ISSN: 2148-1148

IntJSCS

International Journal of Sport Culture and Science (IntJSCS)

International Refereed Scientific Journal

Volume 12 Issue 4
December 2024

crossref <enabled>

doi®

International Refereed Scientific Journal

International Journal of Sport Culture and Science
December 2024 : 12(4)
ISSN : 2148-1148
Doi : 10.14486/IntJSCS

www.iscs-a.org

IntJSCS is an International Refereed Scientific Journal published quarterly by ISCSA.

IntJSCS is indexed/included in CrossRef, DOAJ, Google Scholar, Cite Factor, J-Gate, Research Bible, Mendeley, Open Access Journals, Academic Keys, Scientific Indexing Services, DRJI, Journal Index, ASOS, İSAM, Dergipark, Arastirmax; and it is also under evaluation by many other primary indexing services.

Call for papers

We invite high-quality articles, review papers, case studies of theoretical, and empirical, conceptual, and experimental research solely on sport-related themes in a properly formatted file as per the author guidelines. We do our best to have evaluated all the submissions through a fast double-blind review process by our international scientific board and publish them in the following issue. Articles submitted in IntJSCS for consideration should not have been published elsewhere and should not be submitted for review elsewhere during the duration of evaluation. As mentioned in the general scope of the journal, we value submissions from different regions of the world in order to reach a real international coverage. Las, but not the least, we promote researchers to use our open access articles in their researches and to contribute to the development of our journal through their citations.

International Advisory Board

International Journal of Sport Culture and Science
December 2024 : 11(4)
ISSN : 2148-1148
Doi : 10.14486/IntJSCS

TABLE OF CONTENTS

REFEREES OF THIS ISSUE

Dr. Abdurrahman Demir
Dr. Ahmet Haktan Sivrikaya
Dr. Andrew Shim
Dr. Bahar GÜLER
Dr. Çiğdem ÖNER
Dr. Defne Öcal Kaplan
Dr. Eren Uluöz
Dr. Fatih YAŞARTÜRK
Dr. Ferhat Çifçi
Dr. Hakan KARABIYIK
Dr. Halil Erdem Akoğluğlu
Dr. Hüseyin Eroğlu
Dr. Hüseyin Nasip Özaltaş
Dr. Mergül Çolak
Dr. Nuri Berk Güngör
Dr. Oğuz Gürkan
Dr. Sıtkı Özbek
Dr. Tuna TURGUT
Dr. Yavuz Öntürk

International Journal of Sport Culture and Science
December 2024 : 12(4)
ISSN : 2148-1148
Doi : 10.14486/IntJSCS.2024.718

Examination of Speed, Jumping, Balance and Postural Sway Values in Athletes of Different Sports

Bahaüddin TÜRKARSLAN [1], Gamze ERİKOĞLU ÖRER [2]
[1] Ankara Yıldırım Beyazıt Üniversitesi, Spor Bilimleri Fakültesi, Türkiye
https://orcid.org/0009-0000-8125-0041
[2] Ankara Yıldırım Beyazıt Üniversitesi, Spor Bilimleri Fakültesi, Türkiye
https://orcid.org/0000-0001-6365-7219

Email: bahaddin_turkarslan@hotmail.com, gamzeorer@aybu.edu.tr

Type: Research Article (Received: 07.01.2023– Accepted: 29.10.2024)

Abstract

This study aims to examine the speed, jumping, balance, and postural sway values of athletes from different sports. A total of 30 male athletes, including 12 football players,10 futsal players and 8 volleyball players, who were actively engaged in sports, participated in the study. The gender, age, height, body weight(kg), dynamic balance (Y balance), squat jump (Optojump), postural sway (Kistler© brand Body Sway Module), and speed(30m) parameters of the athletes included in the study were collected. Differences among the disciplines was examined using One-Way Analysis of Variance(ANOVA).There was a significant difference ($p<0.05$) in squat jump and dynamic balance (post-medial-left foot) values between football, futsal and volleyball players, while no difference was found in anthropometric measurements such as body weight (kg),height (cm),body fat percentage (%BF),body mass index (BMI),and leg length, as well as dynamic balance tests (right and left foot / anterior-posterior-lateral).There was also no difference found in postural sway (double foot/eyes open and closed/anterior-posterior-medial-lateral-total sway) and speed test performance parameters($p>0.05$).The differences observed between the branches can be attributed to the different physical characteristics and training programs required by the related sports branches.

Keywords: Balance, Postural sway, Speed, Jumping, Kistler

Introduction

Football has an intermittent nature, including short periods of high-intensity running and longer periods of low-intensity exercise (Rampinini et al.,2007). While aerobic energy production dominates the energy supply in football, elite-level players perform short periods of high-intensity actions during a match, resulting in high anaerobic demands during intense playing periods (Bangsbo, 1994). In addition, speed plays an important role in the foundation of endurance in football (Aytekin et al., 1998). The factors that make up physical fitness in football can be listed as aerobic capacity, anaerobic power, strength, speed, flexibility, agility, balance, and coordination (Açıkada et al., 1999; İşleğen, 1987).

Futsal, also known as indoor soccer, is an officially recognized indoor football by the Federation Internationale de Football Association (FIFA) (Alvurdu et al.,2016), which has its own unique rules despite its general resemblance to traditional football (Barbero et al., 2015). Futsal is played for fun, amateur, and professional levels all over the world (Barbero et al., 2008). The game is played on a rectangular court that measures 40 x 20 meters and consists of two halves of 20 minutes each, with the clock stopping during dead-ball situations, which can result in a total playing time of 75-90 minutes (Álvarez et al., 2002). Futsal is played at a high intensity with numerous repetitions of sudden accelerations and decelerations, quick changes of direction, and battles (Arı & Tunçel, 2020). Therefore, well-developed aerobic endurance, anaerobic power, and speed performance are important in athletes due to the high aerobic-anaerobic requirements of futsal (Colantonio et al., 2020).

Furthermore, anaerobic power and capacity performance are determining factors in futsal, where they are heavily utilized. The anaerobic system is important in futsal players' success and high performance. It is known that movements related to anaerobic endurance mostly consist of sudden accelerations, changes of direction, shots, jumps, sprints at various distances, and the relationship between speed, distance, and time (Erdem & Yazar, 2019).

Studies on the physiological demands of futsal have shown that tasks such as acceleration, deceleration, sprints, and changes of direction are necessary physical abilities to achieve high performance during a game as it is an intermittent sport (Torres et al., 2017).

Although volleyball is considered a sport that requires technical and tactical skills with low-intensity activity periods and recovery times between high-intensity activities, it also requires high-level endurance (aerobic, anaerobic, respiratory functions), strength, flexibility, speed, agility, balance, reaction, and control. As the game lasts for about 90 minutes and includes high-intensity activity periods during the match, players need to use their aerobic and anaerobic energy systems well (Gabbett & Georgieff, 2004). Additionally, sprints jump (blocks and sudden rises), and repeated high-intensity movements during the match increase the importance of the neuromuscular system. Therefore, volleyball players need to have a good physical structure and highly developed conditioning characteristics, and many studies have been conducted to determine their positional differences (Marques et al., 2009).

Like every motor skill, balance is also one of the motor skills that determine performance in the sports field, and weakness in balance skill is a risk factor for ankle segment injuries during sports activities (Brown et al., 2008). Balance is evaluated in two categories: a static

and dynamic balance. The support surface is not fixed in dynamic balance measurement, whereas in static balance evaluation, the support surface is fixed (Bressel et al., 2007).

Balance is the ability of an individual to maintain their center of mass within a supporting surface. Posture (static balance) is a continuation of individual static positions. Postural performance (dynamic balance) is the active control of the body's posture and position to maintain sufficient and effective movement without falling in different environments and situations, either at rest or during movement (Shumway & Horak, 1986). Maintaining balance and a stable posture are integral to most movement applications (Carr & Shepherd, 1998).

Posture is defined as the proper alignment of body parts and is an important indicator of health and a motor habit that accompanies daily activities (Kendall, McCreary & Provance, 2005). Posture serves two important functions in the body. The first is to provide mechanical antigravity and balance to create optimal posture. It accomplishes this function through the muscle tone of extensor antigravity muscles, providing joint stiffness and resisting the reaction force against the ground. The other function is to act as a reference frame for perception and action of a few extremities in relation to the external world. The position and orientation of body segments such as the head, trunk, and extremities not only determine the target location in the external environment but also organize movements toward these targets (Massion, 1994).

Postural control is a necessary skill for all physical activities. Flexor and extensor muscles play an important role in maintaining postural control by working synergistically in opposite directions (Trew & Everett, 2010).

It has been noted that elite athletes exhibit balance control that develops in line with the requirements of each discipline. Learning and training a sport over a long period of time improves the effectiveness of dynamic and static postural control in daily life activities (Perrin et al., 2002). In sports such as football, volleyball, etc., athletes use their muscles intensively against gravity during training and competition.

In football, unlike other individual and team sports, movements in the form of single-leg actions, such as keeping the ball away from the opponent with one foot while simultaneously struggling with a sudden shot/pass, are used. In these movements, it has been observed that players achieve better results than dancers who use intense single-leg stances in terms of some postural performance characteristics (Gerbino et al., 2007). The proper control of postural stability is essential for most actions performed by volleyball players (Agostini et al., 2013).

Therefore, this study was conducted to examine the relationship between the speed, jumping, balance, and postural sway performance of athletes in different sports.

Materials And Methods

The study included 30 male athletes who were currently actively participating in sports and voluntarily agreed to participate in the research. The research group consisted of 12 football players, 10 futsal players, and 8 volleyball players. Football players had an average age of 22.25±0.68 years, an average height of 1.80±0.01 cm, and an average weight of 73.30±2.17 kg. Futsal players had an average age of 22.80±1.04 years, an average height of 1.77±0.01

cm, and an average weight of 72.90±2.18 kg. Volleyball players had an average age of 19.88±0.51 years, an average height of 1.86±0.02 cm, and an average weight of 73.50±2.11 kg. The athletes selected had not experienced a significant lower extremity injury in the past year.

Study Ethics

The research group was informed about the research, and to athletes who participated in the study signed a consent form containing information about the purpose and methods of the study. Ethical approval for this study was obtained from the Ankara Yildirim Beyazit University Health Sciences Ethics Committee on 03.01.2023 with decision number 23-1304.

Data Collection Tools

The height of the research group was measured using a stadiometer (Holtain brand) and their body weights were measured using a digital scale (Tanita BC 480). The athletes' body mass indexes (BMI) were calculated using the formula body weight (kg/m²). Additionally, the athletes' balance was measured using the Y Balance test, their speed

performance was measured using the 30 m speed test, their squat jump heights were measured using the Microgate optojump® (Microgate, Bolzano, Italy) device, and their postural sway values were evaluated using a protocol created with the Body Sway (Switzerland) module of Kistler® brand.

Study Design

Athletes were instructed to refrain from any activity that could cause physical fatigue one day before the test. Additionally, athletes were instructed to wear comfortable sports clothing on the day of the test and to stop eating and consuming caffeine at least 2-3 hours before the test. Before the start of the test, each athlete was given sufficient trial time before beginning the test.

The 30 athletes were divided into groups according to their respective sports, and with sufficient rest time between tests, they participated in the height-weight-postural sway (Kistler)-dynamic balance (Y balance)-speed (30 m) and squat jump (Opto Jump) tests in order.

Height Measurement: The height of the participants in the study was measured using a Holtain brand stadiometer with a precision of 0.1 cm. To determine the height, the stadiometer was brought to the top of the head after taking a deep breath with the head upright and eyes looking straight ahead. (Özer, 2009).

Body Weight Measurement: The body weight of the participants was measured using the Tanita BC 480 with shorts and bare feet.

Balance Measurement: The "Y Balance Test" was performed barefoot on a platform. The athletes started on their right foot behind the starting line and stood in balance on one foot while reaching with the tip of the other foot in 3 directions (anterior, posteromedial, and posterolateral). The test was repeated 3 times for each direction with 15 seconds of rest intervals, and the best score was recorded in centimeters. The best degree for each leg in three different directions was evaluated.

Squat Jump: The OptoJump device was used for the squat jump tests, which are widely used in squat jump tests and have been subjected to validity and reliability studies (Gür et al., 2018). In this test, athletes were asked to jump vertically without bouncing their hands on their hips and to wait for 1-2 seconds in a 90° squat position. Bending the knees in the 90° squat position, bouncing hands off the hips in the air phase of the jump, and retracting the knees were considered incorrect movements. (Santos et al., 2014).

30 m Speed Measurement: The athletes' 30 m sprint times were measured using a photosensor in the gym. Each participant performed two fast-running tests with a 3-minute rest period between them. The best performance between the two repeated speed tests was recorded.

Postural Sway Measurement: Postural Sway Measurement: For the postural sway analysis of the athletes, a protocol was created and evaluated in the Kistler® brand Body Sway (Switzerland) module. Postural control measurements included static balance test. Static balance test was performed in double foot stance positions with eyes open and closed.

Each participant was allowed to practice on the Kistler® brand Body Sway module for 2 to 3 minutes before the test in order to get used to the measurement tool and to reduce the learning effect. The research group was first taken to the test after 5 minutes of low-paced running in a light sportswear and a dynamic stretch. Before starting the test, the athletes were instructed to focus on a fixed point on the wall 1 m in front of them and to remain as still as possible during the test with their arms relaxed at their sides.

The athletes stepped on the center of the force platform and placed their feet anterior-posterior (A-P) (along the Y-axis of the force plate) and medial-lateral (M-L) (along the X-axis of the force plate) with the toes pointing forward (+Y). After the body position was stabilized, the test was started with the countdown “3, 2, 1”. The athletes performed 3 tests for 30 seconds double foot eyes open and 30 seconds double foot eyes closed respectively. In addition, rest intervals of 2 minutes were given between each test to prevent fatigue from negatively affecting the test result.

Data Analysis

SPSS 25 software was used to perform statistical analysis of the collected data. Descriptive statistics such as mean, standard deviation, and minimum and maximum values were used to present the data. The normality of the anthropometric and performance parameters was examined using the Kolmogorov-Smirnov test, and it was found that they were normally distributed. One-way analysis of variance (ANOVA) was used to examine whether the data showed significant differences between sports, and if significant differences were found, Gabriel post hoc test was conducted to determine which group(s) showed the differences.

Findings

Table 1 shows the descriptive statistics for the athletes who participated in the study, including mean, standard deviation, and minimum and maximum values.

Table 1. Descriptive statistics for football, futsal, and volleyball players.

		n	$\bar{x}$	Ss	Min	Max
	Football	12	22,25	2,37	19	28
Age/Year	Futsal	10	22,80	3,29	20	30
	Volleyball	8	19,88	1,45	18	22
	Total	30	21,80	2,73	18	30
	Football	12	73,30	7,52	64	83
Body Weight (kg)	Futsal	10	72,90	6,91	59	80
	Volleyball	8	73,50	5,97	65	84
	Total	30	73,22	6,70	59	84
	Football	12	1,80	0,05	1,74	1,94
Height (cm)	Futsal	10	1,77	0,04	1,71	1,83
	Volleyball	8	1,86	0,08	1,75	2,00
	Total	30	1,81	0,06	1,71	2,00
	Football	12	22,55	1,37	21,10	25,10
Body Mass Index (BMI)	Futsal	10	22,98	1,50	20,31	24,80
	Volleyball	8	21,25	1,61	19,00	24,30
	Total	30	22,34	1,59	19,00	25,10
	Football	12	9,28	3,85	3,60	16,20
	Futsal	10	12,40	3,39	5,10	17,00
Body Fat Percentage (%BFP)	Volleyball	8	9,19	3,16	5,20	13,50
	Total	30	10,29	3,73	3,60	17,00
	Football	12	97,25	5,95	91	114
Leg Length (cm)	Futsal	10	96,40	2,95	93	103
	Volleyball	8	101,25	5,20	93	107
	Total	30	98,03	5,16	91	114

Thirty athletes with a mean age of 21.80±2.73 years, a mean body weight of 73.22±6.70 kg, and a mean height of 1.81±0.06 cm participated in the study. Additionally, the mean BMI values for the athletes were determined as 22.34±1.59, the mean %BF values as 10.29±3.73, and the mean leg lengths as 98.03±5.16.

Table 2. Comparison of Speed and Squat Jump Values According to Groups.

Variable		n	x̄	Ss	F	p
	Football	12	4,39	0,23		
Speed	Futsal	10	4,30	0,18	,463	,634
	Volleyball	8	4,42	0,39		
	Total	30	4,37	0,26		
	Football	12	29,65	4,61		
Squat jump	Futsal	10	31,06	4,09	4,375	,023
	Volleyball	8	35,35	3,98		
	Total	30	31,64	4,76		

Table 2 shows that there was a significant difference in squat jump values among athletes from different sports ($p<0.05$). However, no significant difference was found in speed performance values ($p>0.05$).

Table 3. Comparison of Dynamic Balance (Right and Left Foot) Values According to Groups.

In Table 3, there is a significant difference in the Dynamic Balance (Left Foot/Posterior Medial) values between athletes from different sports ($p<0.05$). However, there is no significant difference in the Dynamic Balance (Right and Left Foot/Anterior-Posterior Lateral) parameters ($p>0.05$).

Table 4. Comparison of Postural Sway (Double Leg/ Eyes open and closed) Values between Groups.

The table 4 shows that there is no significant difference in the performance parameters of Postural Oscillation (Double Feet / Eyes Open and Closed / Anterior-Posterior, Medial-Lateral, Total Oscillation) among different sport branches ($p>0.05$).

Variable		n	x̄	Ss	F	p
Sway_area_Ant_Post_mm_s_closed eyes, two feet	Football	12	152,55	73,36	1,567	,227
	Futsal	10	132,64	63,19		
	Volleyball	8	99,91	52,82		
	Total	30	131,87	66,43		
Sway_area_Med_Y_Anterior_Lat_mm_s_closed eyes, two feet	Football	12	52,11	20,86	3,294	,052
	Futsal	10	80,04	53,37		
	Volleyball	8	38,81	21,54		
	Total	30	57,87	38,00		
Sway_area_Total_mm_s_closed eyes, two feet	Football	12	103,83	28,15	,035	,966
	Futsal	10	105,40	22,30		
	Volleyball	8	106,87	24,46		
	Total	30	105,16	24,51		
Sway_area_Ant_Post_mm_s_Open eyes, two feet.	Football	12	1337,29	1706,93	1,474	,247
	Futsal	10	832,75	808,69		
	Volleyball	8	404,76	440,27		
	Total	30	920,43	1225,89		
Sway_area_Med_Y_Anterior_Lat_mm_s_Open eyes, two feet.	Football	12	105,08	17,98	2,459	,104
	Futsal	10	95,40	9,84		
	Volleyball	8	110,37	14,17		
	Total	30	103,26	15,42		
Sway_area_Total_mm_s_Open eyes, two feet.	Football	12	106,40	55,58	,351	,707
	Futsal	10	113,23	55,45		
	Volleyball	8	93,15	35,01		
	Total	30	105,14	49,84		
Y_Post_Lateral_Left foot	Football	12	101,66	18,50	1,012	,377
	Futsal	10	101,30	14,92		
	Volleyball	8	112,25	19,57		
	Total	30	104,36	17,74		
Sway_area_Ant_Post_mm_s_Open eyes, two feet.Right foot	Football	12	101,23	17,02	1,757	,192
	Futsal	10	97,60	19,06		
	Volleyball	8	114,37	29,95		
	Total	30	105,63	24,30		
Sway_area_Med_Y_Anterior_Lat_mm_s_Open eyes, two feet.	Football	12	45,28	27,09	1,077	,355
	Futsal	10	69,84	53,22		
	Volleyball	8	40,57	20,95		
	Total	30	52,21	37,78		
Sway_area_Total_mm_s_Open eyes, two feet.	Football	12	852,91	1260,26	3,927	,032
	Futsal	10	612,26	750,16		
	Volleyball	8	355,73	281,68		
	Total	30	640,11	915,16		
Y_Post_Medial_Left foot	Football	12	110,00	17,61	,701	,505
	Futsal	10	97,10	14,88		
	Volleyball	8	119,62	19,09		
	Total	30	108,26	18,82		
Y_Post_Lateral_Left foot	Football	12	101,66	18,50	1,084	,353
	Futsal	10	101,30	14,92		
	Volleyball	8	112,25	19,57		
	Total	30	104,36	17,74		

Discussion and Conclusion

This study aimed to examine the speed, jumping, balance, and postural sway values of athletes from different sports branches. When the data obtained in this study were examined, a significant difference was observed between groups in squat jump and dynamic balance (post-medial-left foot) values ($p<0.05$), while there was no significant difference in 30 m speed, dynamic balance (right and left foot / anterior-posterior-lateral) and postural sway (both feet/eyes open and closed / anterior-posterior-medial-lateral-total sway) performance parameters ($p>0.05$).

In sports such as football, the athlete's important achievements depend on speed. A football player must be fast while running during a match, attacking, and defending (Günay & Yüce, 2008). Especially in sports that require speed and explosiveness, strength is an important element (Muratlı et al., 2007). Jumping, sprinting, throwing shot put and javelin, or running at a high pace are examples of converting energy into strength for the athlete. Power is expressed as the unit of work (performance) over time. Explosive power is related to anaerobic metabolism, and it measures it (Günay et al., 2006).

Although there is much domestic and foreign literature evaluating the different features of professional and amateur football players, studies evaluating the characteristics of futsal players are quite limited.

When 30 m sprint performance values were analyzed in our study, no significant difference was found between the groups. When we examine the performance values between branches, it is seen that soccer players run at 4.39 m/s, futsal players run at 4.30 m/s, and volleyball players run at 4.42 m/s.

MendezVillanueva, Buchheit, Kuitunen, et al. reported the sprint speed values of football players as 4.39±0.12 s, Rodríguez and Andújar found the sprint speed values of Spanish football players to be 4.26±0.014 s, Silva-Junior, Palma, Costa, et al. reported a value of 4.147±0.122 s for Brazilian footballers, Sander, Keiner, Schlumberger, et al. found a value of 4.455±0.278 s for German footballers, Wong, Chamari, Chaouachi et al. reported a value of 4.36±0.17 s for Chinese footballers, Aguiar, Abrantes, Maçãs, et al. found a value of 4.23±0.25 s for Portuguese footballers, and Cerrah, Polat, and Erkan reported the values of 4.31±0.22 s for goalkeepers, 4.17±0.19 s for defenders, 4.25±0.17 s for midfielders, and 4.15±0.20 s for forwards playing in the top amateur league. In futsal, high-intensity actions such as transitioning from defense to attack and attack to defense describe physiological characteristics (Burns, 2003).

The ability of players to perform at maximum performance in high-intensity activities is related to the development of their endurance, sprint, agility, and other attributes. In addition, while sprint ability is an important factor for high-level player performance in matches, good agility is also necessary to gain an advantage over the opponent. Agility can be influenced by many factors such as speed, strength, decision-making, and quickness (Eroğlu, 2018). Therefore, the development of all these mentioned motor skills together is a criterion for successful performance from a high-level performance perspective. Sampaio, Maçãs, Abrantes, and Ibáñez reported that semi-professional futsal players had a speed of 4.88±0.10 seconds, which varies depending on the type of fiber in the body (Sevim, 2006; Loturco et al., 2015). In the study conducted by Eren, Erdoğan and Tel (2020) on male

volleyball players, 30-meter sprint speed values were reported as 4.80±0.37 s. It is thought that the speed difference between athletes is due to the type of fiber.It is believed that the difference in speed between athletes is due to the type of fiber.

