	F=1.351 ^(w)	55.00	11.90	F=1.005
Primary Sch.	72.05	7.91	p=0.259	53.00	13.55	p=0.416
Second. Sch.	69.97	8.83		50.11	10.03	
High Sch.	73.97	8.55		55.14	12.52	
Undergrad.	73.22	8.28		54.41	13.41	
Postgrad.	74.53	15.74		50.67	10.98	
Frequency of doing sports						
Twice a week	71.23	9.20	F=4.033	53.12	12.28	F=0.074
3 times a week	74.52	8.51	p=0.019*	53.81	13.83	p=0.929
4 times a week and above	75.37	10.33		53.67	8.38	

Table 4: Correlation analysis for the relationship between ASHN & DGAS

	a	b	c	d	e	f	g	h
a	-0.094							
b	0.310**	-0.195**						
c	-0.294**	0.429**	-0.149*					
d	0.408**	0.614**	0.412**	0.560**				
e	-0.118	-0.005	-0.119	0.052	-0.084			
f	-0.122	0.023	-0.108	0.042	-0.072	0.605**		
g	0.002	0.013	0.101	0.017	0.062	-0.030	0.117	
h	-0.093	0.016	-0.021	0.048	-0.019	0.614**	0.706**	0.711**

a- Information about nutrition; b- Feelings about nutrition; c- Positive eating habits; d-Negative eating habits; e-ASHN Total; f-DGAS Cognitive; g: DGAS Affective; h:DGAS Behavioural

The ASHN average is higher among 21 years old and above, in male participants, in individual sports, among monthly high income, mothers with postgraduate education, illiterate fathers and among who exercise four or more times a week. SBITS score varies significantly with respect to gender, education level of the mother and frequency of sports ($p < 0.05$).

The average of DGAS is higher among 20 and under, in male athletes, in those who engage with individual sports, among monthly medium income, among mothers and

fathers with high school education and among who exercise three times a week.

Discussion:

Studies on attitudes towards nutrition and digital play have been conducted in different studies, and these studies mostly focus on adolescence and youth and in a demographic where women are predominant. Tekkurşun Demir & Cicioğlu (2019) worked on 573 university students in their studies on ASHN. In the study by Özdoğan & Özçelik (2011), the sample was demography of 6th-8th class which 52.3% female and 47.7% male. On the other hand, Doustmohammadian *et al.*, (2017) studied the sample from 5th and 6th grade, of which 49% were male and 51% were female. Richards *et al.*, (2015) conducted in their studies in the southwest of England that the demographic structure was between 11 and 16 years old and 51.1% were male. In an adult study, Sproesser *et al.*, (2017) reported that 58% of the respondents in India and Germany were women. Changes especially in adolescence and youth in the diet have been the subject of various studies. Einstein *et al.*, (2000) reported in their studies that body changes, especially between the ages of 10 and 20, affect their nutritional requirements. In the study by Silva *et al.*, (2014), it has been observed that fast food nutrition was common in 27 participants aged between 13 and 19, as an indicator of unhealthy nutrition, and individuals had low consciousness of healthy nutrition. In this study, while the attitude levels of the participants towards healthy nutrition are high; the digital game attitude is moderate. Unlike the literature, in both groups 20 years old and below and over 21, overall healthy nutrition awareness is found to be high. In the study, the attitude towards healthy nutrition has shown a significant difference according to gender, education status of the mother, and frequency of doing sports. According to gender, the level of attitude towards healthy nutrition is higher in male participants whose mother's level of education is postgraduate and those who do sports four or more times a week according to the frequency of doing sports.

Digital gaming attitude has been the subject of studies in many different fields. For instance, Festl *et al.*, (2013) analyzed the relationship between digital game attitude and militarist tendencies in their study and they reported that playing digital games did not cause negative orientations such as using weapons. On the other hand, in their study, Noraddin & Kian (2014) notified that digital games can increase academic tendency when they are used in education and teaching. Quandt *et al.*, (2015) examined the work in the field of digital games. Hainey *et al.*, (2013) analyzed the characteristics of students in digital gameplay and use them in education in Scotland and the Netherlands in their study. In these studies, demographic variables did not cause a statistically significant difference in individuals' digital game attitudes. In this research, the attitude of

playing digital games did not show a statistically significant difference considering demographic characteristics.