When squat jump (cm) performance values were analyzed in our study, there was a statistically significant difference between the groups ($p<0.05$). When we examine the performance values between the branches, it is seen that soccer players run at a speed of 4.39 m/s, futsal players run at a speed of 4.30 m/s, and volleyball players run at a speed of 4.42 m/s. Loturco et al. reported squat jump values of 40.08 ± 3.68, Keiner et al. 36.0±5.5 cm in young soccer players, G.Coratella et al. 38.8±3.3 cm, L. Dragula et al. reported squat jump values of 36.23±4.75 cm in young soccer players.

I.Tamara et al. reported squat jump values as 26.94±3.83 cm in a study on amateur volleyball players, G.Giatsis et al.reported squat jump values as 28.8±4.5 in elite volleyball players, Ciccarone et al.reported squat jump values as 40.3±3.1 in volleyball players, L.Stanganelli et al. reported squat jump values as 40.5±6 1.2 in volleyball players. M.Lopez et al.reported squat jump values as 37.0±0.5 in a study on amateur futsal players.

In our study, it was determined that the branch with the highest mean difference between squat jump values among the branches was volleyball. This result can be attributed to the fact that for a successful performance in sports branches based on jumping, it is important to practice training to improve jumping strength in order to jump faster and higher and to jump in movements specific to the sports branch (block, smash).

When our study was examined, a significant difference was observed between the groups in dynamic balance (post-medial-left foot) values ($p<0.05$), while no significant difference was found in dynamic balance (right and left foot/anterior-posterior-lateral) performance parameters ($p>0.05$).According to Altay, Jastrejevskaya reported that balance is a factor in distinguishing between those who perform well and those who do not in sports skills and that it positively contributes to physical development where motor skills are exhibited. In our study, while dynamic balance values were found to be similar among football, futsal, and volleyball disciplines, Troop et al.emphasized in their studies with footballers that weak balance can be defined as a risk factor for ankle injuries, which makes us think that this risk factor may also exist in other disciplines, not just in football, for the value observed only significantly between disciplines (post-medial-left foot). If the balance status of a healthy athlete can be determined in advance, some preventive measures can be taken to prevent various injuries. Balance is important in athletes because balance disorders can have negative effects on some sport skills (Panjan & Sarabon, 2010). In other words, an effective postural balance is considered important to reduce both injury risk and physical negativity (McKeon & Hertel, 2008; Myer et al., 2006; Plisky et al., 2006; Zemková, 2014).

In our study, no significant difference was found between the groups when the postural swing (double foot/eyes open and closed/anterior posterior-medial lateral-total swing) performance values were examined). Similarly to our study, Gribble et al.reported that there was no significant difference in the swing distance between the right and left extremities in healthy research groups.

Andreeva et al. (2021), in a study conducted by bringing together 936 athletes aged 6-47 years from 13 different sports branches, revealed that in every sport branch they examined,

athletes provided swing values better in the eyes open state compared to the eyes closed state. As a result of the study, they emphasized that all kinds of sports improve postural stability. In our study, there was no significant difference between the groups in postural oscillation (biped/eyes open and closed/anterior posterior-medial lateral-total oscillation) values, but similar to the study, it was observed that the mean values of postural oscillation in the group with eyes open were better than those with eyes closed.

Cofre Lizama et al. (2016) found that the absence of visual information had no effect on sway, while the presence of visual information reduced postural sway.

Unlike this information in the literature, Asseman et al. (2005), in their study, stated that the absence and presence of visual information did not differ in bipedal stance. This information is consistent with the fact that visual information does not cause any difference in the direction of postural sway bipedal/eyes open and closed/anterior-posterior-medial lateral-total sway.

In addition, in the first case, a more pronounced shift of postural sway was observed in the antero-posterior direction than in the medio-lateral direction. The fact that the ability to maintain balance in sport-specific positions may differ significantly from upright posture (Zemková & Hamar, 2004; Zemková, Hamar, & Böhmerová, 2005; Zemková, Hamar, Pelikánová, & Schickhofer, 2006; Zemková & Hamar, 2008; Zemková, Kyselovičová, & Hamar, 2010) should be taken into account during balance assessment.

Upon examining the obtained data, a significant difference was observed between the groups in squat jump and dynamic balance (post-medial-left foot) values ($p<0.05$), while there was no significant difference between the performance parameters of 30m speed, dynamic balance (right and left foot/anterior-posterior lateral), and postural sway oscillation (double foot/eyes open and closed/anterior posterior-medial lateral-total oscillation) ($p>0.05$). We can assume that the differences in our study arise from different physical characteristics and training programs required by the sports branches.

Furthermore, by increasing the number of athletes and types of sports, performance parameter values can be determined according to sports branches.

REFERENCES

Açıkada, C., Hazır, T., Aşçı, A., & Turnagöl, H. (1999). Bir ikinci lig futbol takımının sezon öncesi hazırlık döneminde fiziksel ve fizyolojik profili. Futbol Bilim ve Teknoloji Dergisi, (1), 14-20.

Agostini, V., Chiaramello, E., Canavese, L., & Bredariol, C. (2013). Postural sway in volleyball players. Human Movement Science, 32(3), 445-456.

Aguiar, M., Abrantes, C., Maçãs, V., Leite, N., Sampaio, J., & Ibáñez, S. (2008). Effects of Intermittent or Continuous Training on Speed, Jump and Repeated-Sprint Ability in Semi-Professional Soccer Players. The Open Sports Sciences Journal, (1), 15-19.

Altay, F. (2001). Ritmik Cimnastikte İki Farklı Hızda Yapılan Chaine Rotasyon Sonrasında Yan Denge Hareketinin Biyomekanik Analizi. Hacettepe Üniversitesi Sağlık Bilimleri Enstitüsü Doktora Tezi, Ankara.

Álvarez, J., Giménez, L., Corona, P., & Manonelles, P. (2002). Cardiovascular and Metabolic Necessities of Indoor Football: Analysis of the Competition. Apunts. Phys Educ Sports, (67), 45-53.

Alvurdu, S., Köse, M. G., & Cinemre, Ş. A. (2016). Futsal Oyuncularında Anaerobik Güç ile Tekrarlı Yön Değiştirme Yeteneği Arasındaki İlişkinin Değerlendirilmesi. Gazi Beden Eğitimi ve Spor Bilimleri Dergisi, 21(1-4), 29-37.

Andreeva, A., Melnikov, A., Skvortsov, D., Akhmerova, K., Vavaev, A., Golov, A., & Zemková, E. (2021). Postural stability in athletes: The role of sport direction. Gait & Posture, 89, 120-125. DOI: 10.1016/j.gaitpost.2021.07.005

Arı, Y., & Tunçel, A. (2020). Kadın Futsal Oyuncularında Motorik Performans İlişkisinin İncelenmesi. CBÜ Beden Eğitimi ve Spor Bilimleri Dergisi, 15(2), 68-78. doi: 10.33459/cbubesbd.795774

Asseman, F., Caron, O., ve Cremieux, J. (2005). Effects of the removal of vision on body sway during different postures in elite gymnasts. International Journal of Sports Medicine, 26(2), 116-119. DOI: 10.1055/s-2004- 830529

Aytekin, C. Z., Özkara, A., Hazır, T., & Ergen, E. (1998). Futbolcularda submaksimal egzersiz sırasında aralıklarla yapılan supramaksimal yüklenmelerde karbonhidratlı sıvı alınımının aerobik performansa ve kalp atım hızına etkisi. Futbol Bilim ve Teknoloji Dergisi, (3), 21-26.

Bangsbo, J. (1994). The physiology of soccer–With special reference to intense intermittent exercise. Acta Physiologica Scandinavica. Supplementum, (619), 1–155.

Barbero-Alvarez, J. C., Soto, V. M., Barbero-Alvarez, V., & Granda-Vera, J. (2008). Match Analysis and Heart Rate of Futsal Players During Competition. Journal of Sports Sciences, (26), 63–73. doi:10.1080/02640410701287289.

Barbero-Alvarez, J. C., Subiela, J. V., Granda-Vera, J., Castagna, C., Gómez, M., & Del Coso, J. (2015). Aerobic Fitness and Performance in Elite Female Futsal Players. Biology of Sport, 32(4), 339–344.

Bressel, E., Yonker, J. C., Kras, J., & Heath, E. M. (2007). Comparison of static and dynamic balance in female collegiate soccer, basketball and gymnastics athletes. Journal of Athletic Training, 42(1), 42-6.

Brown, C., Padua, D., Marshall, S. W., & Guskiewicz, K. (2008). Individuals with mechanical ankle instability exhibit different motion patterns than those with functional ankle instability and ankle sprain copers. Clinical Biomechanics, 23(6), 822–31.

Burns, T. (2003). Holistic Futsal: A Total Mind-Body-Spirit Approach. New York (NY): Lulu.

Carr, J. H., & Shepherd, R. (1998). Neurological Rehabilitation: Optimising Motor Performance. Oxford: Butterworth-Heineman.

Cerrah, A. O., Polat, C., & Ertan, H. (2011). Süper amatör lig futbolcularının mevkilerine göre bazı fiziksel ve teknik parametrelerinin incelenmesi. Niğde Üniversitesi Beden Eğitimi ve Spor Bilimleri Dergisi, 5(1), 1-6.

Ciccarone, G., Croisier, J. L., Fontani, G., Martelli, G., Albert, A., Zhang, L., & Cloes, M. (2008). Comparison between player specialization, anthropometric characteristics, and jumping ability in top-level volleyball players. Medicine and Sport, (61), 29-43.

Cofré Lizama, L. E., Pijnappels, M., Reeves, N. P., Verschueren, S. M., ve van Dieën, J. H. (2016). Can explicit visual feedback of postural sway efface the effects of sensory manipulations on mediolateral balance performance?. Journal of Neurophysiology, 115(2), 907-914. DOI: 10.1152/jn.00103.2014

Colantonio, E., Assis Neves, T. D., Winckler, C., & Fernandes Guerra, R. L. (2020). Sport Training Effect in Female College Futsal Players on Aerobic and Anaerobic Performance. Journal of Exercise Physiology Online, 23(5), 46-57.

Coratella, G., Beato, M., Milanese, C., Longo, S., Limonta, E., Rampichini, S., ... Esposito, F. (2018). Specific Adaptations in Performance and Muscle Architecture After Weighted Jumpsquat vs. Body Mass Squat Jump Training in Recreational Soccer Players. Journal of Strength and Conditioning Research, 32(4), 921–929.

Dragula, L., Lehnert, M., Psotta, R., Gonosová, Z., Valenta, S., & Štastný, P. (2017). The relative force in squat jump is the best laboratory predictor of sprint performance in adolescent soccer players. Human Movement, 18(5), special/issue, 83–90. doi: https://doi.org/10.5114/hm.2017.73622.

Erdem, K., & Yazar, M. (2019). Futsal Antrenmanlarının 16-17 Yaş Erkek Sporcularda Sürat, Çeviklik ve Anaerobik Dayanıklılığa Etkisi. Spor Eğitim Dergisi, 3(3), 63-70.

Erdoğan R, Tel M, Eren A. (2020). Müsabaka Dönemi Antrenmanlarının Voleybolcuların Fiziksel Uygunluk Profillerine Etkisi. Gaziantep Üniversitesi Spor Bilimleri Dergisi, 5(2), 194-206.

Eroğlu, A. K. (2018). Farklı türdeki çeviklik çalışmalarının basketbolculardaki bazı fizyolojik parametrelere, motorsal yeteneklere ve teknik özelliklere etkisi. Ankara: Gece Akademi.

Gabbett, T., & Georgieff, B. (2004). Physiological Characteristics of Elite Junior Volleyball Players Over a Competitive Season. Strength Condition Coaching, (13), 2–7.

Gerbino, P. G., Griffin, E. D., & Zurakowski, D. (2007). Comparison of standing balance between female collegiate dancers and soccer players. Gait & Posture, 26(4), 501-507.

Giatsis, G., Kollias, I., Panoutsakopoulos, V., & Papaiakovou, G. (2004). Volleyball. Sports Biomechanics, 3(1), 145-158. DOI: 10.1080/14763140408522835.

Gribble, P. A., Hertel, J., & Piegaro, A. B. (2001). Predictors For Performance Of Dynamic Postural Control Using The Star Excursion Balance Test. Journal of Athletic Training, 36(2).

Günay, M., & Yüce, A. İ. (2008). Futbol Antrenmanının Bilimsel Temelleri. Ankara: Gazi Kitabevi. Genişletilmiş 3. baskı;221.

Günay, M., Tamer, K., & Cicioğlu, İ. (2006). Spor Fizyolojisi ve Performans Ölçümü. Ankara: Gazi Kitabevi. 543.

Gür, K. E., Başakçı, Ç. B., Baş, A. U., & Ünver, F. (2018). Sağlıklı Gençlerde Kısa Dönem Dinamik Stabilizasyon Eğitiminin Esneklik, Kassal Endurans ve Dinamik Denge Üzerine Etkileri. Journal of Exercise Therapy and Rehabilitation, 5(1), 1-3.

Ilić, T., Stojanović, S., & Mijalković, S. (2023). Body composition is related to motor abilities of female volleyball players. Journal of Anthropology of Sport and Physical Education, 7(2), 9–12.

İşleğen, Ç. (1987). Değişik liglerde oynayan bölgesel profesyonel futbol takımlarının fiziksel ve fizyolojik profilleri. Spor Hekimliği Dergisi, (22), 83-89.

Keiner, M., Kadlubowski, B., Hartmann, H., & Wirth, K. (2021). The Influence of Maximum Strength Performance in Squats and Standing Calf Raises on Squat Jumps, Drop Jumps, and Linear as well as Change of Direction Sprint Performance in Youth Soccer Players. International Journal of Sports and Exercise Medicine, (7), 190. doi: 10.23937/2469-5718/1510190.

Kendall, F. P., McCreary, E. K., & Provance, P. G. (2005). Muscles testing and function with posture and pain. 4th ed. USA: Lippincott Williams and Wilkins.

Lopes, M., Simões, D., Rodrigues, J. M., Costa, R., Oliveira, J., & Ribeiro, F. (2019). The FIFA 11+ does not alter physical performance of amateur futsal players. Journal of Sports Medicine and Physical Fitness, 59(5), 743-751. doi: 10.23736/S0022-4707.18.08532-8.

Loturco, I., Pereira, L. A., Kobal, R., Zanetti, V., Gil, S., Kitamura, K., Esposito, F. (2015). Half-squat or jump squat training under optimum power load conditions to counteract power and speed decrements in Brazilian elite soccer players during the preseason. Journal of Sports Sciences. DOI: 10.1080/02640414.2015.1022574.

Marques, M. C., Van den Tillaar, R., Gabbett, T. J., Reis, V. M., & Gonzalez-Badillo, J. J. (2009). Physical Fitness Qualities of Professional Volleyball Players: Determination of Positional Differences. Journal of Strength and Conditioning Research, 23(4), 1106–1111.

Massion, J. (1994). Postural control system. Current Opinion in Neurobiology, 4(6), 877-887.

McKeon, P. O., & Hertel, J. (2008). Systematic review of postural control and lateral ankle instability, part I: Can deficits be detected with instrumented testing? *Journal of Athletic Training, 43*(3), 293-304.

Mendez-Villanueva, A., Buchheit, M., Kuitunen, S., Douglas, A., Peltola, E., & Bourdon, P. (2011). Age-related differences in acceleration, maximum running speed, and repeated-sprint performance in young soccer players. Journal of Sports Sciences, 29(5), 477–484.

Muratlı, S., Kalyoncu, O., & Şahin, G. (2007). Antrenman ve Müsabaka. 2. baskı. Ladin Matbaası. 277.

Myer, G. D., Ford, K. R., McLean, S. G., & Hewett, T. E. (2006). The effects of plyometric versus dynamic stabilization and balance training on lower extremity biomechanics. *The American Journal of Sports Medicine*, *34*(3), 445-455.

Özer, K. (2009). Kinantropometri Sporda Morfolojik Planlama. Ankara: Nobel Yayın Evi. 35-40.

Perrin, P., Deviterne, D., Hugel, F., & Perrot, C. (2002). Judo, Better Than Dance, Develops Sensorimotor Adaptabilities Involved in Balance Control. Gait and Posture, (15), 187–194.

Plisky, P. J., Rauh, M. J., Kaminski, T. W., & Underwood, F. B. (2006). Star Excursion Balance Test as a predictor of lower extremity injury in high school basketball players. *Journal of Orthopaedic & Sports Physical Therapy, 36*(12), 911-919.

Rampinini, E., Coutts, A. J., Castagna, C., Sassi, R., & Impellizzeri, F. M. (2007). Variation in top-level soccer match performance. International Journal of Sports Medicine, 28(12), 1018-1024.

Rodríguez, A. F., & Andújar, P. S. B. (2010). Efecto agudo del estiramiento sobre el sprint en jugadores de fútbol de división de honor juvenil. Revista Internacional de Ciencias del Deporte, 18(6), 1-12.

Sampaio, J., Maçãs, V., Abrantes, C., & Ibáñez, S. J. (2007). Season variation in repeated sprint ability of futsal players. Journal of Sports Science and Medicine, Suppl. 10, P-033, 131.

Sander, A., Keiner, M., Schlumberger, A., Wirth, K., & Schmidtbleicher, D. (2013). Effects of functional exercises in the warm-up on sprint performances. Journal of Strength and Conditioning Research, 27(4), 995-1001.

Santos-Lozano, A., Gascón, R., López, I., & Garatachea-Vallejo, N. (2014). Comparison of two systems designed to measure vertical jump height. RICYDE Revista Internacional de Ciencias del Deporte, 10(36), 123-30.

Sevim, Y. (2006). Antrenman Bilgisi. 7. Baskı. Nobel Yayınevi, Ankara.

Shumway-Cook, A., & Horak, F. B. (1986). Assessing the influence of sensory interaction on balance. Suggestion from the field. Physical Therapy, 66(10), 1548-1550. Retrieved from http://m.biodex.com/sites/default/files/article-assessing-the-influence-of-sensory-interaction-on-balance-16245.pdf

Silva-Junior, C. J., Palma, A., Costa, P., Pereira-Junior, P. P., Barroso, R. C. L., Abrantes Junior, R. C., & Barbosa, M. A. M. (2011). Relação entre as potências de sprint e salto vertical em jovens atletas de futebol. Motricidade, 7(4), 5-13.

Stanganelli, L. C. R., Dourado, A. C., Oncken, P., Mancxan, S., & César da Costa, S. (2008). Adaptations on jump capacity in Brazilian volleyball players prior to the Under-19 World Championship. Journal of Strength and Conditioning Research, (22), 741-749.

Torres-Torrelo, J., Rodríguez-Rosell, D., & González-Badillo, J. J. (2017). Light-Load Maximal Lifting Velocity Full Squat Training Program Improves Important Physical and Skill Characteristics in Futsal Players. Journal of Sports Sciences, 35(10), 967-975.

Trew, M., & Everett, T. (2010). Human Movement. 6th ed. Churchill Livingstone An Introductory Text, New York.

Troop, H., Ekstrand, J., & Gillquist, J. (1984). Stabiliometry in Functional Instability of The Ankle and Its Value in Predicting Injury. Medicine and Science in Sports and Exercise, (16), 64-66.

Wong, P., Chamari, K., Chaouachi, A., Luk, T. C., & Lau, P. W. C. (2011). Heart rate response and match repeated-sprint performance in Chinese elite youth soccer players. Asian Journal of Physical Education & Recreation, 17(2), 42-49.

Zemková, E., Hamar, D. (2004). The effect of prolonged aerobic exercise on parameters of postural stability. Proceedings of II. Visegrad Congress of Sports Medicine (p. 47). Trencianske Teplice: Slovak Society of Sports Medicine.

Zemková, E., Hamar, D., & Böhmerová, Ľ. (2005). The dynamic balance – reliability and methodological issues of novel computerized posturography system. Medicina Sportiva, 9(2), 76-82.

Zemková, E., Hamar, D., Pelikánová, J., Schickhofer, P. (2006). Postural sway response to different forms of resistance exercise. 11th Annual Congress of the European College of Sport Science. Lausanne: 309.

Zemková, E., Hamar, D. (2008). Assessment the effect of instability resistance training on balance, movement speed, and strength in athletes with previous ACL injury: A field-test approach. 13th Annual Congress of the European College of Sport Science. Estoril: 456.

Zemková, E., Kyselovičová, O., Hamar, D. (2010). Postural sway response to rebound jumps of different duration. Hum. Mov., 11, 153–156. https://doi.org/10.2478/v10038-010-0017-z.

Zemková, E. (2014). Sport-specific balance. Sports Medicine, 44, 579-590.

International Journal of Sport Culture and Science
December 2024 : 12(4)
ISSN : 2148-1148
Doi : 10.14486/IntJSCS.2024.719

Investigation of State and Trait Anxiety Levels of Paragliding Pilots According to Some Variables

Yasemin YALÇIN[1], Muhammed Hanifi KARAKAYA[2]
[1] Alanya Alaaddin Keykubat University, Alanya/ANTALYA, Turkey
https://orcid.org/0000-0002-1484-3477
[2] Alanya Alaaddin Keykubat University, Alanya/ANTALYA, Turkey
https://orcid.org/0009-0002-0590-8483

Email: yasemin.yalcin@alanya.edu.tr, nihatkarakaya814@gmail.com

Type: Research Article (Received: 23.01.2024– Accepted: 08.10.2024)

Abstract

The aim of this study is to examine the state and trait anxiety levels of paragliding pilots in terms of some variables. The study group consisted of 206 licensed paragliding pilots in Turkey. "State and Trait Anxiety Inventory" consisting of 20 questions and administered in two parts was applied to the volunteer participants. In addition to the inventories, a "Personal Information Form" was added to determine the demographic information of the pilots. Of the pilots, 35 were female (17%) and 171 were male (83%). Skewness, Kurtosis (normal distribution of the data) values and Levene's test (equality of variance) results were analyzed and it was decided that the data met the parametric test conditions. Accordingly, t-test and ANOVA tests were applied to evaluate the state and trait anxiety levels of the participants according to various demographic characteristics. In addition, the level of relationship between the scales was evaluated by Pearson correlation analysis. As a result, it was observed that there was a significant difference between the state and trait anxiety mean scores of pilots according to gender, certification level and family support variables. In addition, a significant difference was found between the mean state anxiety scores of pilots according to the variables of age, marital status and duration of interest in the branch.

Keywords: Anxiety, State Anxiety, Trait Anxiety, Paragliding Pilot**.**

Introduction

Anxiety comes from the Greek word "anxietas" and means worry or fear (Khyati, Sushant & Anup, 2016: 980). It is a negative emotional state characterized by nervousness, worry and anxiety and is related to the body's activity or level of arousal (Cheng, Hardy, & Markland, 2009: 271; Weinberg & Gould 2015: 76). However, anxiety is also one of the basic and frequent emotions that people experience such as happiness, sadness, and anger (Zeidner, 2010: 2; Freeman, 2012: 1). Anxiety is not only a normal and basic emotion but also vital for the organism to survive (Kennerley, 2017: 41). Anxiety is a state of worry that arises in the face of bad possibilities, which is felt more or less, continuously or suddenly. The concept of fear, which is often confused with anxiety, exists in the face of a clear or visible threat. The source of the stimulus that creates fear is clearly known (Gall, 2006: 55). People in anxiety generally feel uncomfortable, distressed, afraid and experience many other unpleasant feelings, and there is no apparent reason for these unpleasant feelings (Türk Dil Kurumu Sözlüğü, 2024). It occurs when stimuli that would not cause fear in people under normal conditions cause fear. In other words, there are emotional states that have nothing to do with reality and are difficult to understand and explain. Anxiety creates the feeling that something bad will happen to people in the future (Köknel, 1990: 16). Fear can be distinguished from anxiety because it is an emotion whose cause is known and recognized by the person (Şahin, 2019: 119). Anxiety is a feeling of fear arising from the expectation of a threat that may happen to oneself or others (Gall, 2006: 9).

According to ethnologist Konrad Lorenz, at the beginning of human history, when we were still living together with animals, we were often confronted with threats to life. We had to either flee or fight to cope with these threats. Today, however, we rarely face real threats to life as we have many dangers under control. However, because the survival instinct in our evolution requires us to be always alert to threats from our environment, fear - anxiety - has become a part of our lives, whether subtle or not. These anxieties that we have to live with arise from the necessity of our survival instinct in a world where our evolutionary biological structure has not changed but world conditions have changed (Dağ, 1999: 169).

Anxiety is one of the emotions that people frequently encounter in daily life and is present at different levels in all people. There is no person who does not feel anxiety in daily life, but the degree to which anxiety is experienced is important. If anxiety becomes constant and becomes the center of one's life, then one cannot lead a healthy life (Cüceloğlu, 2006: 440). In psychology, it is known that fear with an unknown object is called "anxiety" and its source is considered by some to be a part of the innate temperament seen in the unconscious depths of the personality. It is formulated by some as a learned response, by others as a means or result of perceiving existence. Our worries, which we call anxiety in daily language but which do not fit the scientific definition, occupy a large place in our lives (Green, 2016: 17). Unless the causes of anxiety are not eliminated, it may become permanent and the person may enter into a vicious circle. This cycle can be sustained by physical sensations, a psychological reaction, a certain behavior or social conditions, and sometimes a combination of all these factors (Kennerley, 2017: 41). In other words, momentary anxiety can turn into trait anxiety when anxiety becomes continuous and takes up more space in a person's life. State anxiety is the short-term and temporary reactions of the organism in the face of immediate threats. On the contrary to state anxiety, trait anxiety is a state of anxiety that lasts for a long time, is continuous and takes place in the daily life of the individual by affecting the personality.

The distinction between state and trait anxiety is as follows: State anxiety indicates frequently changing moods. It is an emotional state characterized by a personal and consciously

perceived sense of fear, tension and excitement, mostly related to the activation or stimulation of the autonomic nervous system. Unlike state anxiety, trait anxiety is part of the personality. People with trait anxiety tend to think that they are threatened by many conditions that are not actually threatening (Kapur et al., 2019: 1080). While state anxiety is a temporary state of anxiety that occurs in the event of danger, trait anxiety is a long-term state of anxiety arising from personality and in which the individual feels constantly threatened (İyigün, 2024: 11).

Anxiety is an intangible concept. It refers to the unbalanced perception between the skills and desires in a particular sport activity. The effect of anxiety on sport performance depends on how it is interpreted. If anxiety is accepted as a normal competitive psychology response, performance will be less affected (Karageorghis & Terry, 2015: 89-90). A high level of anxiety can cause a person to perform below his/her potential in any performance area. For athletes, anxiety is a common emotion that includes feelings such as worry, worry, fear and restlessness. Anxiety has an important place among the situations that affect sports performance. This is one of the reasons for a mistake made at a critical moment of performance or for the athlete to freeze (Karageorghis & Terry, 2017: 89).

Researchers working in the field of sport psychology generally agree on the necessity of a moderate level of anxiety for high performance and its performance-enhancing effect (Başer, 1986: 92-93). However, anxiety levels that are too high or too low can negatively affect performance. High levels of anxiety can cause unnecessary worries, while low levels of anxiety can lead to negligence on the part of the athlete. Worry or negligence impairs the athlete's muscle coordination and increases the likelihood of making mistakes (Yıldız, 2019: 29-30). Generally, people with high anxiety levels have low self-confidence. The opposite is also true. A low level of anxiety can be caused by overconfidence on the part of the athlete, while a high level of anxiety can be caused by a lack of confidence in one's abilities and a fear of not being able to fulfill tasks. In this case, the person avoids performing complex skills and believes that he/she is unable to fulfill challenging tasks (Kaya & Tastan, 2020: 305). Athletes show an increase in anxiety levels as they approach the upper limit of their performance capacity. As the athlete has to push the limits of his/her abilities and perform above his/her capacity, he/she experiences high levels of anxiety (Gümüş, 2002: 4). In case of high anxiety, athletes are exposed to the effects of many stimuli secreted by their bodies. These stimuli include many negative conditions such as anger, blood pressure, increased respiratory rate, muscle tension, and decreased decision-making speed. It also complicates the flow and execution of movement and reduces control over movements (Cüceloğlu, 2015: 440-441; Demir, 2005: 49).

Due to the concept of fear in the definition of anxiety, anxiety can also be mentioned in extreme sports. However, considering the negative impact of high anxiety on performance, it is one of the last emotions that can be desired in extreme sports. On the other hand, since extreme sports are intertwined with nature and relatively more open to danger, anxiety and fear can be felt intensely.

Extreme sports are leisure activities where a mismanaged accident or mistake can potentially result in death. Participants experience this anxiety when they undertake their chosen activity. This type of sport can cause high levels of fear and puts a person in extreme contact with nature. Extreme sports provide powerful psychological experiences in which participants are fully aware that death may be imminent, but at the same time they have powerful psychological experiences (Brymer & Oades, 2009: 11). One of the most popular extreme sports is paragliding. Paragliding has rapidly entered the category of high-risk extreme sports due to increased flight intensity and serious injuries (Schulze et al., 2002: 365). Parachuting

involves high risks, serious injuries or death are always possible (Powell & Verner, 1982: 184).

Paragliding offers a flight experience that can last for kilometers or hours depending on the quality of the material used, the experience of the pilot and other factors (Bako, 2016: 18-19; Sunar et al., 2018: 1424). Pilots are similar because they take off on foot like birds, ascend at similar rates, and are exposed to similar environmental stressors. They are exposed to factors such as cold, wind, noise and anxiety while experiencing the reality of life at extreme points (Wilkes et al., 2017: 1). The biggest challenge for paragliding pilots is to be able to anticipate the meaning and consequences of risk to their physical integrity (Paixão & Tucher, 2012: 9). In the light of this information, paragliding pilots' one-to-one contact with nature, long flight time, fear of death and weather events may cause fear and anxiety. According to Cüceloğlu, anxiety arises when we do not know what will happen and cannot make sense of it. The most important reasons for pre-flight anxiety and stress in paragliders are the feeling of falling, fear of having an accident, injury and death. It can be said that experienced pilots are less stressed, but this may vary according to geographical factors (Özçiriş, 2017: 69).

Paragliding pilots may experience anxiety due to their vulnerability to natural conditions, the high risk of death in case of an accident, the risk of serious disability and injury in the event of the slightest mistake, and their inability to predict the threats in the air and on the ground. However, considering the negative effects of high anxiety, paragliding pilots flying with moderate anxiety will reduce the possibility of making mistakes.

In this context, the aim of this study is to determine the state and trait anxiety levels of paragliding pilots according to some variables.

METHOD

Research model

In order to determine the state and trait anxiety of paragliding pilots, a descriptive/survey model that provides the opportunity to evaluate the existing situation in a broad way was used. The survey model is a research approach that aims to investigate and describe a past or current situation as it is. In the survey model, in a universe consisting of a large number of elements, the whole universe or a group or sample to be taken from the universe is scanned in order to make a general judgment about the universe (Karasar, 2008). Descriptive studies are observations that aim to determine a situation and aim to obtain a description of the subject or forms of interest (Şavran, 2009). The study consists of two parts: practical and theoretical. In the first part, the literature on the subject was utilized and a detailed framework was drawn with the results of previous studies and the findings obtained. In the second part, based on this framework, hypotheses were tested according to some variables that paraglider pilots have by using the State and Trait Anxiety Scale and the state and trait anxiety levels of paragliding pilots were determined by obtaining the data of the quantitative part.

Participant Group

The study group of the research consists of 206 paragliding pilots in Alanya district of Antalya in 2022, determined by convenience sampling method (Bishop, 2018). Of the pilots, 35 were female (17%) and 171 were male (83%).

Data Collection Tools

The State-Trait Anxiety Inventory (STAI) developed by Spielberger et al. (1970) was adapted into Turkish by Le Compte and Öner (1983). State Anxiety Inventory aims to determine how the person feels in the face of the current situation and the situation. The Trait Anxiety

Inventory, on the other hand, aims to determine how the person feels in general terms, regardless of the situation and conditions in which the person finds himself/herself. Each of the State and Trait Anxiety Inventories consists of 20 items. The statements in the items are scored between 1 and 4. In the State Anxiety Scale, one of the options such as (1) not at all, (2) a little, (3) a lot and (4) completely is selected. In the Trait Anxiety Scale, one of the options such as (1) almost never, (2) sometimes, (3) most of the time and (4) almost always is selected (Le Compte & Öner, 1998; Aydemir & Köroğlu, 2000). There are inverted statements in the State and Trait Anxiety Scales. These statements are ten in the State Anxiety Scale (items 1, 2, 5, 8, 10, 11, 15, 16, 19 and 20) and seven in the Trait Anxiety Scale (items 1, 6, 7, 10, 13, 16 and 19). To determine the anxiety scores of the participants, the total score of the direct statements is subtracted from the total score of the inverted statements. The result is summed with a predetermined and unchanging value. This value is 50 for the State Anxiety Scale and 38 for the Trait Anxiety Scale. The final score is the anxiety score of the individual.

The data collection tools were interviewed one-on-one with the paragliding pilots and they were asked to fill them in voluntarily after their consent was obtained. The Trait Anxiety Scale was administered at a time when the pilots were not preparing for a flight or when they could not go on a flight. The State Anxiety Scale was administered and collected 20-30 minutes before the flight when they were preparing for the flight. In addition to the Trait and State Anxiety Scales, variables such as age, gender, marital status, duration of interest in the sport, paragliding pilot certification level, and family support were included in the personal information form to determine the demographic characteristics of the participants.

Data Analysis

The data obtained from the research were analyzed with the help of SPSS 25.0 program. The normality distribution of the data was examined with Skewness and Kurtosis (normal distribution of data) values and Levene (equality of variance) test, and Pearson correlation analysis, t-test and ANOVA tests were performed for related samples to determine the differences and relationship between variables. Cronbach Alpha reliability coefficient was calculated to determine the reliability of the measurement tools. In the statistical analysis and interpretations of the data, $p<0.05$ significance level was taken into consideration.

In this direction, it was aimed to examine the state and trait anxiety levels of paragliding pilots according to variables such as age, gender, marital status, duration of interest in the sport, certification level of pilots, and family support.

Within the framework of these aims, answers to the following questions were sought:

Is there a relationship between state and trait anxiety levels of paragliding pilots?

Do the trait and state anxiety levels of paragliding pilots differ according to their gender?

Do the trait and state anxiety levels of paragliding pilots differ according to their age?

Do the trait and state anxiety levels of paragliding pilots differ according to their marital status?

Do the trait and state anxiety levels of paragliding pilots differ according to their duration of interest in the sport?

Do trait and state anxiety levels of paragliding pilots differ according to their certification levels?

Do trait and state anxiety levels of paragliding pilots differ according to family support?

FINDINGS

In this section, firstly, the table showing the frequency distribution of the research group according to their demographic characteristics is given. Afterwards, the table showing the distribution of the scores of the scales, the table showing the relationship between state and trait anxiety levels, and the results tables showing the difference between the averages of the scales and demographic variables (gender, age, marital status, duration of interest in the branch, certificate level and family support) are given respectively.

Table 1. Frequency Distribution of the Research Group According to Demographic Characteristics

Variables	Subgroup	N	%	Total
Gender	Female	35	17.0	206
	Male	171	83.0	
Age	20 years or younger	21	10.2	206
	20-25 years old	57	27.7	
	26-30 years old	43	20.9	
	31-35 years old	29	14.1	
	36-40 years old	24	11.7	
	41 years or older	32	15.5	
Marital Status	Married	81	39.3	206
	Single	125	60.7	
Duration of Interest in the Branch	1-5 years	122	59.2	206
	6-10 years	57	27.7	
	11-15 years	27	13.1	
Certificate Level	P2	69	33.5	206
	P3	33	16.0	
	P4	17	8.3	
	P5	33	16.0	
	Tandem Pilot	54	26.2	
Family Support	Yes	163	79.1	206
	No	43	20.3	

It was determined that 83.0% of the paragliders included in the study were male, 27.7% were in the 20-25 age group, 60.7% were single, 59.2% had been interested in paragliding for 1-5 years, 33.5% had a P2 level certificate and 79.1% were supported by their families (Table 1).

Table 2. Distribution of State and Trait Anxiety scores

Scale	Item	Mean	Sd.	Skewness	Kurtosis	C.Alpha
State Anxiety	20	1.55	0.515	1.073	0.799	0.92
Trait Anxiety	20	1.67	0.475	0.892	0.489	0.86

Table 2 shows that the mean State Anxiety score of the paragliding pilots in the study was 1.55. Cronbach Alpha internal consistency coefficient was calculated as 0.92 for State Anxiety. The average score of Trait Anxiety, which is another scale within the scope of the research, is 1.67. The Cronbach Alpha internal consistency coefficient of Trait Anxiety was calculated as 0.86. According to Kılıç (2016), the criterion values for the reliability coefficient are; $0.00<\alpha<0.40$ is "not reliable", $0.41<\alpha<0.60$ is "low reliability", $0.61<\alpha<0.80$ is "moderately reliable", $0.81<\alpha<1.00$ is "highly reliable". In the light of these criteria regarding

the reliability coefficient, it can be said that the internal consistency coefficients of the current study have a high level of reliability.

When the skewness and kurtosis values are examined, it is observed that the data fulfill the normality assumption. According to Tabachnick and Fidell (2007), skewness and kurtosis values are within ±1.50 and according to George and Mallery (2010), values within ±2 are acceptable for normality. From this point of view, it was decided to apply parametric statistical techniques for the analysis procedures for the determination of relationship and difference.

Table 3. Pearson correlation analysis results showing the relationship between state and trait anxiety

Scale		1	2
1.State Anxiety	R	1	.357**
	p		.000
	n	206	206
2.Trait Anxiety	R	.357**	1
	p	.000	
	n	206	206

*p<0.05, **p<0.01

When Table 3 is examined, it is seen that there is a significant positive relationship between state and trait anxiety total score (R=.357; p<0.01).

Table 4. *Results of t-test analysis according to gender variable*

Scale	Gender	N	Mean	Sd.	T	p
State Anxiety	Female	35	1.76	0.539	2.714	0.007*
	Male	171	1.51	0.501		
Trait Anxiety	Female	35	1.83	0.582	2.079	0.039*
	Male	171	1.64	0.445		

* p<0.05

The analysis results in Table 4 show that there is a significant difference in the mean state and trait anxiety scores of the research group according to the "gender" variable (t=2.714, p>0.05 / t=-2.079 p<0.05). Accordingly, it can be said that women have higher state and trait anxiety levels than men (Table 4).

Table 5. ANOVA analysis results according to age variable

Scale	Age	N	Mean	Sd.	F	p	Significant difference
State Anxiety	**1.** 20 years or younger	21	1.77	0.543	4.973	0.000	1-5* 1-6* 2-5* 2-6*
	2. 20-25 years old	57	1.72	0.515			
	3. 26-30 years old	43	1.58	0.606			
	4. 31-35 years old	29	1.46	0.412			
	5. 36-40 years old	24	1.34	0.382			
	6. 41 years or older	32	1.30	0.366			
Trait Anxiety	**1.** 20 years or younger	21	1.87	0.482	1.451	0.208	
	2. 20-25 years old	57	1.72	0.481			
	3. 26-30 years old	43	1.66	0.483			
	4. 31-35 years old	29	1.54	0.475			
	5. 36-40 years old	24	1.60	0.362			
	6. 41 years or older	32	1.65	0.503			

* p<0.05

The ANOVA test results show that there is a significant difference in the mean state anxiety scores of the research group (F=4.973, p>0.05) according to the "age" variable. Accordingly, the state anxiety levels of pilots aged 20 years or younger are higher than those of pilots aged 36-40 years and pilots aged 41 years or older. Again, the state anxiety levels of pilots between the ages of 21-25 are higher than those of pilots between the ages of 36-40 and 41 or above. When the same table is analyzed, the results show that there is no statistically significant difference in the mean scores of trait anxiety of the group (F=1.451, p>0.05) according to the "age" variable (Table 5).

Table 6. Results of t-test analysis according to marital status variable

Scale	Marital Status	N	Mean	Ss	T	p
State Anxiety	Married	81	1.41	0.473	3.334	0.001*
	Single	125	1.64	0.522		
Trait Anxiety	Married	81	1.61	0.438	1.645	0.101
	Single	125	1.72	0.494		

* p<0.05

The results of the analysis show that there is a statistically significant difference in the mean state anxiety scores of the research group (t=3.334, p<0.05) according to the "marital status" variable. Accordingly, married participants had lower state anxiety levels than single participants. In the mean scores of trait anxiety (t=1.645, p<0.05), there was no statistically significant difference according to the "marital status" variable (Table 6).

Table 7. ANOVA analysis results according to the duration of interest in the branch

Scale	Duration of Interest in the Branch	N	Mean	Sd.	F	p	Significant difference
State Anxiety	**1.** 1-5 years	122	1.74	0.542	23.658	0.000	
	2. 6-10 years	57	1.29	0.326			1-2*
	3. 11-15 years	27	1.26	0.326			1-3*
Trait Anxiety	**1.** 1-5 years	122	1.72	0.504	2.283	0.105	
	2. 6-10 years	57	1.56	0.377			
	3. 11-15 years	27	1.72	0.499			

* p<0.05

The ANOVA test results show that there is a statistically significant difference in the mean state anxiety scores of the research group (F=23.658, p<0.05) according to the variable "duration of interest in the sport". Accordingly, it can be said that the state anxiety levels of pilots who have been interested in paragliding for 1-5 years are higher than pilots who have been interested in the sport for 6-10 years and 11 years or more. There was no statistically significant difference in the group's mean scores of trait anxiety (F=2.283, p<0.05) according to the variable "duration of interest in the sport" (Table 7).

Table 8. ANOVA analysis results by certificate level variable

Scale	Certificate Level	N	Mean	Sd.	F	p	Significant difference
State Anxiety	**1.** P2	69	1.90	0.487	22.953	0.000	1-2*
	2. P3	33	1.62	0.593			1-3*
	3. P4	17	1.53	0.410			1-4*
	4. P5	33	1.38	0.390			1-5*
	5. Tandem Pilot	54	1.18	0.215			2-5*

							3-5* 4-5*
Trait Anxiety	**1.** P2	69	1.83	0.530	4.505	0.002	1-5*
	2. P3	17	1.71	0.483			
	3. P4	33	1.65	0.480			
	4. P5	54	1.66	0.450			
	5. Tandem Pilot	21	1.48	0.328			

* p<0.05

The ANOVA test results show that there is a statistically significant difference in the mean state and trait anxiety scores of the research group (F=22.953, p>0.05 / F=4.505, p>0.05) according to the "certification level" variable. Accordingly, it can be said that as the certification level of paragliding pilots increases, their state and trait anxiety decreases (Table 8).

Table 9. Results of t-test analysis according to family support variable

Scale	**Family Support**	**N**	**Mean**	**Sd.**	**t**	**p**
State Anxiet	Yes	163	1.46	0.489	-5.018	0.000*
	No	43	1.88	0.480		
Trait Anxiety	Yes	163	1.63	0.453	-2.579	0.011*
	No	43	1.84	0.522		

* p<0.05

The results of the analysis showed that there was a statistically significant difference in the mean state and trait anxiety scores of the research group (t=-5.018, p<0.05/t=-2.579, p>0.05) according to the "family support" variable. Accordingly, paragliding pilots with family support have lower state and trait anxiety levels than pilots without family support (Table 9).

Discussion And Conclusion

This study aims to determine the state and trait anxiety levels of paragliding pilots. In addition, it is aimed to determine the differences in state and trait anxiety levels according to variables such as gender, age, marital status, duration of interest in the sport, pilots' certification level and family support.

According to the findings in Table 3, there is a positive relationship between state and trait anxiety of paragliding pilots. Unlike state anxiety, trait anxiety is a long-term emotional state that is acquired as a result of experience and becomes a part of the personality. People with high levels of trait anxiety tend to experience high levels of anxiety when they are under pressure (Weinberg & Gould, 2015: 77). Therefore, it can be concluded that as pilots' trait anxiety increases, their state anxiety also increases.

Başaran et al. (2009) stated that there is a statistically significant relationship between trait anxiety score and state anxiety score in athletes. Civan et al. (2010), on the other hand, found that there was a positive relationship between trait anxiety score and state anxiety score of individual and team athletes and that state anxiety score increased with the increase in trait anxiety score. Yalçın (2021) reached similar results in his study on folk players and found that trait anxiety levels of folk players predicted state anxiety levels in a statistically significant and positive direction.

According to Table 4, a significant difference was found between the gender of paragliding pilots and their state and trait anxiety scores. It was observed that female pilots had higher state and trait anxiety levels than male pilots. Considering that trait anxiety depends on personality traits and subjective factors, it is natural to expect gender-based differences. Since paragliding pilots are exposed to similar threatening situations, it can be thought that there will be no difference in state anxiety levels according to gender. However, it can be thought that the protective and cautious attitudes that women develop depending on their gender characteristics affect their anxiety levels.

Karakaya et al. (2006) conducted a study on 31 swimmers between the ages of 9-13, and according to the results, the trait and state anxiety levels of female swimmers were found to be significantly higher than male swimmers, which is consistent with the findings of this study. On the other hand, Kartopu (2012) conducted a study on high school students and teachers and found that women had higher trait anxiety levels than men, which is consistent with the findings of this study. However, in terms of state anxiety levels, it was found that men had lower levels and this is different from this study. In the studies conducted by Öztürk (2019) on dart athletes and Hacıcaferoğlu et al. (2015) on folk players, no significant difference was found between trait anxiety levels according to gender. However, state anxiety levels were found to be higher in men, which is different from this study. Başaran et al. (2009) conducted a study on a total of 324 athletes (132 women and 192 men) in basketball, volleyball, handball, teakwando and wrestling branches and found that state anxiety scores of male subjects were higher than female subjects. However, no differentiation was found in terms of trait anxiety. Özçiriş (2017), in his study on the anxiety levels of paragliding pilots, did not find a significant difference between state and trait anxiety according to gender among a total of 170 athletes, 30 females and 140 males, which does not coincide with this study.

There are other studies in which there is no difference between the gender of the athletes and their state or trait anxiety (Yücel, 2003; Gül Akmaz & Ceyhan, 2009; Civan, Arı & Görücü, 2010; Yokuş et al., 2013; Öner, 2015; Karabulut & Mavi-Var, 2019).

According to the findings in Table 5, a significant difference was observed between age and state anxiety level. Accordingly, state anxiety of paragliding pilots decreases with increasing age. However, no significant difference was found between age and trait anxiety level. Advancing age brings about a decrease in anxiety levels as a result of experiences and experiences. It is a general idea that with the stagnation and calmness of age, individuals' reactions to events become more mature. For this reason, older individuals are expected to have lower levels of anxiety than younger individuals.

In the study conducted by Koç (2004), it was observed that as the age of professional soccer players increased, their state anxiety levels decreased. Öztürk (2019), on the other hand, stated that there was a significant difference between age and state and trait anxiety in his study on 146 dart athletes. Accordingly, state and trait anxiety levels of darts athletes between the ages of 14-17 were found to be higher than those of athletes aged 22 and over. Hacıcaferoğlu et al. (2015) found that state anxiety levels of public players decreased with increasing age. The aforementioned studies are supportive of the result we obtained in this study. On the other hand, in the studies conducted by Taşmektepeligil (2004) on 132 referees from different branches and by Demirli (2017) on 39 elite wrestlers, no statistical difference was found between age and anxiety status, which is not compatible with this study.