Studies in the field prove that the level of digital gaming affects many variables, particularly physical activity, and healthy nutrition. The results obtained from these studies indicate that there may be a decrease in the basic functions of individuals such as nutrition and daily activities, which can be counted from their self-efficacy with the increase of digital game attitude (Boj *et al.*, 2018). On the other hand, studies are focusing on digital games and games that can eliminate nutritional disorders. Silva *et al.*, (2018) informed that digital games in nutrition and food education increase the knowledge of food and nutrition on 177 secondary school students. In their study, Baranyi *et al.*, (2017) spoke that digital play attitude can be used effectively in those who are not conscious of food intake, rather than normal individuals. Concurrently, Peng (2009) analyses the usability of digital games in terms of healthy nutrition. However, these studies reveal the effects of the programs that have been previously designed. On the other hand, when free time and physical activity are evaluated together, it can be expected that there is a significant relations

Conclusion:

The results in the research prove that individuals' awareness of healthy nutrition increases and their interest in a digital game decreases thanks to sports. Studies on digital games indicate that there are undesirable problems in individuals who are engaged with these games at the level of addiction. From this point of view, it is beneficial not to prevent the playing of digital games entirely, but also to adjust the level of play and to approach individuals with auto control to these games. To achieve this, sports that improve the auto control of individuals can be effective in reducing the digital game addiction of young people. Likewise, when the age and demographic characteristics of the research sample are considered, the average level of digital game interest can be interpreted as the positive effect of sports against digital game addiction.

There is a similar situation with nutrition. Regarding the age group and general demographic characteristics of the research sample, it is expected that the knowledge and interest in healthy nutrition, especially fast food, will be low. However, in the research sample, athletes have an attitude towards a high level of healthy nutrition. It is possible to state that this is again among the positive effects of sports. In general, when the results of the research are evaluated together, it is obvious that sports are beneficial by minimizing not only direct physical and recreational benefits but also other negative factors such as digital game addiction.

References:

Aygün, M. & Öztasyonar, Y. (2019): Analysing sports trait self-confidence features of ice hockey players. *Sportmeter J. Phy.*