There are also studies showing that anxiety level has no direct relationship with age (Yücel, 2003; Tekkoyun, 2008; Erbaş & Küçük, 2012; Türkçapar, 2012; Yokuş et al., 2013; Kardaş, 2018; Karabulut & Mavi-Var, 2019).

When the findings in Table 6 are analyzed, it is seen that there is a significant difference between marital status and state anxiety of paragliding pilots. Accordingly, married pilots have lower state anxiety levels than single pilots. Married pilots may be more careful and cautious due to their responsibilities towards their families. This may reduce state anxiety levels during risky activities. No significant difference was found between the marital status of the pilots and their trait anxiety.

The study conducted by Oktay and Yıldız (2018) revealed that there was no significant difference between state anxiety and marital status of first-time divers. However, in the same study, it was found that single divers had higher levels of trait anxiety compared to married divers. In the study conducted by Taşmektepligil (2004), no significant difference was found between the state anxiety levels of the referees and their marital status, which is not in parallel with this study.

According to the findings in Table 7, it is seen that the state anxiety levels of paragliding pilots decrease as the duration of interest in the sport increases. This may mean that the state anxiety levels of paragliding pilots decrease with age as they practice this sport for a long time. Similarly, it is expected that the excitement or fear of paragliding pilots who continue this activity for a long time will also decrease. Moreover, when we look at the same table, there is no significant difference between the duration of paragliding pilots' interest in the sport and their trait anxiety.

Öntürk et al. (2019) stated in their study that taekwondo players' trait anxiety increased as the years of interest in their sport increased, but there was no significant difference in their state anxiety. Saylam (2021) in his studies on archers, Demirli (2017) on wrestlers, and Öztürk (2019) on dart athletes did not find a significant difference between the duration of interest in sports and state and trait anxiety, which does not coincide with the results of this study.

According to the findings in Table 8, there is a significant difference between the certification level of paragliding pilots and their state and trait anxiety. Accordingly, tandem pilots have lower state and trait anxiety levels than P5 pilots, P5 pilots have lower state and trait anxiety levels than P4 pilots and P4 pilots have lower state and trait anxiety levels than P2 pilots. Considering that tandem pilots take responsibility for passengers and passengers may be more anxious, tandem pilots are expected to be anxious. However, it is also possible that the death anxiety level of tandem pilots and passengers is low, there is not much difference between the death anxiety of passengers and pilots, and professional flight conditions may reduce the anxiety level (Çalık, 2021: 21).

The most important reason why paragliding pilots feel anxiety and stress before the flight is the feeling of falling, having an accident, injury, and fear of death. In addition, while experienced pilots are less stressed, this situation may vary according to geographical effects (Özçiriş, 2017: 69). It can be argued that the increase in the training received in parallel with the level of certification, the knowledge and experience gained increase the self-confidence of the pilots and reduce their anxiety. Aksu (2020) did not find a significant difference between the certification levels of football coaches and Yıldız (2021) did not find a significant difference between the state and trait anxiety of volleyball coaches, which does not coincide with this study.

According to the findings in Table 9, a significant difference was found between state and trait anxiety of paragliding pilots and family support. Pilots who did not receive family support had higher levels of state and trait anxiety than pilots who received family support.

There is no study in the literature examining the difference between state and trait anxiety and "family support" variable.

As a result, it was observed that there was a significant difference between the mean scores of state and trait anxiety of pilots according to gender, certificate level and family support variables. In addition, a significant difference was found between the mean state anxiety scores of pilots according to the variables of age, marital status and duration of interest in the branch.

Recommendations

It has been observed that there are not many studies on the psychological status of paragliding pilots in the literature. The number of studies to be conducted in this direction can be increased. Paragliding pilots can use different methods to reduce their anxiety and stress levels. These include pre-flight breathing exercises and using the right equipment. They can also connect with other pilots through support systems or groups to support each other and thus help them cope with anxiety and stress. During certification training, simulation-based training can help pilots avoid excessive anxiety during flight.

REFERENCES

Aksu, A. (2020). Futbol antrenörlerinin sürekli kaygı düzeylerinin incelenmesi (Elazığ ili örneği). *Akademik Sosyal Araştırmalar Dergisi, 8*(105), 368-376.

Aydemir, Ö., & Köroğlu, E. (2000). *Psikiyatrik değerlendirme ölçekleri*. Hekimler Yayın Birliği.

Bako, A. G. (2016). *Alternatif turizm kapsamında şarap turizmi: Kulayı ziyaret eden şarap turistlerine yönelik bir inceleme*. (Yüksek Lisans Tezi, Mersin Üniversitesi, Sosyal Bilimler Enstitüsü, Mersin).

Başaran, M. H., Aydın, M., Kutlu, M., & Kınay, S. (2009). Sporcularda durumluk ve sürekli kaygı düzeylerinin bazı değişkenlere göre incelenmesi. *Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, (2), 536.

Başer, E. (1986). *Uygulamalı Spor Psikolojisi* (31), Ankara: Milli Eğitim Gençlik ve Spor Bakanlığı Yayınları.

Bishop, P. A. (2018). *Measurement and evaluation in physical activity applications.* Exercise Science, Physical Education, Coaching, Athletic Training & Health: Routledge.

Brymer, E., & Oades, L. G. (2009). Extreme sports: A positive transformation in courage and humility. *Journal of Humanistic Psychology, 49*(1), 114-126.

Cheng, W. K., Hardy, L., & Markland, D. (2009). Thoward a three-dimensional conseptualization of porformance anxiety: Rational and inital measurement development. *Psychology of sport and exercise*, 10, 271.

Civan, A., Arı, R., Görücü, A., & Özdemir, M. (2010). Bireysel ve takım sporcularının müsabaka öncesi ve sonrası durumluk ve sürekli kaygı düzeylerinin karşılaştırılması. *Uluslararası İnsan Bilimleri Dergisi, 7*(1), 193-206.

Cüceloğlu, D. (2006). *İnsan ve davranışı*. (15. basım). İstanbul: Remzi Kitabevi.

Cüceloğlu, D. (2015). *İnsan ve davranışı, psikolojinin temel kavramları.* İstanbul: Remzi Kitabevi.

Çalık, D. S., Gürsoy, R., & Saruhan, E. (2021). Evaluation of the psychological and hormonal parameters in paragliding. *Central European Journal of Sport Sciences and Medicine, 34*, 15-23.

Dağ, İ. (1999). Psikolojinin ışığında kaygı. *Doğu Batı Düşünce Dergisi*, (6), 167-174.

Demir, A. (2005). Hemşirelerin vardiya ile çalışmalarının anksiyete ve arteryel kan basıncına etkisinin irdelenmesi. *Anadolu Hemşirelik ve Sağlık Bilimleri Dergisi*, *8*(2), 40-54.

Demirli, A. (2017). *Elit güreşçilerin müsabaka öncesi ve sonrası durum kaygı düzeylerinin karşılaştırılması*. (Yüksek Lisans Tezi, Bartın Üniversitesi, Eğitim Bilimleri Enstitüsü, Bartın.).

Erbaş, M. K., & Küçük, V. (2012). Üst düzey basketbolcularda durumluk kaygı düzeylerinin farklı değişkenlere göre karşılaştırılması. *Selçuk Üniversitesi Beden Eğitimi ve Spor Bilimleri*

Dergisi, 14(2), 257-261.

Freeman, D., & Freeman, J. (2012). *Anxiety: A very short introduction*. Oxford: OUP Oxford.

Gall Lee, A., (2006). *"Anksiyete ve kaygı",* (Çeviren: İ. Yerguz Çev.), (1. Baskı), Ankara: Dost Kitabevi.

George, D., & Mallery, P. (2010). *SPSS for Windows step by step: A simple guide and reference, 17.0 update* (10a ed.). Boston: Pearson.

Green, W. (2016). Anxiety: A Self-Help Guide to Feeling Better. UK: Summersdale Publishers Ltd. Erişim adresi: eBook Subscription Super Collection - Turkey (EBSCOhost).

Gül Akmaz, M., & Ceyhan, N. (2009). Fen edebiyat fakültesi Türk dili ve edebiyatı bölümü öğrencilerinin durumluk – sürekli kaygı düzeyleri ve kaygı nedenleri (Tokat örneği), *Sosyal Bilimler Araştırmaları Dergisi*, (1), 131-147

Gümüş, M., (2002). *Profesyonel futbol takımlarında puan sıralamasına göre durumluk kaygı düzeylerinin incelenmesi*. (Yüksek Lisans Tezi, Sakarya Üniversitesi, Sosyal Bilimler Enstitüsü).

Hacıcaferoğlu, S., Hacıcaferoğlu, B., & Seçer, M. (2015). Halk oyunları branşına katılan sporcuların yarışma öncesi kaygı düzeylerinin bazı değişkenler açısından incelenmesi. *International Journal of Sport Culture and Science, 3*(4), 288-297.

İyigün, R. (2024*). Erken dönem uyumsuz şemalar ile psikolojik dayanıklılık, durumluk ve sürekli kaygı düzeyleri arasındaki ilişki*. (Yüksek Lisans Tezi, İstanbul Nişantaşı Üniversitesi, Eğitim Bilimleri Enstitüsü, İstanbul).

Kapur, S., Debar, V., & Kaur, R. (2019). Lifestyle affects the pre-competitive state anxiety: Study on male and female basketball players. *International Journal of Physiology, Nutrition and Physical Education, 4*(1), 1079-1082.

Karabulut, E. O., & Mavi-Var, S. (2019). Taekwondocuların durumluk ve sürekli kaygılarının müsabaka performansı ve yaralanma durumu ile ilişkisi. *Türk Spor Bilimleri Dergisi, 2*(1), 47-54.

Karageorghis, C. I., & Terry, P. C. (2015). *Spor psikolojisi. Inside sport psychology human kinetics*, Ankara: Nobel Akademik Yayıncılık

Karakaya, I., Coşkun, A., & Ağaoğlu, B. (2006). Yüzücülerin depresyon, benlik saygısı ve kaygı düzeylerinin değerlendirilmesi. *Anadolu Psikiyatri Dergisi, 7*(3), 162-166.

Karasar, N. (2008). *Bilimsel araştırma yöntemi* (22. Baskı). Ankara: Nobel Yayın Dağıtım.

Kardaş, N. T. (2018). 13-16 Yaş arası altyapı futbolcularının müsabaka dönemindeki durumluk kaygı düzeylerinin İncelenmesi. *Sportif Bakış: Spor ve Eğitim Bilimleri Dergisi, 5*(2), 109-117.

Kartopu, S. (2012). Lise öğrenci ve öğretmenlerinin durumluk ve sürekli kaygı düzeylerinin bazı değişkenler açısından incelenmesi (Kahramanmaraş örneği). *Fırat Üniversitesi İlahiyat Fakültesi Dergisi, 17*(2).

Kaya, N., & Tastan, N. (2020). Özgüven üzerine bir derleme. *Kırıkkale Üniversitesi Sosyal Bilimler Dergisi*, *10*(2), 297-312.

Kennerley, H., (2017). *Overcoming anxiety*, Çeviri: Yener, Nur, Kaygı (Anksiyete), Kuraldışı Yayıncılık.

Khyati, S., Sushant, S., & Anup, T. (2016). A clinical interpretation of the term Vishaada W.S.R. to generalized anxiety disorder. *World Journal of Pharmacy and Pharmaceutical Sciences, 5*(9), 978-989.

Kılıç, V. (2016). Üniversite öğrencilerinde internet bağımlılığı ile durumluk ve sürekli kaygı düzeyleri arasındaki ilişkinin incelenmesi. *Journal of Human Sciences*, *13*(2), 3104-311.

Koç, H. (2004). *Profesyonel Futbolcularda Durumluk Kaygı Düzeylerini Etkileyen Faktörlerin Değerlendirilmesi*. (Yüksek Lisans Tezi, Dumlupınar Üniversitesi, Sosyal Bilimler Enstitüsü, Kütahya).

Köknel, Ö. (1990). *Korkular*. İstanbul: Altın Kitaplar.

Le Compte, A., & Öner, N. (1998). *Durumluk-sürekli kaygı envanteri el kitabı.* Türk Psikologlar Derneği Yayınları.

Oktay, M. C., & Yildiz, M. (2018). İlk defa deneme dalışı yapan bireylerin sürekli ve durumluk kaygı düzeylerinin çeşitli değişkenlere göre incelenmesi. *Kafkas Universitesi. Sosyal Bilimler Enstitüsü Dergisi*, (21), 161-168.

Öner, E. (2015). *Milli tenisçiler ile Orta Doğu Teknik Üniversitesi tenis oyuncularının müsabaka öncesi durumluk kaygı düzeylerinin karşılaştırılması*. (Yüksek Lisans Tezi, Kütahya Dumlupınar Üniversitesi, Sağlık Bilimleri Enstitüsü).

Öntürk, Y., İmamoğlu, O., & Karacabey, K. (2019). Elit tekvandocularda durumluk ve sürekli kaygının araştırılması. *Manas Sosyal Araştırmalar Dergisi*, *8*(4), 3764-3774.

Özçiriş, İ. (2017). *Yamaç paraşütü yapan pilotların uçuş öncesi kaygı ve stres düzeyinin değerlendirilmesi*. (Yüksek Lisans Tezi, İstanbul Gelişim Üniversitesi, Sağlık Bilimleri Enstitüsü).

Öztürk, S. E. (2019). *Dart sporcularının durumluk ve sürekli kaygı düzeylerinin performansa etkisinin incelenmesi.* (Yüksek Lisan tezi, Bartın Üniversitesi, Eğitim Bilimleri Enstitüsü).

Paixão, J. A. D., & Tucher, G. (2012). Risk perception for paragliding practitioners. *International Journal of Sports Science, 2*(2), 6–10.

Powell, F. M., & Verner, J. P. (1982). Anxiety and performance relationships in first time Parachutists. *Journal of Sport Psychology*, 4, 184-188.

Saylam, D. K., & Alp, H. (2021). Okçuluk müsabakalarına katılan sporcuların anlık ve sürekli kaygı düzeylerinin incelenmesi. *Spor ve Eğitim Bilimleri Dergisi*, *8*(3): 439-452.

Schulze, W., Richter, J., Schulze, B., Esenwein, S. A. & Büttner-Janz, K. (2002). Injury prophylaxis in paragliding. *British Journal of Sports Medicine, 36*(5), 365.

Spielberger, C. D., Gorsuch, R.L., & Lushene. R.E. (1970). *Manual for the State-Trait*

Anxiety Inventory. Palo Alto, CA: Consulting Psychologists Press.

Sunar, H., Gökçe, F., Gökçe, H., & Şahin, M. (2018). Alternatif turizm türü olarak yamaç paraşütü potansiyeli: Hatay örneği, *VII. Ulusal III. Uluslararası Doğu Akdeniz Turizm Sempozyumu. Bildirileri içinde* (ss. 1422-1429).

Şahin, M. (2019). Korku, kaygi ve kaygi (anksiyete) bozuklukları. *Avrasya Sosyal ve Ekonomi Araştırmaları Dergisi*, *6*(10), 117-135.

Şavran, A. (2009). *Eğitimde araştırma yöntemleri.* Anı Yayıncılık.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston: Pearson Education.

Taşmektepligil, M. Y., Aydın, İ., Ağaoğlu, S. A., & Öğreten, N. (2004). Farklı branşlarda görev yapan faal hakemlerin maç öncesi durumluk kaygı düzeylerinin karşılaştırılması ve bazı değişkenlerin durumluk kaygılarına etkileri. *Gazi Beden Eğitimi ve Spor Bilimleri Dergisi, 9*(4), 25-40.

Tekkoyun, M. (2008). *Sınıftaki öğrenci sayısının ilköğretim birinci kademe öğretmenlerinin stres ve kaygısı üzerine etkisinin K. Çekmece ilköğretim okulları örneğinde incelenmesi*. (Yüksek Lisans Tezi, Beykent Üniversitesi).

Türkçapar, Ü. (2012). Güreşçilerin farklı değişkenler açısından sürekli kaygı düzeylerinin incelenmesi. *Gazi Üniversitesi Gazi Eğitim Fakültesi Dergisi*, *32*(1), 129-140.

Weinberg, R. S., & Gould, D. (2015). *Spor ve egzersiz psikolojisinin temelleri*. Nobel Akademik Yayıncılık, Ankara.

Wilkes, M., MacInnis, M. J., Witt, M. J., Vergalla, M., Verschave Keysers, M., Thomas, A., & Hawkes, L. A. (2017). Free flight physiology: paragliding and the study of extreme altitude. *High altitude medicine & biology*, *18*(1), 90-91.

Yalçın, Y. (2021). Sürekli kaygı düzeyinin durumluk kaygı düzeyi üzerine etkisi var mıdır? Halk oyuncuları örneği. *EJER Congress Bildiri Kitabı, 1148-1154.*

Yıldız, A. (2019). *Bursada yaşayan voleybol antrenörlerinin durumluk ve sürekli kaygı düzeylerinin yaş, belge türü çalıştırdığı takım düzeyi ve sporcu özgeçmişine göre incelenmesi*. (Yüksek Lisans Tezi, Bursa Uludağ Üniversitesi, Eğitim Bilimleri Enstitüsü, Bursa).

Yokuş, T., Yokuş, H., & Kalaycıoğlu, Ş. G. (2013). Müzik öğretmeni aday adaylarının sürekli-durumluk kaygı düzeyleri ve müzik özel yetenek sınavı başarıları arasındaki ilişkinin incelenmesi. *Fine Arts*, *8*(1), 153-163.

Yücel, E. O. (2003). *Taekwondocuların durumluk ve sürekli kaygı düzeyleri ve müsabakalardaki başarılarına etkisi.* (Yayımlanmamış Yüksek Lisans Tezi, Gazi Üniversitesi, Ankara).

Zeidner, M., & Matthews, G. (2010). *Anxiety 101*. Springer Publishing Company.

International Journal of Sport Culture and Science
December 2024 : 12(4)
ISSN : 2148-1148
Doi : 10.14486/IntJSCS.2024.720

Bibliometric Analysis of EEG Studies in Sports

Emre BELLİ[1], Özlem Ece BAŞOĞLU[2]
[1] Atatürk University, Erzurum, Turkiye
https://orcid.org/ 0000-0001-8435-2529
[2] Atatürk University, Erzurum, Turkiye
https://orcid.org/ 0009-0008-6352-0501

Email: emre.belli@atauni.edu.tr, basogluozlem@atauni.edu.tr

Type: Review Article (Received: 15.02.2024– Accepted: 18.11.2024)

Abstract
This study aims to analyze 566 studies published between 1998 and 2023 on sports and electroencephalography (EEG) from a bibliometric perspective. EEG, a non-invasive tool for assessing cognitive and psychomotor performance in sports, has seen growing applications as technological and methodological advances continue to enhance its utility in sports research. These applications demonstrate EEG's potential to optimize athletes' training, evaluate performance, and deepen expertise and understanding. The research employed document analysis to examine the data, with studies on sports and EEG in the Web of Science (WoS) database serving as the primary data source. Data analysis was conducted using the VOSviewer software. The findings indicate that research in this area began in 1998, with the majority of studies to date being conducted in the United States. Additional findings are discussed comprehensively in the results section. The insights derived from this analysis contribute to understanding the progression of the field, identifying its strengths and weaknesses, and highlighting researchers' areas of focus.

Keywords: EEG, Sports, Bibliometric Analysis, Neuroimaging.

Introduction

Electroencephalography (EEG) is a noninvasive tool used in various fields such as neuroscience, psychology, and medicine, providing valuable information about brain function and functions such as cognitive function, brain development, emotional recognition, and brain connectivity (Kober et al.,2020; Hasan&Tatum,2021)

The first human EEG was recorded by German psychiatrist Hans Berger in 1929, marking a significant advancement in neuroscience. The technique has evolved into, a critical tool for understanding brain dynamics and diagnosing conditions such as epilepsy, sleep disorders, and brain injuries (Tseng et al.,2024).

In recent years, the exploration of sports performance through electroencephalography (EEG) has gained traction, deepening the understanding of neurocognitive and motor processes critical for athletic success. EEG, a non-invasive technique, enables real-time monitoring of brain oscillations linked to motor control, sensory processing, and cognitive efficiency, providing insight into how elite athletes achieve optimal performance. For instance, EEG neurofeedback has been shown to improve psychomotor efficiency by modulating neural activity in specific brain regions, with studies noting that increased sensorimotor rhythm (SMR) power often correlates with enhanced coordination, balance, and reaction time—key skills in sports (Cheng et al.,2024)

Moreover, the focus has expanded to include the identification of EEG biomarkers that may predict performance outcomes. Recent systematic reviews emphasize the value of EEG neurofeedback training (NFT) in strengthening athletes' cognitive control and resilience under pressure, potentially reducing mental fatigue and optimizing in-game decision-making (Onagawa et al., 2023). Research has also highlighted that EEG biomarker applications are still developing, with ongoing challenges such as movement artifacts during dynamic sports activity and a need for standardization in data interpretation to increase reliability and practical utility (Mikicin et al.,2018; Hatfield et al.,2020; Jeunet et al.,2020)

As EEG methodologies advance, their application in sports training programs promises to enhance both individualized training and evidence-based protocols, helping athletes achieve greater neural efficiency and peak performance states through targeted brain training.

Through a systematic review of empirical studies, this research aims to contribute valuable knowledge to the growing field of sports neuroscience.

Material and Method

In this research, the document analysis technique, one of the data collection methods, was used. For this analysis, all eight indexes of the Web of Science Core Collection (WoSCC) were used as electronic databases.

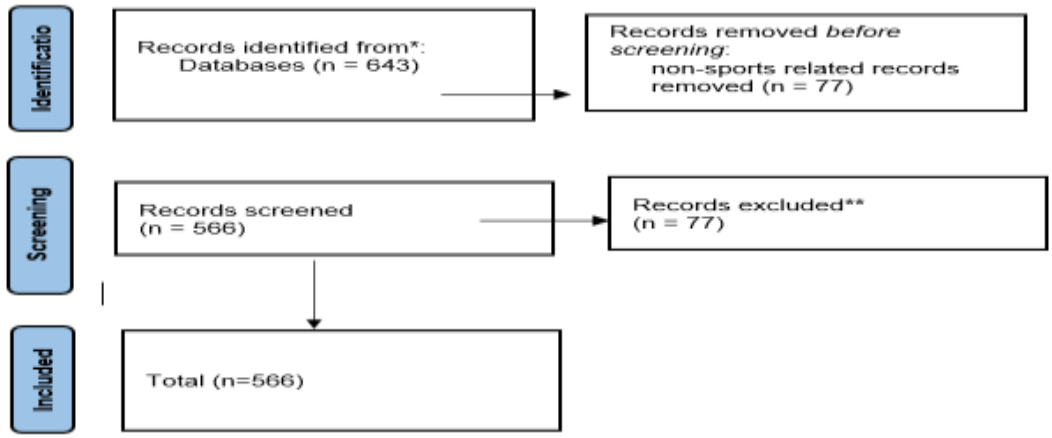
In the first stage, keywords were determined and studies related to sports and EEG were searched in the Web of Science database with the keywords "Sport and EEG". As a result of this scanning, a data set consisting of 566 publications was reached. To analyze the data set received in the second stage, the VOSviewer program was used, which allows the creation of collaborative networks of countries and authors publishing in the field of sports and EEG, due to the advantages of bibliometric analysis in creating visual graphs and processing big data. VOSviewer is a program used for bibliometric analysis to identify the most cited authors, organizations, countries, and keywords based on citation networks (Yu & Yu,2023).

Bibliometric analysis refers to the use of statistical and mathematical methods to quantitatively analyze the literature in a particular field (Hussain & Ahmad, 2023). It

contributes to identifying the main areas of science, mapping trends, and providing an overview of academic research in these specific areas. One of the advantages of bibliometric analysis is that it detects the tendencies of researchers on the subject. Additionally, the use of bibliometric analysis tools such as the Science Mapping Analysis Software Tool SciMAT and VOSviewer has allowed researchers to visualize and analyze the structure and trends of international sports research (Soós & Kiss, 2020).

Flow Diagram in Data Analysis

Designed with Preferred Reporting Items for Research, Systematic Reviews and Meta-Analyses (PRISMA).



Findings

Country	Citation	Record
1. USA	2799	145
2. GERMANY	1283	92
3. ITALY	1138	49
4. ENGLAND	1108	37
5. CANADA	802	48
6. CHINA	639	75
7. AUSTRALIA	508	28
8. TAIWAN	423	41
9. SWITZERLAND	288	11
10. SPAIN	284	24
11. BELGIUM	244	4
12. SCOTLAND	243	5
13. NETHERLANDS	235	12
14. JAPAN	229	19
15. FRANCE	209	16
16. BRAZIL	173	9
17. WALES	155	8
18. POLAND	152	21
19. LUXEMBOURG	106	10
20. SOUTH KOREA	103	5
21.SWEDEN	125	6
22.AUSTRIA	120	14
23. NEW ZEALAND	88	5
24. QATAR	88	2
25. TURKIYE	73	12

Table 1. Publication and citation distribution by country

When we look at the Publication and Citation Distribution by Countries table, the USA ranks first with 2799 citations, as in the density map. In second place is Germany (1283 citations), and in third place is Italy (1138). Turkıye (73 citations) ranks 25th in the list of 63 countries found to have sports and EEG-related studies in the WoS database.

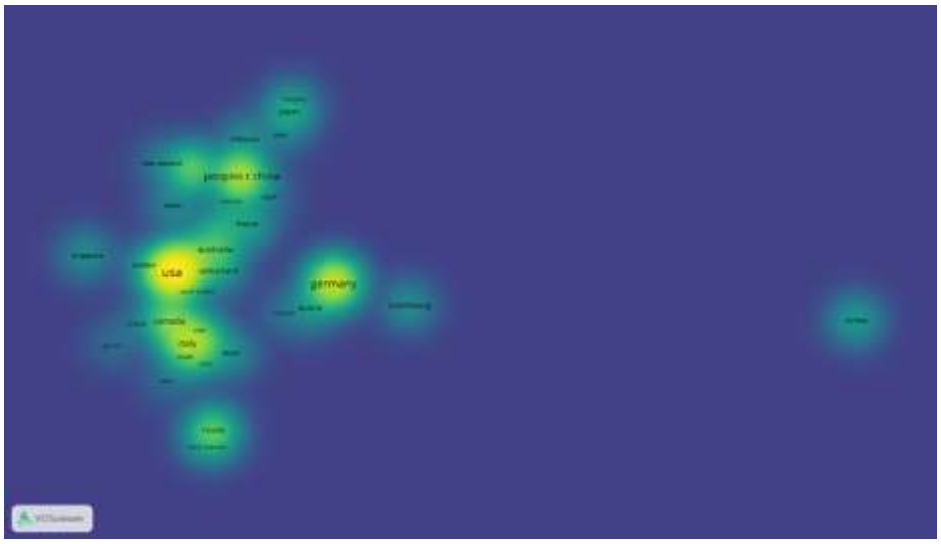


Figure 1. Density chart by countries

When you look at Figure 1, you can see the density chart of countries on sports and EEG publications taken from the WoS database. There are a total of 63 countries that have studies

on this subject. The points in the chart where the yellow color is dominant represent the countries where the most work is done. The USA and Germany are the most notable countries in this field.

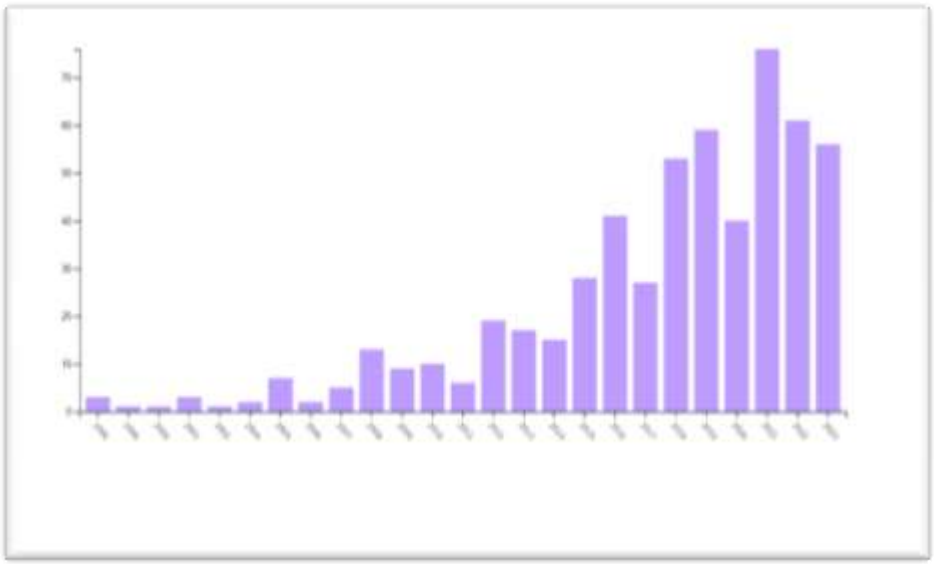


Figure 2. Publication and citation distribution by years

When the publication and citation distribution graph of studies on sports and EEG is examined by years, it is seen that there was an increase in 2018-2019 and the most intense study period on the subject occurred in 2021 (76 publications). Considering that the current analysis was conducted in December 2023, it is thought that interest in the subject will gain momentum in 2024, similar to the last 3 years.

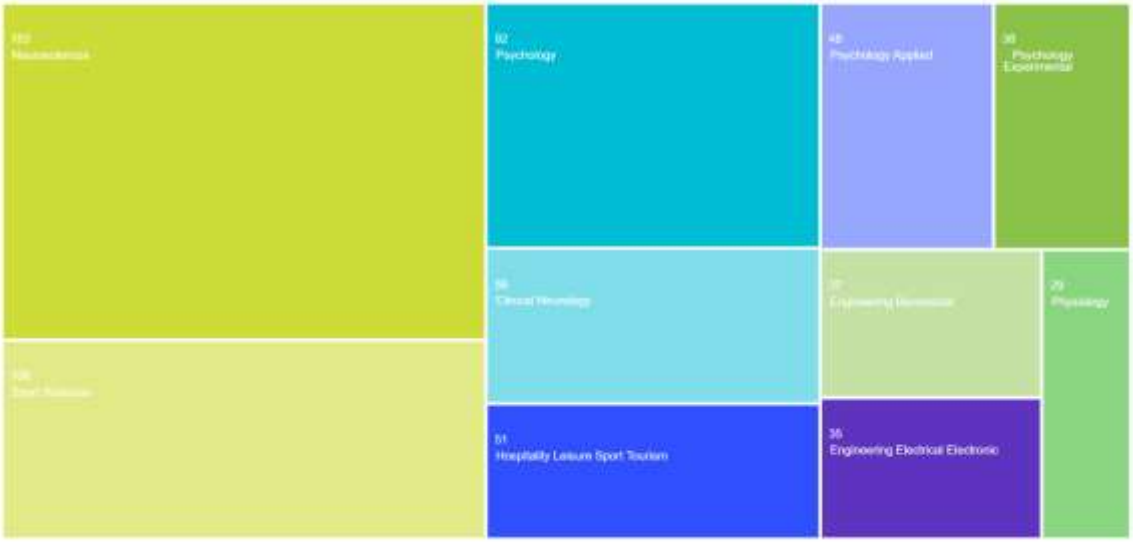


Figure 3. Distribution map according to research areas

A TreeChart chart can be seen according to the distribution map according to research areas, sports topics and EEG-related studies. “Neuroscience” ranks first with 183 studies. Then, "sports sciences" with 108 publications, "psychology" with 92 publications, "clinical neurology" with 58 publications and "accommodation entertainment sports tourism" with 51 publications were in the top five.

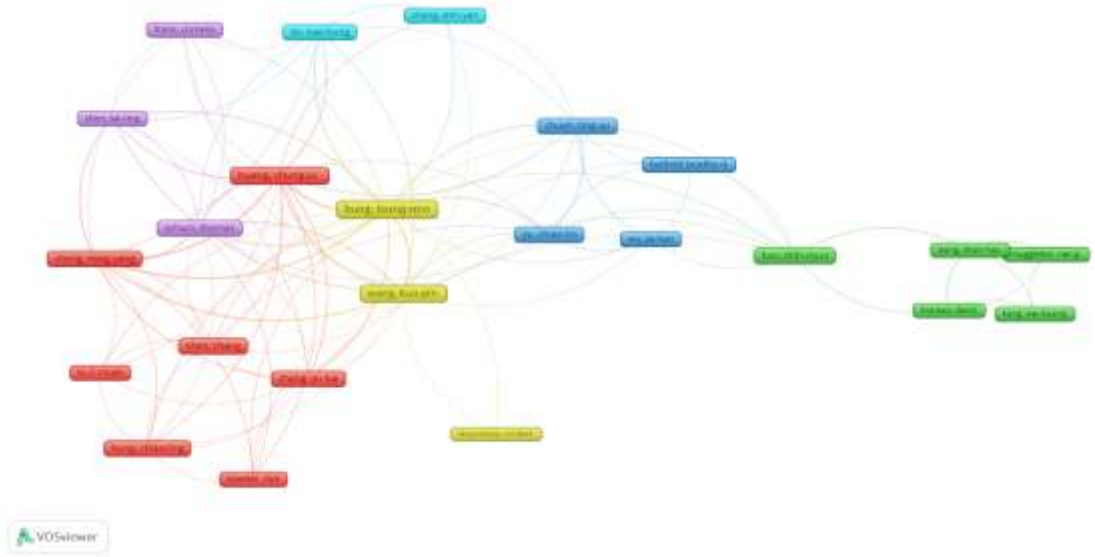


Figure 4. Network map of co-author distribution by years

In Figure 4, the co-author distribution map obtained for studies on sports and EEG consists of 24 nodes, 6 clusters, and 101 connections. While 2221 authors have done work related to the subject, the author who has done the most work is "Hung-tsung-min" and the 7 authors whose works have been cited the most are "Del Percio, Claudio, Babiloni, Eusebi-Fabrizio, Marzano-Nicola" (It was determined that 8 publications had 553 citations each).

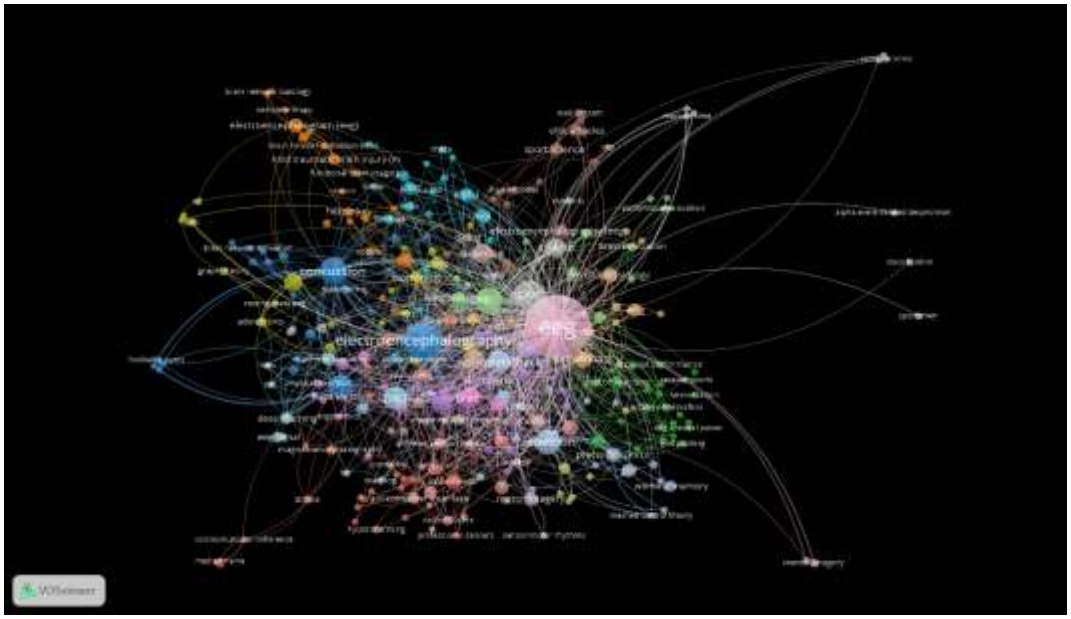


Figure 5. Network map of keywords

Figure 5 shows the network map containing 1570 different keywords examining sports and EEG-related studies. It was determined that the 3 most used keywords were "EEG, Electroencephalography and sports". Subsequently, 'collision, attention, and brain' are the most used keywords. The network map of the keywords in Figure 5 was obtained by studies using at least 2 keywords. According to this; 296 items, 21 clusters, and 1498 links were found.

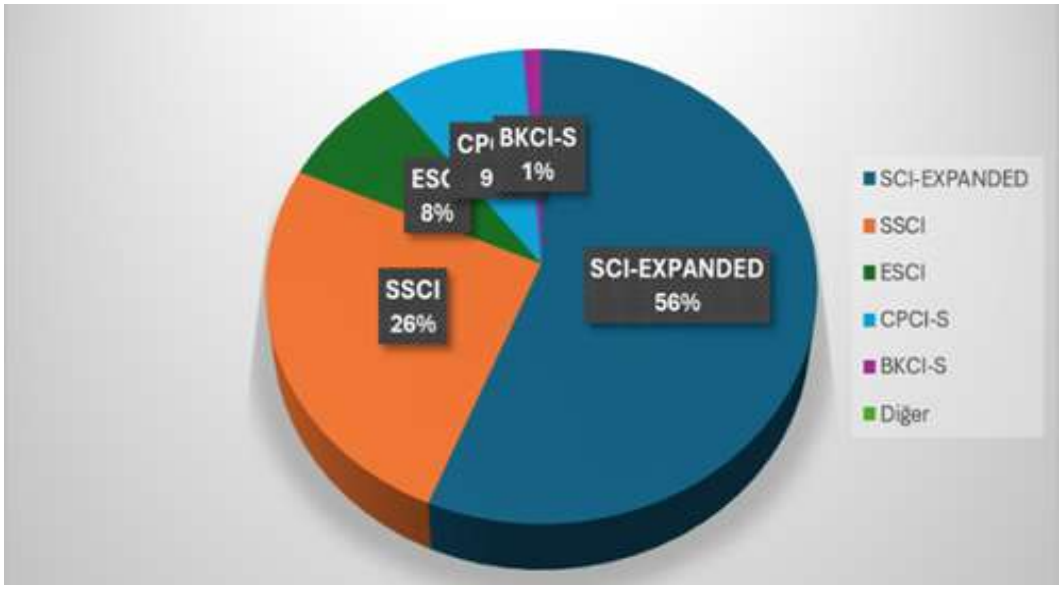


Figure 6. Distribution by indexes

Figure 6 shows the journals where studies on sports and EEG are published. It is seen that the first 5 rows are SCI-EXPANDED (385), SSCI (175), CPCI-S (63), ESCI (55), BKCI-S (8) publications. Others include CPCI-SSH, BKCI-SSH, and A&HCI publications.

Major platforms that disseminate research on the relationship between EEG and sports performance include "Human Brain Mapping," "Neuroscience & Biobehavioral Reviews," "Applied Psychophysiology and Biofeedback," "Frontiers in Human Neuroscience," "Scandinavian Journal of Medicine and Science in Sports," "Frontiers in Psychology," "Cognitive Neurodynamics," "Research Quarterly for Exercise and Sport," "European Journal of Sport Science," "Journal of Sport and Exercise Psychology," "BMC Neuroscience," "Scientific Reports," "Frontiers in Sports and Active Living," "Developmental Neuropsychology," "Stadium - Hungarian Journal of Sport Sciences," and "Biomedical Human Kinetics."

Figüre 7. Document type chart

According to the document-type chart of sports and EEG-themed studies, it was determined that 435 of the findings were articles, 59 were proceeding papers, 44 were review, 26 were meeting abstract and 9 were book chapters (others).

Discussion and Conclusion

The widespread use of EEG today can be attributed to its noninvasive nature, versatility, and applications in various fields. Electroencephalography (EEG) is becoming increasingly common in clinical practice due to its relatively low cost, ease of setup, noninvasiveness, and good temporal resolution (Dora & Holcman, 2021). EEG applications in sports sciences have provided new insights into the nature and development of athlete performance. This effort has been aided by recent advances in EEG data acquisition, including improvements in hardware portability and comfort, as well as reduced preparation times (Park et al., 2015).

The analysis of publications and citations related to sports and EEG from the WoS database reveals notable trends and patterns in research output. The USA leads with the highest number of citations, followed by Germany and Italy, while Turkey ranks 25th in citation frequency among the 63 countries contributing to this field. The density map further underscores the dominance of the USA and Germany in sports and EEG research, with these nations leading in both publication output and citation counts.

The data also indicate a significant increase in the volume of publications starting in 2018, with the peak occurring in 2021, suggesting a growing interest in the intersection of neuroscience and sports. This trend is expected to continue in 2024, reflecting ongoing advancements in EEG technology and its applications in sports performance.

Regarding research areas, neuroscience stands out as the dominant field, with significant contributions from sports sciences, psychology, and clinical neurology. These interdisciplinary connections highlight the diverse applications of EEG in understanding cognitive and motor processes in sports. Moreover, the collaborative nature of this research is illustrated by the co-author network, with prominent researchers such as Hung-Tsung Min and Del Percio et al. making substantial contributions to the field.

The use of EEG in sports is also evident in the proliferation of key terms like "collision," "attention," and "brain," which frequently appear in the studies. These keywords suggest a focused interest in cognitive processes and their relation to athletic performance. Additionally, major scientific journals, particularly those within the SCI-EXPANDED and SSCI databases, play a crucial role in disseminating research on EEG and sports, reflecting the growing recognition of this interdisciplinary field.

The 16 most popular journals publishing studies using EEG in the field of sports were reached. It was determined that the journal that published the most studies among these journals was "Frontiers in Psychology". Among these journals, it was determined that the journal that published the most studies was "Frontiers in Psychology". These journals published many studies such as psychomotor performance, cognition, neurofeedback, and athletic performance. They have been primary platforms for disseminating research on the relationship between EEG and sports performance, covering a variety of topics.The extensive publication of studies in these journals underscores the increasing relevance and importance of EEG in understanding the cognitive and psychophysiological aspects of sports performance.

Finally, the document type distribution reveals that the majority of studies are articles, with a smaller number of proceedings papers, reviews, and book chapters. This indicates that primary research articles remain the core method for exploring the relationship between EEG and sports. As the field continues to evolve, it is clear that EEG will play an increasingly important role in enhancing athletic performance and advancing sports science.

Thanks to the bibliometric analysis, the analysis of publications on the subject and the resulting keywords can provide insight into the potential future directions of the research. Using frequently occurring trends and keywords, information can be gathered to understand the evolving nature of their field, identify gaps in the existing literature, and design studies to address these gaps. It is suggested that studies can be carried out in many fields and contents by using the Web of Science database together with different databases such as Scopus and Proquest.

In the literature, studies have been identified on various topics related to EEG and sports performance. These include areas such as neurofeedback in sport psychology (Cheng et al.,2024; behavioral performance (Fang et al.,2022), motor control (Parr et al.,2023), performance level (Tharawadeepimuk& Wongsawat, 2021), emotional processing (Lee et al.,2020), mental skills (Corrado et al.,2024).

Future research should focus on improving these methodologies and exploring their long-term effects on performance, as well as working in multidisciplinary fields, to ensure that EEG remains a reliable tool in sports science.

REFERENCES

Cheng, M. Y., Yu, C. L., An, X., Wang, L., Tsai, C. L., Qi, F., & Wang, K. P. (2024). Evaluating EEG neurofeedback in sport psychology: a systematic review of RCT studies for insights into mechanisms and performance improvement. *Frontiers in Psychology*, *15*, 1331997.

Corrado, S., Tosti, B., Mancone, S., Di Libero, T., Rodio, A., Andrade, A., & Diotaiuti, P. (2024). Improving mental skills in precision sports by using neurofeedback training: a narrative review. *Sports*, *12*(3), 70.

Dora, M., & Holcman, D. (2022). Adaptive single-channel EEG artifact removal with applications to clinical monitoring. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 30, 286-295.

Fang, Q., Fang, C., Li, L., & Song, Y. (2022). Impact of sport training on adaptations in neural functioning and behavioral performance: A scoping review with meta-analysis on EEG research. *Journal of Exercise Science & Fitness*, *20*(3), 206-215.

Hasan, T. F., & Tatum IV, W. O. (2021). Ambulatory EEG usefulness in epilepsy management. *Journal of Clinical Neurophysiology*, 38(2), 101-111.

Hatfield, B. D., Jaquess, K. J., Lo, L., and Oh, H. (2020*). The cognitive and affective neuroscience of superior athletic performance: Handbook of sport psychology*. Hoboken, NJ: Wiley, 487–512. doi: 10.1002/9781119568124.ch23

Hussain, A., & Ahmad, S. (2023). Mapping the Literature on Artificial Intelligence in Academic Libraries: A Bibliometrics Approach. Science & Technology Libraries, 1-16.

Jeunet, C., Tonin, L., Albert, L., Chavarriaga, R., Bideau, B., Argelaguet, F., ... & Kulpa, R. (2020). Uncovering EEG correlates of covert attention in soccer goalkeepers: towards innovative sport training procedures. Scientific Reports, 10(1), 1705.

Kober, S. E., Neuper, C., and Wood, G. (2020). Differential effects of up- and down-regulation of SMR coherence on EEG activity and memory performance: A neurofeedback training study. *Frontiers Human Neuroscience 14*:606684. doi: 10.3389/fnhum.2020.606684

Lee, H. W., Cho, H., Lasko, E., Kim, J. W., & Kwon, W. (2020). From knowing the game to enjoying the game: EEG/ERP assessment of emotional processing. *International Journal of Sports Marketing and Sponsorship*, *21*(2), 305-323.

Mikicin, M., Sczypanska, M., & Skwarek, K. (2018). Neurofeedback needs support! Effects of neurofeedback-EEG training in terms of the level of attention and arousal control in sports shooters. *Baltic Journal of Health and Physical Activity*, 10(3), 8.

Park, J. L., Fairweather, M. M., & Donaldson, D. I. (2015). Making the case for mobile cognition: EEG and sports performance. *Neuroscience & Biobehavioral Reviews*, 52, 117-130.

Parr, J. V., Gallicchio, G., & Wood, G. (2023). EEG correlates of verbal and conscious processing of motor control in sport and human movement: a systematic review. International *Review of Sport and Exercise Psychology*, *16*(1), 396-427.

Soós, S., & Kiss, A. (2020). Informetrics and the study of science–society communications: a bibliometric scoping review. *Scientometrics*, 124, 825-842.

Tharawadeepimuk, K., & Wongsawat, Y. (2021). Quantitative EEG in sports: performance level estimation of professional female soccer players. *Health Information Science and Systems*, *9*, 1-15.

Tseng, Y. L., Lee, C. H., Chiu, Y. N., Tsai, W. C., Wang, J. S., Wu, W. C., & Chien, Y. L. (2024). Characterizing autism spectrum disorder through fusion of local cortical activation and global functional connectivity using game-based stimuli and a mobile eeg system. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*.