ORIGINAL ARTICLE

- Edu. Sports Sci.*, 17(3):202-212.
- Baranyi, R., Steyrer, B., Lechner, L., Agbektas, G.N., Lederer, N. & Grechening, T. (2017): “**NutritionRush – A Serious Game to Support People with the Awareness of Their Nutrition Intake**”. 2017 IEEE 5th International Conference on Serious Games and Applications for Health (SeGAH).
- Besler, H.T. & Rakicioglu, N. (2015): Turkey-specific food and nutrition guide. Ankara: merdiven reklam tanitim. The International Olympic Committee and the International Society for Sports Nutrition. *S. Af. J. Clin. Nutri.*, 26(1):6-16.
- Boj, C., Diaz, D.J., Portales, C. & Casas, S. (2018): Video Games and Outdoor Physical Activity for the Elderly: Applications of the HybridPLAY Technology. *Appl. Sci.*, 8(1912):1-14.
- Demir, G.T. & Hazar, Z. (2018): Dijital oyun oynama motivasyonu ölçeği (doomö): geçerlik ve güvenirlik çalışması. *Beden Eğitimi Ve Spor Bilimleri Dergisi*, 12(2).
- Demir, G.T. & Bozkurt, T.M. (2019): The Digital Gaming Attitude Scale (DGAS): Reliability and validity study. *J. Sports and Edu. Sci.*, 6(1):1-18.
- Demir, T.G. & Cicioglu, H.I. (2019): “The Relationship between Motivation for Physical Activity Participation and Motivation for Digital Gaming”. *Spormetre*, 17(3):23-34.
- Demir, T.G., Cicioglu, H.I., Ilhan, E.L. & Arslan, Ö. (2017): The attitudes of classroom teacher candidates towards physical education lesson. *Int. J. Sport, Exer. & Training Sci.*, 3(4):120-128.
- Dogu, B. (2006): **Lifestyle represented in computer games as popular culture’s medium of consumption**. Master Thesis, Ege University Institute of Social Sciences, Izmir.
- Doustmohammadian, A., Omidvar, N., Keshavarz-Mohammadi, N., Abdollahi, M., Amini, M. & Eini-Zinab, H. (2017): Developing and validating a scale to measure Food and Nutrition Literacy (FNLIT) in elementary school children in Iran. *PLoS ONE*, 12(6):1-18.
- Einstein, E., Coelho, K.S.C., Coelho, S.C. & Coelho, M.A.S.C. (2000): “Nutrition in adolescence”. *J. pediatr.* (Rio J.), 76(3):263-274.
- Festl, R., Scharkow, M. & Quandt, T. (2013): “Militaristic Attitudes and the Use of Digital Games”. *Game. Cult.*, 8(6):392-407.
- Gay, L.R. & Airasian, P. (2000): **Educational Research**. Pub. by: Upper Saddle River, New Jersey.
- Hainey, T., Westera, W., Connolly, T.M., Boyle, L., Baxter, G., Beeby, R.B. & Soflano, M. (2013): Students’ attitudes toward playing games and using games in education: Comparing Scotland and the Netherlands. *Compu. Edu.*, 69(2013):474-484.
- Hazar, Z. & Demir, G.T. (2018): Attitude scale towards game and physical activities course of class teacher candidates: validity and reliability study. *J. Human Sci.*, 15(2):1206-1215.
- Inceoglu, M. (2010): **Attitude, perception, communication**. Beykent Üniversitesi Yayinlari, 69(5). Baski, Istanbul.Karaküçük, S. (1999): **Recreation**. pub. by: Bagirgan, Ankara.
- Mujika, I. & Burke, L.M. (2010): Nutrition in team sports. *Ann. Nutr. Metab.*, 57(2):26-35.
- Noraddin, E.M. & Kian, N.T. (2014): Academics’ Attitudes towards Using Digital Games for Learning & Teaching in Malaysia. *Malay. Online J. Edu. Tech.*, 2(4):1-21.
- Özdoğan, Y. & Özçelik, A.Ö. (2011): “**Development of a Nutrition Knowledge Scale for Adolescents (Validity and Reliability Study)**”. 2nd International Conference on New Trends in Education and Their Implications.
- Peng, W. (2009): Design and evaluation of a computer game to promote a healthy diet for young adults”. *Health Communi.*, 24(1):115-127.
- Prensky, M. (2001): **Digital natives, digital immigrants**. From on the Horizon. *MCB Univers. Press*, 9(5):1-6.
- Richards, G., Malthouse, A. & Smith, A. (2015): The diet and behaviour scale (DABS): testing a new measure of food and drink consumption in a cohort of secondary school children from the South West of England. *J. Food Res.*, 4(3):148-161.
- Silva, J.G., Teixeira, M.L.O. & Ferreira, M.A. (2014): Eating during adolescence and its relations with adolescent health”. *Text Cont. Nursi. Florianópolis*, 23(4):1095-1103.
- Silva, C.C., Filho, A.G.S., Monteiro, J.S. & Santos, W.P. (2018): The Development of Digital Games for Food and Nutrition Education Using Popular Education and Participatory Design pp.-141-188. In: **Rural Education: Teaching Strategies, Student Issues and Trends**, Pub. by: Nova Science Publishers.
- Sproesser, G., Klusmann, V., Ruby, M.B., Arbit, N., Rozin, P., Schupp, H.T. & Renner, B. (2017): “The positive eating scale: relationship with objective health parameters and validity in Germany, the USA and India”. *Psychol. Health*, 1:1-27.
- Szczepanska, E. & Spalkowska, A. (2012): Dietary behaviours of volleyball and basketball players. *Rocz Panstw Zakl Hig.*, 63(4):483-489.
- Tavsancil, E. (2014): **Measuring attitudes and data analysis with spss (5th Edition)**. Pub. by: Nobel Yayınevi, Ankara.