Yu, L., & Yu, Z. (2023). Qualitative and quantitative analyses of artificial intelligence ethics in education using VOSviewer and CitNetExplorer. *Frontiers in Psychology*, 14, 1061778.

International Journal of Sport Culture and Science
December 2024 : 12(4)
ISSN : 2148-1148
Doi : 10.14486/IntJSCS.2024.721

THE ATTITUDES OF 10-14 YEARS OLD CHILDREN AGAINST THE ACT OF PLAYING GAMES REQUIRING PHYSICAL ACTIVITY (PLAYFULNESS AMONG 10-14 YEARS OLD CHILDREN)

Muhsin HAZAR[1]
[1]Gazi University, Ankara, Turkey
https://orcid.org/0000-0002-5300-9581

Email: muhsin@gazi.edu.tr

Type: Review Article (Received: 15.02.2024– Accepted: 18.11.2024)

Abstract

The objective of this study is to develop an assessment instrument directed to assessment of attitudes of children coming from 10 – 14 years old group against playing the games requiring physical activity. The scale constituted from 33 Article was applied totally on 1008 children and 499 of them are girls and 509 of them are boys who are taking high school education in Çankaya,Keçiören and Yenimahalle Districts of Ankara. Analysis of articles and exploratory factor analysis of the gathered data are implemented with the aim of ensuring the validity of structure and it is stated that the structure of the scale has five – factored sub structure constituted from 27 articles. These are named as "Game Passion", "Social Adaptation", "Desire to Play Game", "The Will to win" and "Risk Taking". The total variance rate of these five factors is 51, 291. As a prove of validity of article, article test correlations were calculated and the correlation coefficients are changing between 0,30 and 0,62. In order to determine the reliability level of the scale, Cronbach Alpha value was used. As a result of conducted calculation, it is seen that the alpha value for 27 articles is 0.82. The scale which is prepared in line with this value has high level of reliability. The alpha values in terms of factors, it can be stated that the first factor was calculated as 0,73; the second factor was calculated as 0,82; the third factor was calculated as 0,64; the fourth factor was calculated as 0,61 and the fifth factor was calculated as 0,63. As a conclusion, it is determined that the developed "Playfulness Scale" is a valid and reliable assessment instrument in determining the attitudes of middle – school student against playing the games requiring physical activity.

Keywords: 10-14 Years old, Physical activity game, Playfulness

Introduction

There is no clear idea about the term "attitude" in social sciences. Each of the idea evaluates different aspects of the term "attitude" or there are different denotations which are in use (Tavşancıl, 2010: 65). However, "attitude" is generally determined as a reaction / predisposition of an individual against any issue (living or non – living) (Tekarslan et. al., 2000: 197). Şimşek et. al., (2008: 71) stated that "attitude is the period of enthusiasm and familiarization which emerges in line with definite value standards and believes regarding an aspect of his / her own life.

On the other hand, from the aspect of children, games are the funny activities which ensure the mental, physical and spiritual development. On one hand, games contribute to development of children in fun and entertainment (Mengütay, 2006: 95) and on the other hand, games also provide the chance of physical activity and the ability to express him / her. These characteristics are very important for the children who are growing within a computer-based society which causing immobility via virtual games and television. The increase in digital addiction encourages a sedentary lifestyle and, by affecting eating habits, leads to an increase in obesity (Oniz, Sarıtaş and Gocer, 2023). In addition to this, the games requiring physical activity develops creativity, the ability to solve problem, the fighting spirit, social interaction, solidarity and increases entertainment (Byl, 2002: XXV). Active games provide the abilities which are essential for children and also contribute to muscle building and development of auditory perceptions. Games provide opportunities for children to develop their self-confidence, moral, aesthetic, and spiritual components of learning (Yuldoshev, 2021). Thanks to games, children can comprehend the social values and also they can realize their own power. The children who play games become more creative and his / her curiosity also develops. (Auerbach, 2008: 20-23).

Huizinga (2006: 50) defined the term "game" as a voluntary action or activity which is accepted freely and which is implemented in definite time and places in accordance with totally instructive rules and which has an objective in itself in accordance with the consciousness of "being different from routine life in addition to stress and happiness. On the other hand, Özmen (1999: 119-120) determined "game" as an activity which includes the basic moves such as jumping, hopping, etc. and which emerges naturally without any external impact.

"Game is the activity which is seen in free times in line with a definite objective with physical and mental abilities within limited place and time in accordance with its own rules and which creates groups as a result of voluntary participation, develops social adaptation and emotional maturity and which depends on ability, intelligence, skills and coincidences; which affects the participants and audiences in company with the sense of stress and which does not give any monetary / material interest." (Hazar, 2000: 4).

The investigation to be conducted on word structure of "playfulness" which is used in the study will clarify the term. The term "-ful-" is an adjective particle which is used since Turkish Language Revolution which is started in Republican Period. (Temir, 1999). The term "-sal" in Turkish, which is the equal of "-ful" in English, gives the meaning of "relevancy, connectivity and belonging" to the names." "Playfulness states everything regarding games. The objective of "-ness" in English, which is the equal one of "-lık in Turkish, is that this particle gives the "qualification, feature" to the names or adjectives by generalizing their meanings." (Zülfikar, 1991: 139). In other words, the term "playfulness" generalizes the term "playful" and adds qualification to this word.

Active games affect physical development and health (respiration, circulation, skeleton, muscle and immune system, etc.), social development (vocations, religions, traditions, language, laws, etc.), emotional development (good – bad, beautiful – ugly, right- wrong, admitting the defeat, protecting the rights, etc.) and mental development (perception, interpreting, decision – making, language, learning, following the rules, strategic planning, etc.) of children. In other words, the children who want to play game more and who play game more have better health, personal characteristics, social adaptation, emotional and mental development.

Thus, playfulness is thought as an indirect indicator in addition to direct assessments which are about whether they have health physic and sportive sub – structure in addition to the ability to fight and their achievements, their imagination and creativity and being a good person. Thus, it is expected that there may be some contributions both in problem solution and in achievements from the aspect of social structure, quality education and progress, sportive abilities.

Material and Method

Development Process of Assessment Instrument

The "Playfulness Scale" which is developed by the researchers was developed in 5 steps. These steps are respectively; creating the articles and preparing the draft scale, gathering the ideas of experts regarding the validity of scope of scale, determining the preliminary test working group and trial of scale, analyzing the data and validity, reliability study. The details regarding the preparation process of the scale are given below:

1. Creating the Articles and preparing the Draft Scale

First of all, because of the reason that developed scale is aimed to assess the attitudes, the dimensions of attitudes, the points to be taken into consideration in creating the expressions of attitudes and the speculative structure regarding the attitude are investigated in detail. In writing the articles of scale, the national and international literature regarding the active game, physical, social and affective development characteristics of the children coming from 10 – 14 age groups are investigated. The statements given in the scale are arranged in a 5 categorized grading method which varies between 5 (Agree) and 1 (Disagree).

2. Validity of Scope

Prepared draft form includes 40 articles which are directed to physical activity. The expert opinion is demanded for the validity of scope of draft form and the technique of survey. In line with these opinions, 7 articles were removed from the scale and a final trial form, which includes 33 articles, was prepared.

3. Determining the Working Group and Implementing the Scale

Trial working form, in which the achievable sampling method was used, was applied on 1008 children who are educated in eight middle schools which are found in Çankaya, Keçiören and Yenimahalle districts of Ankara. In accordance with the literature, factor analysis is evaluated as "good" for 300 people, "very good" for 500 people and "perfect" for 1000 people. (Tavşancıl, 2006: 51). In line with this direction, it can be understood that the number of gathered samplings is in perfect grade.

As it can be seen in Table 1, there are 8 middle schools within the scope of investigation. In dispersion of genders by schools, it can be seen that male students are mostly found in G

(%57,4) and F (%57,1) and they are less in A (%44,1). Female students are most in A (%55,9) and they are less in G (%42,6).

Table 1. Number of Students and Gender Distribution by Schools

Gender		Middle Schools								Total
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	
Male / Boy	**f**	52	27	78	69	34	32	35	182	**509**
	%	44,1	47,4	48,8	53,1	48,6	57,1	57,4	51,1	**50,5**
Female / Girl	**f**	66	30	82	61	36	24	26	174	**499**
	%	55,9	52,6	51,3	46,9	51,4	42,9	42,6	48,9	**49,5**
Total	**f**	**118**	**57**	**160**	**130**	**70**	**56**	**61**	**356**	**1008**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Generally, 509 (50,5%) of 1008 middle – school students are male students and 499 (49,5%) of them are female students.

4. Analyzing the Data

The scale which is prepared as a trial and which is constituted from 33 articles was applied on 1008 people. Data is analyzed with the assistance of SPSS 18.00 packaged software. The articles in the scale are graded as Strongly Agree (5), Agree (4), Doubtful (3), Not Agree (2) and Strongly Disagree (1). In addition, Article 9, 18, 22 and 24 are graded reversely.

5. Validity and Reliability Study

In order to ensure the validity of prepared scale, depending on the factor analysis and the relation between variables, exploratory approach which is one of the factor analysis approaches was used and the varimax techniques was also used in order to determine the high – related articles. (Altunışık, Coşkun, Bayraktaroğlu and Yıldırım, 2005: 115-116). With the aim of determining whether the gathered data is appropriate for factor analysis or not and whether the sampling in the study sufficient or not; Kaiser-MeyerOlkin (KMO) coefficient and BarlettSphericity test are used. In accordance with Kalaycı (2008), on the condition that KMO value is close to 1 and more than 0,5 and on the condition that the Bartlett's test statistic is 0,05 less than significant value, it is seen that data is appropriate for factor analysis.

The article analysis is also made regarding the structure validity of the scale. Article analysis is made in order to develop a consistent scale by determining whether the scale measures any feature free from one another feature or not (Tavşancıl; 2006: 51). In order to determine the assessment power of each article, the article analysis steps which are stated as 1. Depending on the correlation and 2.Depending on consistency (t – test) were used (Trans. from Tezbaşaran, 1997).

In this direction, the articles which are generally 0,30 or more in the article scale correlation are distinguishing the individuals better (Büyüköztürk, 2006: 171) and thus, the relation between the total points of the scale and the grade of each of the articles, in other words the correlation factor (r) 0,30, was accepted as limit value in the research. However, generally, it is stated that the article which are 0,30 or more are distinguishing the individuals better, the articles between 0,20-0,30 can be used when it is deemed obligatory and the article which are less than 0,20 should not be used in the scale (Büyüköztürk, 2006: 171).

One another way in article analysis is the one which depends on the difference between sub – upper group averages which is named as "article analysis depending on inner consistency". In this method, on the condition that an article distinguishes two different groups easily, this article is stated as an article which should be used in the final scale (Tezbaşaran, 1997).

In order to determine whether the articles constituting the Playfulness Scale distinguishes the positive – negative articles from each other, the selectivity powers are calculated. First of all, the grades gathered by the individuals were calculated and ordered starting from the higher one. 27 % of the group starting from the upper side constitutes the upper group (268) and the 27 of the group from the bottom side constitutes the sub – group. It is examined via independent group t – test whether there are any meaningful differences between the groups or not.

In the study, the alpha coefficient method which is also known as Cronbach alpha among inner – consistency analysis which are used as reliability approaches, was used. On the condition that the alpha coefficient is 0.00-0.40, it is stated as the scale is not reliable; on the condition that the alpha coefficient is 0.40-0.60, the reliability of the scale is low; on the condition that the alpha coefficient is 0.60-0.80, the scale is pretty reliable and on the condition that the alpha coefficient is 0.80-1.00, the scale is highly reliable (Kalaycı 2008, Alpar, 2010: 350). Alpha value is taken between 0 and 1 and the acceptable value is demanded as 0.70. However, it is stipulated that this value may be seen as appropriate up to 0.50 (Altunışık et. al., 2005: 115-116). Cronbach Alpha inner – consistency coefficient is calculated separately for the scale of which factor analysis is made and for each of the factors found in the scale.

The reliability and validity analysis which are made by taking all the points stated above regarding the development of scale are given below.

Findings

Article Analysis

The Article Analysis depending on the correlation coefficients between the grade of a point partaking in developed scale and the scale grade consisted from the total of all the article grades and depending on the sub – upper group average (independent group t – test) by taking the 27% of the upper group (268 people) and 27% of the sub group (268 people) was made and the results of this analysis are given in Table 2.

Table 2. Article Analysis Results

Article No	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***
Correlation Coefficient **(r)**	0,62	0,53	0,30	0,38	0,5	0,44	0,45	0,31	0,31	0,37
Difference of the Averages (**t**)	16,2	17,3	11,6	16,8	18,8	8,85	9,41	15,7	9,64	16,3
Article No	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***
Correlation Coefficient **(r)**	0,46	0,40	0,13*	0,10*	0,47	0,04	0,57	0,49	0,04*	0,32
Difference of the Averages (**t**)	18,5	9,68	0,22*	0,42*	14,9	2,88	25,7	21,5	2,42*	13,9
Article No	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***
Correlation Coefficient **(r)**	0,38	0,30	0,33	0,39	0,38	0,31	0,47	0,19*	0,17*	0,30
Difference of the Averages (**t**)	9,03	0,38*	8,02	18,7	11,8	11,9	14,2	3,45	0,93*	***0,82****
Article No	***31***	***32***	***33***							
Correlation Coefficient **(r)**	0,46	0,62	0,55							

Difference of the Averages (**t)**	15,00	15,9	22,8

*p>.05,*r<0,30

In accordance with the Table 2, it was observed that the correlation coefficients of Article 13, 14 and 29 partaking in the scale are lower than 0.30 which is accepted as limit value and the meaningfulness level of the mentioned articles is also more than 01 in the results of independent groups t – test which is made for article analysis depending on the difference of the average of sub – upper group.

In the analysis made for article analysis, the decision regarding whether it is necessary to remove Article 16, 19 and 28, which are meaningful in the analysis made in line with the sub – upper group difference of the averages but of which correlation coefficient are low in the result of article scale correlation analysis, was taken in line with the changing seen in alpha values of 30 articles creating the scale. In the alpha values similar to the results of article – scale correlation; it is seen that Article 16 and 19 decreases the reliability of the scale and the inner – consistency of the scale is increasing when these two article are removed from the scope and thus, these two articles were removed from the scope of the scale. However, because the reason that Article 22, 28 and 30 have high correlation coefficient and they increase the reliability of the scale, the decision regarding the removal of these articles was taken in line with these points. Thus, the article grades of the articles included in the scale and the correlation coefficients between the article grade and scale grade are between 0,30 and 0,62.

The other 28 Articles are more than 0, 30, which is the limit value, and they are also meaningful. Article selectivity powers are meaningful and high; thus, this means that the scale distinguishes the negative and positive attitudes from each other.

In the result of conducted steps, the number of articles which was 33 at the first was decreased to 28 and the factor analysis step directed to the structure validity of the scale is applied.

Factor Analysis

Before starting the exploratory factor analysis process for the structure validity, the Kaiser-Mayer-Olkin (KMO) Sampling Assessment and Barlett's Test were made with the aim of testing whether the data set is appropriate and meaningful or not. Results of KMO sampling assessment and Barlett's test are given in Table 3.

Table 3. Results of Kaiser-Mayer-Olkin (KMO) and Barlett's Test

Kaiser-Mayer-Olkin (KMO) Adequacy of Sampling Assessment Value =,921
Barlett Test Approximate Ki-Square Value = 8412,009 sd = 351**p =0 .000**

It is seen that the KMO value is very high 0.921> 0.50 and the Barlett test is meaningful p=0,00<0,05. Depending on the values given above, it is stated that conducting the factor analysis for the structure validity of playfulness scale data is appropriate.

Table 4. Results of Factor Analysis (Reversed Fundamental Component Analysis)

ARTICLE	COMMON VARIANCE	LOAD VALUES AFTER TRANSFORMATION				
		FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5

M.20	0,522	0,696				
M.27	0,565	0,690				
M.10	0,498	0,685				
M.14	0,552	0,656				
M.16	0,482	0,607				
M.21	0,534	0,584				
M.15	0,519	0,567				
M.26	0,604		0,660			
M.7	0,626		0,646			
M.17	0,509		0,601			
M.12	0,500		0,598			
M.6	0,598		0,598			
M.25	0,456		0,591			
M.22	0,422		0,579			
M.19	0,428		0,548			
M.1	0,586		0,530			
M.23	0,437		0,521			
M.2	0,602			0,722		
M.13	0,501			0,645		
M.5	0,417			0,531		
M.18	0,629				0,757	
M.24	0,585				0,729	
M.9	0,306				0,445	
M.3	0,536					0,710
M.8	0,548					0,667
M.4	0,452					0,476
M.11	0,432					0,460

As a result of factor analysis which is applied on all the articles partaking in the final stage, Article 28 of which correlation is low in article analysis was removed because of being in more than one article and article 22 and article 30 are decided to be given in the scale because of the reason that they have high factor load and the reliability of the scale is decreasing without them. The articles left in the scale are re-ordered.

Table 5. Articles Removed From the Scale

13.	I want to play games with the ones which have the same gender with me.
14.	I fight with my friend during the game.
16.	I don't play the game that I don't like.
19.	I delay my duties in order to play games.
28.	I get tired because of playing games.
29.	I don't like to follow the rules when I play games.

Analysis was made on 27 Articles and it was seen that the load values of each of the articles is more than 0,30 and the scale has a 5 – factored structure.

Table 6. First Sub – Factor – Game Passion

20.	I want to play game even when I am ill.
27.	I want to play game every time.
10.	I want to play game when I get up.
14.	I am not satisfied with playing games.

16.	I pass most of my time by playing game.
21.	I play game outside event the weather conditions are not well.
15.	I dream of playing games even when I am playing game.

As a result of applied analysis, seven articles of which load values are between 0,567-0,696 created the first factor and this is named as "Game Passion".

Table 7. Second Sub – Factor – Social Adaptation

26.	I enjoy playing games.
7.	I share my toys with my friends.
17.	I play games with my friends instead of playing alone.
12.	I enjoy playing games with my peers.
6.	I follow the rules of games.
25.	My day goes well when I play game.
22.	I enjoy playing games in game saloons.
19.	I get sad when one of my friends is injured during game.
1.	I like playing game.
23.	The term "game" makes me remember my friends.

The second factor consists of ten articles. The load values of this factor which is names as "Social Adaptation" is between 0,521 and 0,660.

Table 8. Third Factor – The Desire to Play Game

2.	I get excited when I play game.
5.	I play game instead of watching film on TV.
13.	I get excited when I learn a new game.

The third factor is names as "The Desire to Play Game". The number of articles included in this factor is three and the load values of articles in this factor are between 0,531 and 0,722.

Table 9. Fourth Sub – Factor –The Will to Win

9.	I get bored during game.
18.	I left the game when I lost the game.
24.	I play the game only to win.

The fourth factor of which article load values are between 0,445 and 0,757 includes three articles. The content of the articles were investigated and the fourth factor is named as "the Will to Win".

Table 10. The Fifth Sub Factor –Taking Risk

3.	I do not afraid of being injured during the game.
4.	I go on playing game even when I am hungry.
8.	I do not pay attention to keeping the clothes clean during game.
11.	I do not notice that I got tired during the game.

The fifth factor includes four articles and the article load values are between 0,460 and 0,710. The fifth factor of the scale is named as "Taking Risk".

When the Table 11 which is given below is evaluated, the first factor of the scale states 24,492 % of the total variance regarding the scale and the second factor stated 13,747% of the scale. The third factor states 4,967% of the total variance and the fourth factor states an close value with 4,263 %. The fifth factor states 3,822% of total variance. Total variance rates stated by five factors emerged as a result of factor analysis made for playfulness scale is 51,291.

Table 11. Variance Rates Stated by the Factors

Factor	***Stated Variance***
1. Game Passion	24,492
2. Social Adaptation	13,747
3.Desire to Play Game	4,967
4. Will to Win	4,263
5. Taking Risk	3,822
Total	51,291

In order to determine the relation between factors, the correlation coefficient between the factors constituting the scale is calculated. The correlation coefficient between the factors is as given in the Table 12.

Table 12. Correlation Coefficient between the Factors

Factors	**1**	**2**	**3**	**4**	**5**
1	1				
2	28*	1			
3	46*	31*	1		
4	14*	18*	09*	1	
5	41*	27*	32*	10*	1

It is seen in Table 12 that the correlation coefficients between the factors is low. In accordance with this situation, it can be said that the factors are different from each other by the features which assessed by them.

With the aim of determining the reliability level of the scale, Cronbach Alpha value was used. As a result of conducted step, the alpha value for 27 Article of the scale is 82. The scale which is prepared in line with this value is highly reliable. The alpha values by factors are calculated as 73 for the first factor, 82 for the second factor, 64 for the third factor, 61 for the fourth factor and 63 for the fifth factor.

Discussion and Conclusion

In the conducted study, the Playfulness Scale directed to assessing the attitudes against playing the games requiring physical activity is developed. In development process of the scale, the steps such as creating the articles, scope validity, preparing the draft from, applying the form on the work group and validity and reliability transactions were made. The study was conducted in Ankara with the participation of 1008 middle – school students of which ages are between 10 and 14. In order to determine the assessment power of each article, the article analysis steps which are stated as 1. Depending on the correlation and 2.Depending on consistency (t – test) were used The correlation coefficients of the articles remaining in the scale at the end of conducted transactions are between 0,30 and 0,62. In the article analysis directed to inner – consistency term, it was seen that these 27 articles distinguish the negative

and positive attitudes from each other; in other words, the selectivity power regarding the articles for all the test article in 27% sub and upper group averages is 0,05 ($p<0,05$) meaningful.

For the validity of structure, in order to determine whether the data is appropriate for facto analysis or not and in order to determine whether the sampling in the study is enough or not, Kaiser-Meyer-Olkin (KMO) coefficient and Barlett Sphericity test were used and it was stated that the sampling is sufficient and the factor analysis was conducted. It is determined that the Playfulness Scale is five – sub factored and the contents of the articles within the scope of these factors are investigated and they are named as "Game Passion, Social Adaptation, The Desire to Play Game, the will to Win and Taking Risk". The total stated variance of these five factors is 51,291 and this is an acceptable level.

With the aim of determining the reliability level of the scale, Cronbach Alpha value was used and it was determined that the alpha value directed to all the scale is 0, 82 and the scale is found highly reliable.

As a conclusion; developed "Playfulness Scale" is a valid and reliable assessment instrument in determining the attitudes of middle – school children against playing the games requiring physical activity.

As a result of conducted analysis and transactions, the norm which is given below is created regarding the playfulness level of the children of whom ages are between 10 and 14.

Table 13. Playfulness Levels of Children of Whom Ages are Between 10 and 14

Playfulness Level	**Grade Range**
Too Weak	1.00- 1.79
Weak	1.80- 2.59
Medium	2.60- 3.39
Good	3.40- 4.19
Very Good	4.20- 5.00

REFERENCES

Auerbach, S. (2008). *Anne babalar için çocuk yetiştirmede oyunun önemi*. İstanbul: Yakamoz Yayıncılık, p. 20-23.

Alpar, R. (2010). *Uygulamalı İstatistik ve Geçerlik-Güvenirlik*. Ankara: Detay Yayıncılık, p. 350.

Altunışık, R., Coşkun, R., Bayraktaroğlu, S., Yıldırım, E. (2005). *Sosyal Bilimlerde Araştırma Yöntemleri SPSS Uygulamalı*. Sakarya: Sakarya Kitabevi, p. 115-116.

Büyüköztürk, Ş. (2006). *Veri Analizi El Kitabı. "İstatistik, Araştırma Deseni SPSS Uygulamaları ve Yorum"*. Ankara: Pegem A Yayıncılık, p. 171.

Byl, J. (2002). Co-Ed Recreational Games. USA: Versa Press, p. XXV.

Hazar, M. (2000). *Beden Eğitimi ve Sporda Oyunla Eğitim*. Ankara: Saray Matbaası, p. 4.

Huizinga, J. (2006). *Homo Ludens, Oyunun Toplumsal İşlevi Üzerine Bir Deneme.* İstanbul: Ayrıntı Yayınları, p. 50.

Kalaycı, Ş. (2008). *SPSS Uygulamalı Çok Değişkenli İstatistik Teknikleri.* Ankara: Asil Yayın Dağıtım, p. 151,405.

Mengütay, S. (2006). *Çocuklarda Hareket Gelişimi ve Spor*. İstanbul: Morpa Kültür Yayınları, p. 95.

Oniz, M., Sarıtaş, N., & Gocer, I. (2023). Digital Addiction and Obesity in the Information Age: The Deep Connection Between Two Modern Threats and Obesity Education. *Journal of Exercise Science & Physical Activity Reviews*, *1*(2), 13–25.

Özmen, Ö. (1999). *Çağdaş Sporda Eğitim Üçgeni.* Ankara: Bağırgan Yayımevi, p. 119-120.

Şimşek, Ş., Akgemci, T., Çelik, A. (2008). *Davranış Bilimlerine Giriş ve Örgütlerde Davranış*. Ankara: ÖzBaran Ofset Matbaacılık, p. 71.

Tavşancıl, E. (2006). *Tutumların Ölçülmesi ve SPSS ile Veri Analizi*. Ankara: Nobel Yayın Dağıtım, p. 51.

Tavşancıl, E. (2010). *Tutumların Ölçülmesi ve SPSS ile Veri Analizi*. Ankara: Nobel Yayın Dağıtım, p. 65.

Tekarslan E., Kılınç T., Şencan H., Baysal, A. C. (2000). *Davranışın Sosyal Psikolojisi*. İstanbul: Dönence Basım ve Yayın Hizmetleri, p. 197.

Temir, A. (1999). "Türkiye Türkçesindeki –sal/sel Sıfat Eki Nereden Geliyor?" Sosyal Bilimler Enstitüsü Dergisi. 8, p. 1-5.

Tezbaşaran, A. A. (1997). *Likert Tipi Ölçek Geliştirme Kılavuzu*. Ankara: Türk Psikologları Derneği Yayınları, p. 28-31.

Yuldoshev, S. V. (2021). Pedagogical Analysis And Methodology Of Children's Games. *The American Journal of Social Science and Education Innovations*, *3*(11), 36–40.

Zülfikar, H. (1991). *Terim Sorunları ve Terim Yapma Yolları*. Ankara: Türk Dil Kurumu Yayınları, p. 139.

THE ATTITUDES OF 10-14 YEARS OLD CHILDREN AGAINST THE ACT OF PLAYING GAMES REQUIRING PHYSICAL ACTIVITY

(PLAYFULNESS AMONG 10-14 YEARS OLD CHILDREN)

Dear Young Ones,

This scale is prepared with the aim of determining the desire and will to play the active games which require physical activity. Passive games (computer or table games) are not included in this study. Thus, please answer the questions by taking the games which require physical struggle and your will / desire to play such games into consideration. Please mark (X) the answer which is best for you among the answers: Strongly Disagree, Disagree, Doubtful, Agree, Strongly Agree. Please pay attention that there is no unmarked statement left. Thanks for your contribution.

City and District : **School :** **Age :** **Gender :**	**STRONGLY DISAGREE (1)**	**DISAGREE (2)**	**DOUBTFUL (3)**	**AGREE (4)**	**STRONGLY AGREE (5)**
Statements					
1. I like playing games.					
2. I get excited when I play game.					
3. I am not afraid of being injured during game.					
4. I go on playing game even when I am hungry.					
5. I play game instead of watching film on TV.					
6. I follow the rules of a game.					
7. I share my toys with my friends.					
8 I do not pay attention to keep my clothes clean.					
9. I get bored during any game.					
10. I want to play game when I get up.					
11. I do not notice that I get tired during the game.					
12. I enjoy playing games with my peers.					
13. I get excited when I learn a new game.					
14. I am not satisfied with playing games.					
15. I dream of playing games even when I am playing games.					
16. I spent the bigger part of my time with playing games.					
17. I play games with my friends instead of playing alone.					
18. I stop playing the game when I lost the game.					
19. I become sad when one of my friends get injured during the game.					
20. I want to play game even when I am ill.					
21. I play game outside even when the weather conditions are not well.					
22. I enjoy playing games in game saloons.					
23. The term “game” makes me remember my friends.					

24. I play the game only to win.					
25. I day goes well when I play game.					
26. I enjoy playing game.					
27. I want to play game all the time.					

International Journal of Sport Culture and Science
December 2024 : 12(4)
ISSN : 2148-1148
Doi : 10.14486/IntJSCS.2024.722

Perceived Effectiveness of a Skill Analysis Training Program for PE Student Teachers

Shern Meng-TAN[1]
[1]Nanyang Technological University, Singapore, Singapore
https://orcid.org/ 0000-0003-1483-9619

Email: shernmeng.tan@nie.edu.sg

*Type: **Research** Article (Received: 29.05.2024– Accepted: 11.10.2024)*

Abstract

Although skill analysis is important for physical education (PE) teachers, its training is underemphasized by the physical education teacher education (PETE) programs in Singapore. This study aims to examine the perceived effectiveness of the skill analysis training program, and ten pre-service PE student teachers who completed the skill analysis training program were interviewed. Data was analyzed using a thematic approach and six themes within the sub-categories of strengths, weaknesses, and suggestions to the skill analysis training program emerged: (1) Videos of correct skill performances facilitated participants' learning, (2) Learning activities enabled participants to analyze skills, (3) Checklists alone do not enable skill analysis, (4) Lack of opportunities for real-time skill analysis, (5) Combine learning activities 1 and 2, and (6) Provide opportunities for real-time skill analysis. Specifically, future skill analysis training programs should be instructor-led as pre-service PE teachers need guidance, participants should be provided with a clear understanding of the skill by providing checklists and correct skill performance videos simultaneously, and existing skill analysis attempts should be technology-aided until further research ascertain the effective transfer from video-based skill analysis to real-time.

Keywords: Fundamental movement skills, Movement analysis, Physical education teacher education, Qualitative movement diagnosis

Introduction

Skill analysis is an important ability that PE teachers must possess as they rely on it to provide feedback, manage the classroom, and inform teaching practice (Metzler, 2011; Rink, 2014; Siedentop & Tannehill, 2000). Skill analysis refers to the systematic observation and introspective judgment of the quality of the human movement to provide the most appropriate intervention to improve performance (Knudson, 2013), but its training has been understudied for the past decades. For example, past research indicated that videotape-based instruction complemented with skill checklists was effective for pre-service PE teachers (Cloes et al., 1995; Gangstead & Beveridge, 1984). Skill analysis training without instructors was found to be less effective, e.g., self-directed training programs (Walkley & Kelly, 1989), multimedia interactive laserdisc computer-driven training programs (Williams & Tannehill, 1999), computer-based distance learning (McKethan et al., 2003), and peer-teaching among undergraduates (Pulling & Allen, 2014). More importantly, few studies have enabled their participants to attain the established level of 80% for skill analysis to be considered competent (Kelly & Moran, 2010; Walkley & Kelly, 1989; Williams & Tannehill, 1999).

Currently, skill analysis training is underemphasized by the PETE programs in Singapore (National Institute of Education, 2020a, 2020b, 2020c). Although pre-service PE teachers in Singapore read kinesiology or biomechanics courses, past studies indicated that such courses offer little opportunities to acquire skill analysis ability (Abendroth-Smith et al., 1996; Morrison & Harrison, 1997; Wilkinson, 2000). Likewise, pre-service PE teachers attend numerous physical activity courses, e.g., Badminton, Basketball, Dance, Floorball, Curriculum Gymnastics, Soccer, Softball, Track & Field, and Volleyball, but the courses emphasize game/sports skills but do not equip them with skill analysis ability.

Researchers have proposed that PETE programs depart from the traditional but fragmented approach of skill analysis training (Overdorf & Coker, 2013) and adopt an interdisciplinary approach instead. Moreover, skill analysis training should be incorporated into instructional courses and supported by technology (Ward et al., 2021). For example, Knudson and his colleagues proposed a skill analysis model that integrated many subdisciplines of PE, e.g., biomechanics, motor learning, and pedagogy, and comprised four tasks: preparation, observation, evaluation/diagnosis, and remediation (Knudson, 2000, 2013; Knudson & Morrison, 1996). For this skill analysis model, PE teachers must first prepare to analyze the skill by identifying its performance criteria from research, professional literature, and experience. Next, PE teachers should observe multiple attempts of the skill and from positions where he/she can see most/all of the performance criteria. After observing, PE teachers evaluate/diagnose the skill performance by determining whether the performance criteria were performed correctly, incorrectly, or absent. Last, PE teachers remediate the skill performance either by providing feedback to the performer or modifying the task.

Situated in Singapore's PETE programs, this study is one of the first studies examining the effects of a training program on pre-service PE teachers' skill analysis ability. The significance of this study is (1) the contribution to the limited literature on skill analysis training, and (2) the potential of inclusion or incorporation of skill analysis training by the PETE programs. Specifically, this study aimed to examine the perceived effectiveness of the skill analysis training program.

MATERIAL AND METHOD

Research Design

Qualitative case studies are intense investigations of a bounded system, focusing on an identified issue, collecting data only from those involved in the bounded system, and providing a rich description of it (Pitney & Parker, 2009). Using the qualitative case study research design, the skill analysis training program is considered as the bounded system, and data is collected from the participants via interviews.

Skill Analysis Training Program

Premised on Knudson's (2013) four-task model, i.e., preparation, observation, evaluation and diagnosis, and intervention, the skill analysis training program comprised four learning activities. The first and second learning activities were based on the first task of preparation. The third and fourth learning activities were based on the second task of observation, and the third task of evaluation and diagnosis. The skill analysis training program did not address the fourth task of intervention as the participants were not required to propose interventions to correct the errors observed in the skill performance videos.

For the first learning activity, the instructor provided participants with criteria sheets containing illustrations and critical features of eight identified skills and introduced the skills' sequences and performance criteria. The eight identified skills coincided with those taught in Singapore schools (Ministry of Education, 2016), and are often assessed to establish motor proficiency among children (Ulrich, 2000, 2013), i.e., catch, dribble with hand, kick, roll (underhand), strike with bat, strike with racket, throw (overhand), and throw (underhand). The number of performance criteria ranged from five to eleven for each skill.

For the second learning activity, the instructor showed participants correct skill performance videos of the eight identified skills, i.e., all the skill performance criteria are present and performed correctly. The correct skill performance videos were first shown in real-time and without the instructor's comments to give participants an overall impression. Subsequently, the videos were shown in slow motion or freeze-frame, and the instructor highlighted the performance criteria whenever they occurred.

For the third learning activity, the instructor showed participants incorrect skill performance videos of the eight identified skills, i.e., some of the skill's performance criteria were absent or performed incorrectly. The incorrect skill performance videos were first shown in real-time and without the instructor's comments to give participants an overall impression. Subsequently, the videos were shown in slow-motion or freeze frame, and the instructor highlighted the erroneous or missing performance criteria whenever they occurred.

For the fourth learning activity, the participants were provided with incorrect skill performance videos of the eight identified skills and tasked to rate them before comparing their ratings with the instructor. Participants were afforded the use of slow-motion and/or freeze-frame functions when rating the incorrect skill performance videos.

The skill analysis training program adopted a typical university course schedule for three weeks, i.e., 3-hour sessions per week (see Figure 1). The first and second activities are scheduled for the first session, and the third and fourth activities are scheduled for the second and third sessions respectively. Participants' skill analysis ability was measured before (pre-

test), immediately after (post-test), and six weeks after (retention test) the training program, and their test scores were analyzed and reported in another study.

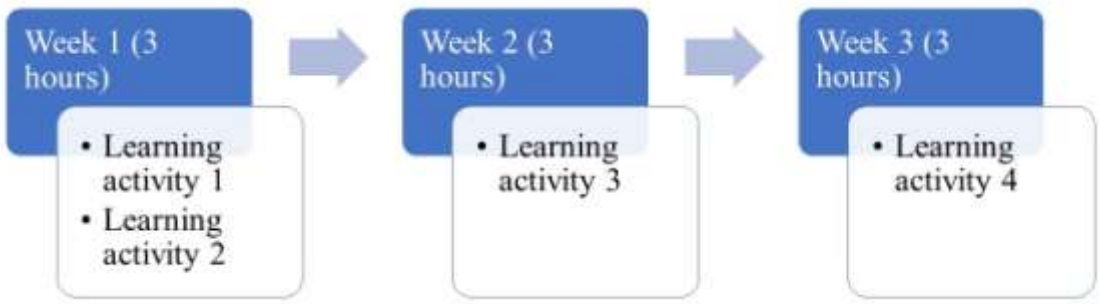


Figure 1. Skill analysis training program

Participants

Ten pre-service physical education teachers (3 males, 7 females, mean age 26.9 ± 5.55 years) participated in this study (see Table 1). Participants for this study were purposively sampled because of their ability to answer the research question (Teddlie & Yu, 2007), i.e., all the identified participants completed the skill analysis training program and attained the established level of 80% for skill analysis to be considered competent (Kelly & Moran, 2010). This study was approved by the investigator's university institutional review board (IRB-2020-06-031) and the participants provided signed informed consent.

Table 1. Details of participants

Participant	Gender	Age	Post-test score (%)
1	F	20	91.18
2	F	24	92.65
3	F	23	92.65
4	M	40	91.18
5	M	27	91.18
6	F	24	92.65
7	F	31	91.18
8	M	26	92.65
9	F	25	95.59
10	F	29	91.18

Procedure

All the interviews were conducted during the first quarter of 2021 (January to March) at a time convenient to the participants, and the interviews ranged between 37.33 to 62.45 minutes (mean duration 52.51 ± 8.78 minutes). The semi-structured interviews sought participants' perceived effectiveness of the skill analysis training program, i.e., which learning activity enables you to analyze skills and why? Follow-up questions sought participant's perceived shortcomings of the skill analysis training program, i.e., which learning activity did not enable you to analyze skills and why? The interviewer also sought their suggestions to improve the skill analysis training program, i.e., what other learning activities do you think will enable you to analyze skills and why? Each interview was audio-recorded and transcribed verbatim.

Data Analysis

Adopting a four-phase approach (Creswell, 2013), the interview transcripts were analyzed and interpreted using the constant comparative method. The four phases comprised: (1) organizing the data, (2) reading and making memos, (3) describing, classifying, and interpreting data into codes and themes, and (4) representing and visualizing the data. First, data is organized by electronically storing the transcripts as Word documents and systematically naming them. Second, all the Word documents are read in their entirety several times to gain a sense of the whole database, with memos, i.e., short phrases, ideas, or key concepts, written to help in the exploration of the whole database, and to form initial codes. Third, information that is expected to be found (based on existing research), surprising information that is not expected to be found, and information that is conceptually interesting or unusual are coded and further reduced into a small, manageable set of themes. Last, themes were interpreted within a combination of personal views and the research literature and visualized as a hierarchical tree diagram.

FINDINGS

Based on the participants' responses, their perceived strengths and weaknesses, as well as suggestions for the skill analysis training program, are categorized into the following themes: (1) Correct skill performance videos facilitated participants' learning, (2) Learning activities enabled participants to analyze skills, (3) Checklists alone do not enable skill analysis, (4) Lack of opportunities for real-time skill analysis, (5) Combine learning activities 1 and 2, and (6) Provide field experiences for real-time skill analysis (see Figure 2). Each theme is explained in the following sections.

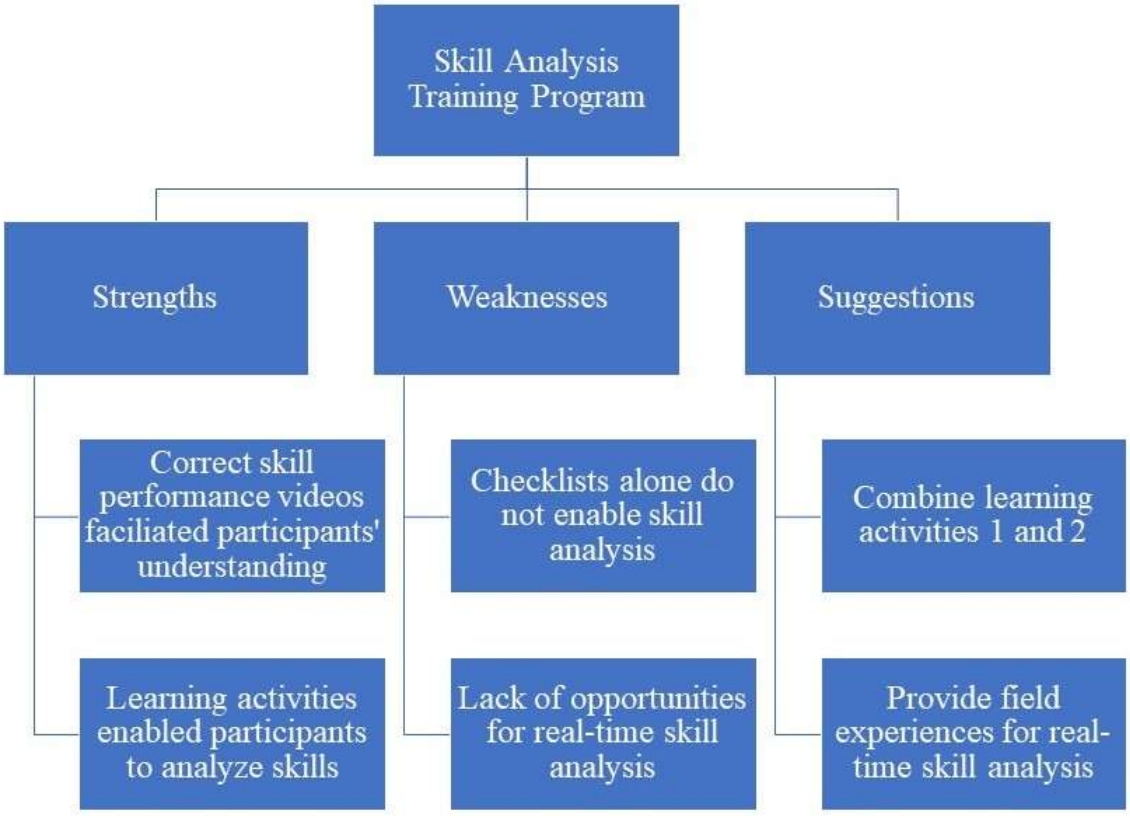


Figure 2. Participants' Perceptions of the Skill Analysis Training Program

Correct Skill Performance Videos Facilitated Participants' Understanding

The first strength of the skill analysis training program was the skill performance videos. Slightly more than half of the participants found the correct skill performance videos important for their learning. With the skill checklists, participants must mentally visualize how the skills are performed. Conversely, participants were able to watch how the skills were performed and where each of the performance criteria occurred during the correct skill performance videos. For example:

I think I'm confident enough to analyze skills because the correct skill performance videos provide me with a guide. Once I'm clear with the set of movements from the resources provided, it makes no difference to me if I've to analyze any students' skill performances (Participant 4).

The videos provided us with a very accurate description of the checklist, it's a lot easier to analyze someone with the checklist and the video. I became familiar with the skill after viewing the video 3 to 5 times, especially when I can playback the video in slow motion (Participant 9).

An additional benefit of the correct skill performance videos was the affordance of video functions, i.e., freeze-frame, and slow-motion, that enabled the participants to gain a better grasp of the skill performance and its performance criteria, as opposed to watching the skill performance in real time. For example:

Watching the correct skill performance videos gave me a mental image of the skill and when I can see the flow I can kind of keep it in my head faster. Also, after I see the video, I realized that there are some performance criteria that are simultaneous. Pausing the video during the performance criteria really helped because it was hard to see some performance criteria when the video was played at real-time speed (Participant 1).

I will be somewhat confident to watch students' skill performances and check whether the performance criteria are there or not, but I will need the student to perform the skill several times because unlike the video, I cannot replay their performances and check the performance criteria one by one. I prefer the skill performance videos to live skill demonstrations, because I need to slow down or stop the skill performance so that I can check off each performance criteria, and make sure I understand them (Participant 6).

From the videos, I could see some of the performance criteria that I couldn't tell from the pictures alone. Also, I could play the videos in slow motion because some of the performance criteria are so fast that I wouldn't be able to see in real time. If I don't understand any of the performance criteria, I will review the video to see how the criteria is performed (Participant 10).

Interestingly, the correct skill performance videos also allowed participants to check on their own skill performances. For example:

The correct skill performance videos helped me when I was able to view them while looking at the checklists. Also, I used the correct skill performance videos to check my own skill performances because I have to know the performance well to be able to breakdown the performance part by part and tell myself what to focus on. (Participant 2).

Learning Activities Enabled Participants to Analyze Skills

The second strength of the skill analysis training program was the learning activities. Most of the participants perceived that the third learning activity enabled them to analyze skills. Some participants highlighted that the third learning activity provided them the opportunity to

compare their skill analysis to the instructor and to clarify their doubts with the instructor. For example:

Although I don't agree with some of the instructor's analysis, I'm okay to go along with his perspective. I'm not really a professional yet, and I can't be 100% sure that what I agree on is the right one. I've to get used to this because I have to make sure my analysis is the same throughout because everyone in my department is going to follow this (Participant 2).

From this activity, I could see how students performed these skills and it gave me a chance to check back using the performance criteria that were provided and compare my skill analysis with the instructor (Participant 4).

I found this activity tough initially because the performance criteria were interpreted differently by me, the others, and the instructor. It was the discussions and clarifications that helped me really understand the performance criteria and the rest to arrive at a common ground. It is when I really talked it out with the instructor and understand what each performance criterion and the picture really mean (Participant 6).

In addition, some participants gained a better grasp of the skills' performance criteria after the third learning activity when they watched the incorrect skill performance videos. For example:

I would say this activity helped me a lot. I was able to better understand the performance criteria as there were performance errors in the students' skill performance videos. I prefer the students' skill performance videos because it is what I will be observing in the future (Participant 3).

During Activity 2, I just match the performance criteria to the skill performance video when it occurred. For this activity, I really had to watch the students' performances and process whether the student perform each criterion or not. Also, the practice really helped when I watched several students' performance videos (Participant 7).

Interestingly, the incorrect skill performance videos performed by students not only gave the participants a sense of what to expect from students when they teach in schools but also the variety of skill performance errors that students might portray. For example:

After this activity, I am like 90-95% confident to analyze skills because I now know from the students' skill performance videos how a student might perform in a realistic setting and what's right or wrong in each performance. I think I will be most confident after I start teaching students and gain more experience in analyzing their skill performances (Participant 5).

This was the most helpful activity for me because the main issue I had was to decide whether the students' skill performance meet the performance criteria or not. Also, I've never really got a chance to observe primary school students performing these skills and they came up with all sorts of different patterns that I didn't except during their skill performance videos (Participant 8).

I used to assess students' performances based on my past experiences and I found it very hard for me to help them improve because I couldn't identify what went wrong with their performances. Also, the videos of students' performances gave me a sense of how students will perform, and the possible areas where students can make mistakes during their performances (Participant 9).

The videos provided an experience of what's really happening on the ground when you assess them based on the performance criteria. Also, I could play the videos in slow motion, stop the videos at certain junctures, and replay the videos as often I require (Participant 10).

The participants unanimously perceived that the fourth learning activity enabled them to analyze skills, allowed them to apply what they have learned during the skill analysis training program, afforded them more time to analyze the students' skill performances, and imbued confidence in their skill analysis. Specifically, the fourth learning activity provided them the opportunity to align their analysis with the instructors, compare their analysis with peers, and understand why skill analysis might differ between themselves and others. For example:

This activity was useful when it came to my speed in checking and identifying the performance criteria. I tend to slow down, pause, and overthink when it comes to whether I should mark the students' skill performances as right or wrong. But then, I just told myself to think about the model answer and be ruthless (Participant 1).

This was definitely useful because it allowed me to compare my skill analysis with the other participants during the discussion. It helped me to be uniform in terms of our analysis because in schools, skill analysis varies between different teachers (Participant 4).

Most importantly, participants saw the fourth learning activity as an opportunity to apply what they had learned during the skill analysis training program. For example:

Activity 4 gave us the opportunity to apply what we learnt, and when I tried to apply, I have questions. I personally think this is better because I can bring my questions back to the instructor and this is much closer to the real classroom experience than Activity 3. Also, I had time to playback the students' skill performance videos in slow motion and real time and compare them with the correct skill performance videos when I needed to (Participant 6).

The individual practice allowed me to apply what I have learnt from the previous activities. At home, I had time to playback the students' performance videos in real time, slow motion, and stopping it whenever I needed. Also, I was able to watch the correct skill performance videos again to compare with the students' performance videos. Checking my responses with the instructor at the end enabled me to look at the students' skill performance videos from a different perspective when my responses were different from the instructor (Participant 7).

Unlike the third learning activity which was instructor-led, the fourth learning activity was self-directed, i.e., participants were given access to the incorrect skill performance videos and completed the skill analysis on their own time. This provided them with more time to better analyze the skills with the affordances of the video functions. For example:

It's just as effective as activity 3 but maybe I got a bit more time to watch the videos multiple times, pause it at certain points, and play it back in slow motion (Participant 8).

I treated it as more practice for me to analyze the skills and being able to take the videos back home gave me more time to look at the videos in real time and in slow motion (Participant 9).

The videos allowed me to interpret the performance criteria against actual students' performance. Like activity 3, I could play the videos in slow motion, stop the videos at certain junctures, and replay the videos as often I require (Participant 10).

In turn, participants were more confident with their skill analysis ability after the fourth learning activity as they progressed through the skill analysis training program and could see their improvement in terms of analyzing skills. For example:

I was quite stressed at the start of the training program because I don't know which performance criteria is right, which is wrong. Having gone through the previous activities, I found this activity easier for me because I'm confident in checking the performance criteria when I watched the videos (Participant 2).

I took a lot of notes during Activity 3 and I was able to confidently analyze the students' skill performances during this activity. I could see the improvements that I made where I was able to get more rights than wrongs during the discussion (Participant 3).

This activity was very helpful even though I spent quite a bit of time doing it, especially when we came back and discuss a bit more on the performance criteria. I think I was pretty confident to analyze the skills after the activities (Participant 6).

Checklists Alone Do Not Enable Skill Analysis

The first weakness of the skill analysis training program was the checklists. Most of the participants did not perceive that the skill checklists alone enabled them to analyze skills. Specifically, the performance criteria and illustrations were not as clear for them. For example:

I think my confidence to analyze skills will be low because of the interpretation of the words. There's a gap between reading the words and watching the skill performance videos to know what exactly I'm supposed to look for. Some performance criteria were clear to me, but I really didn't understand some (Participant 4).

Although the checklist is quite detailed, but it doesn't say how smooth the motion is like. I didn't really understand how some performance criteria were supposed to look like even when I looked at the pictures (Participant 9).

Participants perceived that the skill checklists alone did not give them a good grasp of the skill performance and were concerned with the discrepancy in the analysis they might make when their analysis is compared with others. For example:

I would say this activity alone is insufficient because I won't be able to see how the movements are carried out or how different students might carry out the movements. There was nothing much for me to understand from the checklists other than the words, and my analysis might be different for each student I observed (Participant 3).

I'll not be too confident to analyze the skills because the checklists' performance criteria do not give me a good grasp of how the skill actually look like. Although the performance criteria are quite clear, there is still discrepancy or ambiguity how the skill is analyzed (Participant 8).

By only looking at the pictures and performance criteria, I think two different persons can interpret this differently and whether the performance meet the criteria or not. Also, having only the pictures and performance criteria may be sufficient for a person with knowledge of the skills, but it will not be sufficient for a person without knowledge of the skills (Participant 10).

Interestingly, two participants perceived that the skill checklists alone enabled them to analyze skills because the performance criteria were simply worded and easily understood, and the illustrations allowed them to visualize how the skills were performed. For example:

It is not difficult to analyze skills with only the checklists because it's in simple English, there's no jargon, and I would be certain with how I look at things. It's more like there's different interpretations to the performance criteria and I don't want to cause confusion to my students, e.g., if I say his performance is wrong, but another teacher says that his performance is correct (Participant 1).

With the pictures in the checklists, I can gauge, imagine, and act out how the movement looks like. I think I can understand the performance criteria better because they are put in words as well. Some people would think differently on how the movement might look like, but that's probably a minor thing, and it doesn't impact a lot (Participant 2).

Lack of Opportunities for Real-Time Skill Analysis

The second weakness of the skill analysis training program was the lack of real-time skill analysis. As the skill analysis training program did not require participants to propose interventions to correct the errors observed in the videos, they saw it as a shortcoming and proposed that peer-based and real-time experiences be included in future iterations of the program. First, participants can practice by analyzing their peers' skill performances either via video or in real time. For example:

Video record and analyze fellow participants' skill performances. Since we need to demonstrate the skills to our students in the future, we need to get it right first. So, we get to practice performing our skills and analyzing each other's skills. The participants' skill performance videos should be analyzed by several participants and the instructor, and then discussed (Participant 2).

Get my fellow participants to perform the skills and analyze their skill performances in real time, without the use of video playback functions. When it's on a video, I have the luxury of slowing down or pausing the skill performances. Doing skill analysis in real time will really train us to catch the speed of the skill performance and become confident and comfortable to analyze skills in real time (Participant 6).

Combine Learning Activities 1 and 2

The first suggestion was to combine the learning activities. Some of the participants who did not perceive that the skill checklists alone enabled them to analyze skills suggested that they need to watch the skill performance, either on video or in real time, to better grasp how the skill is performed before they can analyze it. For example:

With the checklists alone, I would say that I'm 50% confident because it just made half the process easier for me. Without any skill performance videos, it's quite hard for me to visualize the whole process. With only the pictures and performance criteria in the checklists, I can only imagine how the skill performances will look like, but I don't know that this is the correct thing for sure (Participant 5).

The checklists are just a sequence of pictures and words to me. Seeing the skill being executed in real time or through a video would really help me to understand the performance criteria better. Specifically, I want to watch the correct skill performance and match it to the different performance criteria that are on the sheet of paper (Participant 6).

Although the checklists have pictures and performance criteria, I need to see the skill performance and see how the performance criteria come together into the skill before I can analyze a skill (Participant 7).

Having experienced the first and second learning activities separately, participants suggested that the two learning activities should be combined so that the skill checklists and correct skill performance videos are made available simultaneously to future participants. It was also suggested that the first and second learning activities be made available ahead of the skill analysis training program. For example:

Combine Activities 1 and 2. I prefer to see the correct skill performance videos immediately and together with the checklist (Participant 3).

Instead of separate activities, Activity 1 and 2 can be combined so that the pictures, performance criteria, and the correct performance are shown simultaneously and coherently (Participant 10).

Instead of conducting them during the training program, Activities 1 and 2 can be conducted before the start of the training program. I think I'm able to watch the correct performance video and match the performance criteria on the checklist on my own (Participant 9).

Provide Field Experiences for Skill Analysis

The second suggestion was to include opportunities for real-time skill analysis. Addressing the perceived weakness of the skill analysis training program, participants further suggested field experiences to analyze students' skill performances. Specifically, they needed to know whether they could analyze students' skill performances in real time and conduct skill analyses for a class of students. For example:

Having to analyze 1 class of students' skill performances. I only got to analyze 10 students' skill performances, and I wanted to see more variety. Also, I know that to have 20 or 30 students is a lot to do but this is my bread and butter and I want to know I can analyze 1 class properly (Participant 5).

Going to a school and analyze students' skill performances in real time or having to analyze 1 class of students' skill performance videos, and students of different body types. The current videos cover the average student, but I think it will be very interesting to see how a taller or shorter student perform the skills (Participant 8).

Observing students' performances in real time and not having the option to pause the video. Once I am posted to the school, I can't always video record students' performances or get them to do it again, so it's a good platform to practice. Also, my observation and analysis should be checked by the instructor or a peer (Participant 10).

DISCUSSION AND CONCLUSION

This study aimed to examine the perceived effectiveness of the skill analysis training program, and ten participants who completed the training program were interviewed. In this section, the strengths, weaknesses, and suggestions for the skill analysis training program are discussed.

The perceived strengths of the skill analysis training program were that skill performance videos facilitated participants' learning, and learning activities enabled participants to analyze skills. In terms of the skill performance videos, participants found them useful as they need not mentally visualize the skill using the skill checklists. In addition, the video functions, i.e., slow-motion and freeze frame, allowed them to better grasp the skill and its performance criteria. This finding is consistent with previous studies where video technology has enhanced skill analysis training (Walkley & Kelly, 1989). For example, Kelly and his colleagues have consistently relied on skill performance videos for skill analysis training among pre-service

and in-service PE teachers (Kelly & Bishop, 2013; Kelly & Moran, 2010; Kelly et al., 2012; Walkley & Kelly, 1989; Wilson et al., 2021). Although the participants did not attain skill analysis competency in some of their studies, all the participants demonstrated improvement when skill performance videos were used in their skill analysis training programs.

In terms of learning activities, participants highlighted that they were able to observe how the instructor analyzed the skills, compare their analysis against the instructor, and clarify their doubts immediately during the instructor-led activity. The importance of the skill analysis training program's instructor cannot be understated as McKethan et al. (2003) found that a computer-based training program without an instructor was ineffective in improving participants' skill analysis ability. Moreover, Kelly and his colleagues found that the instructor's presence was more important for pre-service than in-service PE teachers as the instructor's guidance was imperative for pre-service PE teachers, i.e., they completed fewer attempts when assigned self-directed practices, and attained lower competency in skill analysis (Kelly & Bishop, 2013; Wilson et al., 2021). Like the correct skill performance videos, participants found the incorrect skill performance videos useful as they were better able to identify the skills' performance criteria and anticipate the errors school students will make when performing the identified skills. This finding is congruent with Gangstead and Beveridge (1984) as they found that knowledge of the correct skill performance alone may not improve skill analysis ability but the availability of correct and incorrect skill performances improved skill analysis ability. Lastly, participants highlighted that practice was the key affordance for the self-directed activity as they used the video functions more and repeatedly watched and compared the correct and incorrect skill performance videos. This finding is consistent with previous studies as experience and familiarity with the skill provide an advantage to skill analysis ability, i.e., coaches were better able to analyze skills than PE teachers as they do it daily (Imwold & Hoffman, 1983), and participants who completed more attempts of self-directed practices attained higher competency in skill analysis (Kelly & Bishop, 2013; Wilson et al., 2021).

The perceived weaknesses of the skill analysis training program were that checklists alone do not enable skill analysis, and the program lacked opportunities for real-time skill analysis. In terms of the checklists, participants were mainly concerned with their interpretations of the illustrations and performance criteria to analyze the skills correctly. Consequently, the participants have suggested that checklists and correct skill performance videos be introduced simultaneously to alleviate this weakness, i.e., combine learning activities 1 and 2. Prior studies have always introduced checklists and skill performance videos simultaneously when training participants to analyze skills. For example, Wilkinson (1996) and Wilson et al. (2021) simultaneously taught participants the criteria and showed both correct and incorrect skill performance videos as part of their tutorials for the overhand throw and underhand roll respectively. After observing many PE lessons where school students never received skill analysis training but were provided checklists and expected to analyze their peers' skill performances, the investigator often questioned whether such practice was pedagogically sound. Therefore, separating the provision of skill checklists and skill performance videos provided the opportunity to examine whether participants can analyze skills when only provided with skill checklists. This study's findings demonstrated that skill checklists alone do not enable one to analyze skills and training is essential for such ability. Therefore, it is not only crucial that pre-service PE teachers receive skill analysis training for effective PE teaching but also imperative that PE teachers cease the practice of providing skill checklists to school students and expect them to analyze their peers' skill performances without training.

In terms of opportunities for real-time skill analysis, participants suggested that the skill analysis training program should include such opportunities. As PE teachers-to-be, the participants were aware that they would be required to analyze their students' skill performances during their lessons. Unfortunately, prior studies indicated that video-based skill analysis training does not transfer well to real-time skill analysis. For example, Eckrich et al. (1994) found that video-based skill analysis training did not improve real-time skill analysis, attributing their findings to environmental differences. While the video only showed a few students, participants were distracted by larger spaces, more students, and more ongoing activities in the real-time environment. Likewise, Haynes and Miller (2015) reported significant differences between the real-time and video analyses, indicating that participants were more accurate in their skill analysis via video recordings than in real-time. While more research is required to better understand the transfer of video-based skill analysis training to real-time skill analysis, two possible solutions have been proposed. First, more time is spent on skill analysis training so that PE teachers transit progressively from video-based to real-time, by first focusing on simple skills before complex skills, and by first analyzing a few students before the entire class (Eckrich et al., 1994). Second, it was recommended that PE teachers avoid the frailties of real-time skill analysis and utilize technology-aided skill analysis since smartphones and inexpensive digital cameras are readily available (Haynes & Miller, 2015).

In conclusion, this study provided further evidence that skill analysis training is essential for pre-service PE teachers, highlighted the program's strengths and weaknesses, and identified possible improvements to the program. Specifically, pre-service PE teachers learning to analyze skills should be simultaneously exposed to its criteria as well as correct and incorrect skill performance videos, and the program for pre-service PE teachers should be instructor-led as they require guidance. Consequently, neither pre-service PE teachers nor school students should be provided with skill checklists and expected to analyze the skill performances of their students or peers respectively. While further research is required to better understand the transfer of skill analysis from video-based to real-time, PE teachers can still rely on technology-aided skill analysis using their smartphones and digital cameras. Finally, this study not only contributes to the limited literature on skill analysis training but also supports the inclusion or incorporation of skill analysis training by the PETE programs.

Acknowledgments

The author would like to thank the participants of the study and Associate Professor Tan Kwang San Steven for his guidance in the preparation of the manuscript.

REFERENCES

Abendroth-Smith, J., Kras, J., & Strand, B. (1996). Get aboard the B-BOAT (biomechanically based observation and analysis for teachers). Journal of Physical Education, Recreation & Dance, 67(8), 20-23. https://doi.org/10.1080/07303084.1996.10604832

Cloes, M., Premuzak, J., & Pieron, M. (1995). Effectiveness of a video training program used to improve error identification and feedback processes by physical education student teachers. International Journal of Physical Education, 32(3), 4-10.

Creswell, J. W. (2013). Qualitative inquiry & research design: Choosing among five approaches (3rd ed.). SAGE Publications, Inc.

Eckrich, J., Widule, C. J., Shrader, R. A., & Maver, J. (1994). The effects of video observational training on video and live observational proficiency. Journal of Teaching in Physical Education, 13, 216-227. https://doi.org/10.1123/jtpe.13.3.216

Gangstead, S. K., & Beveridge, S. K. (1984). The implementation and evaluation of a methodological approach to qualitative sport skill analysis instruction. Journal of Teaching in Physical Education, 3(2), 60-70. https://doi.org/10.1123/jtpe.3.2.60

Haynes, J., & Miller, J. (2015). Preparing pre-service primary school teachers to assess fundamental motor skills: Two skills and two approaches. Physical Education and Sport Pedagogy, 20(4), 397-408. https://doi.org/10.1080/17408989.2014.892064

Imwold, C. H., & Hoffman, S. J. (1983). Visual recognition of a gymnastics skill by experienced and inexperienced instructors. Research Quarterly for Exercise and Sport, 54(2), 149-155. https://doi.org/10.1080/02701367.1983.10605287

Kelly, L. E., & Bishop, J. (2013). Learning strategies used while developing motor skill assessment competency. ICHPER-SD Journal of Research, 8(1), 25-31.

Kelly, L. E., & Moran, T. E. (2010). The effectiveness of a web-based motor skill assessment training program. ICHPER-SD Journal of Research, 5(2), 48-53.

Kelly, L. E., Taliaferro, A., & Krause, J. (2012). Does computer-based motor skill assessment training transfer to live assessing? Research Quarterly for Exercise and Sport, 83(3), 400-406. https://doi.org/10.1080/02701367.2012.10599874

Knudson, D. (2000). What can professionals qualitatively analyze? Journal of Physical Education, Recreation & Dance, 71(2), 19-23.

Knudson, D. (2013). Qualitative diagnosis of human movement: Improving performance in sport and exercise. Human Kinetics.

Knudson, D., & Morrison, C. (1996). An integrated qualitative analysis of overarm throwing. Journal of Physical Education, Recreation & Dance, 67(6), 31-36.

McKethan, R. N., Kernodle, M. W., Brantz, D., & Fischer, J. (2003). Qualitatitive analysis of the overhand throw by undergraduates in education using a distance learning computer

program. Perceptual and Motor Skills, 97, 979-989. https://doi.org/10.2466/pms.2003.97.3.979

Metzler, M. W. (2011). Instructional models for physical education (Third ed.). Holcomb Hathaway, Publishers, Inc.

Ministry of Education. (2016). Physical education teaching & learning syllabus: Primary, secondary & pre-university. Singapore: Ministry of Education Retrieved from https://www.moe.gov.sg/-/media/files/primary/physical_education_syllabus_2014.pdf

Morrison, C., & Harrison, J. (1997). Integrating qualitative analysis of movement in the university physical education curriculum. The Physical Educator, 54(2), 64-71.

National Institute of Education. (2020a). Bachelor of Arts (Education)/Bachelor of Science (Education): 2020-2021. National Institute of Education. https://repository.nie.edu.sg/bitstream/10497/22201/1/2020-BA-BSc.pdf

National Institute of Education. (2020b). Diploma programmes: Jul 2020. National Institute of Education. https://repository.nie.edu.sg/server/api/core/bitstreams/2879127d-320c-482f-bc72-28ee0f4bb631/content

National Institute of Education. (2020c). Postgraduate Diploma in Education (PGDE) (Physical Education) Programme handbook: July 2020 intake. National Institute of Education. https://repository.nie.edu.sg/bitstream/10497/22176/1/2020-PGDE_PE.pdf

Overdorf, V. G., & Coker, C. A. (2013). Efficacy of movement analysis and intervention skills. The Physical Educator, 70, 195-205.

Pitney, W. A., & Parker, J. (2009). Qualitative research in physical activity and the health professions. Human Kinetics.

Pulling, A., & Allen, R. (2014). Impact of a peer-tutoring course on skill performance, assessment, and instruction. The Physical Educator, 71, 344-362.

Rink, J. E. (2014). Teaching physical education for learning (Seventh ed.). McGraw-Hill.

Siedentop, D., & Tannehill, D. (2000). Developing teaching skills in physical education (Fourth ed.). Mayfield Publishing Co.

Teddlie, C., & Yu, F. (2007). Mixed methods sampling: A typology with examples. Journal of Mixed Methods Research, 1(1), 77-100. https://doi.org/https://doi.org/10.1177/1558689806292430

Ulrich, D. A. (2000). Test of gross motor development (Second ed.). Pro-Ed.

Ulrich, D. A. (2013). The Test of Gross Motor Development-3 (TGMD-3): Administration, Scoring & International Norms. Spor Bilimleri Dergisi, 24(2), 27-33.

Walkley, J. W., & Kelly, L. E. (1989). The effectiveness of an interactive videodisc qualitative assessment training program. Research Quarterly for Exercise and Sport, 60(3), 280-285. https://doi.org/10.1080/02701367.1989.10607451

Ward, P., Ayvazo, S., Dervent, F., Iserbyt, P., Kim, I., & Li, W. (2021). Skill analysis for teachers: Considerations for physical education teacher education. Journal of Physical Education, Recreation & Dance, 92(2), 15-21. https://doi.org/https://doi.org/10.1080/07303084.2020.1853635

Wilkinson, S. (1996). Visual analysis of the overarm throw and related sport skills: Training and transfer effects. Journal of Teaching in Physical Education, 16, 66-78. https://doi.org/10.1123/jtpe.16.1.66

Wilkinson, S. (2000). Transfer of qualitative skill analysis ability to similar sport-specific skills. Journal of Physical Education, Recreation & Dance, 71(2), 16-18. https://doi.org/10.1080/07303084.2000.10605996

Williams, E. U., & Tannehill, D. (1999). Effects of a multimedia performance principle training program on correct analysis and diagnosis of throwlike movements. The Physical Educator, 56(3), 143-154.

Wilson, W. J., Brian, A., & Kelly, L. E. (2021). The effects of online motor skill assessment training on assessment competence of physical educators. Journal of Motor Learning and Development, 9, 1-13. https://doi.org/10.1123/jmld.2020-0011

International Journal of Sport Culture and Science
December 2024 : 12(4)
ISSN : 2148-1148
Doi : 10.14486/IntJSCS.2024.723

Enhancing Inpatient Care: The Impact of Therapeutic Recreation on Emotional Competence and Life Orientation

Ferhat KILIÇARSLAN[1], Tebessüm AYYILDIZ DURHAN[2], Ecem TÜRKMEN[3], Beyza Merve AKGÜL[4]

[1]İstanbul Aydın University, İstanbul, Turkey
https://orcid.org/0000-0002-9363-1068
[2]Gazi University, Ankara, Turkey
https://orcid.org/0000-0003-2747-6933
[3]Gazi University, Ankara, Turkey
https://orcid.org/0000-0003-0059-2037
[4]Gazi University, Ankara, Turkey
https://orcid.org/0000-0003-2950-4221

Email: tebessum@gazi.edu.tr, ferhatkilicarslan@aydin.edu.tr, ecemturkmen@gazi.edu.tr, bmakgul@gazi.edu.tr

*Type: **Research** Article (Received: 27.06.2024– Accepted: 25.09.2024)*

Abstract

This study investigates the effects of therapeutic recreational activities on the emotional skills, competence, and life orientations of patients receiving inpatient treatment at Ankara Gülhane Training and Research Hospital. The sample consisted of 313 inpatients, 154 males, and 159 females. Data collection tools included a personal information form, the "Emotional Skills and Competence Scale (ESCQ-45)," and the "Life Orientation Test (LOT)." Statistical analyses used were descriptive statistics, independent sample t-test, ANOVA, LSD post hoc tests, multiple linear regression, and Pearson correlation analyses. Internal consistency coefficients were 0.96 for the ESCQ-45 and 0.92 for the LOT. Results showed high mean scores on the ESCQ-45 ($\bar{x}$ = 3.81) and low scores on the LOT ($\bar{x}$ = 2.00), indicating pessimistic life orientations. Participants' therapeutic recreational activity involvement, age, education level, treatment unit, and daily treatment frequency significantly influenced these measurements. There were negative and moderate correlations between emotional skills, competence, and life orientation, with emotional skills and competence being significant predictors of life orientation. Findings suggest that participation in therapeutic recreational activities has a limited impact on emotional skills and life orientation.

Keywords: Therapeutic Recreation, Patients, Emotional Skills and Competence, Life Orientation

Introduction

Emotion is a positive or negative mental state that combines physiological input with cognitive evaluation and is effective in rational decision-making (Lall, 2010). Also, emotions are fundamental components of human biology and behavior, linking senses, thoughts and actions through various communication channels such as facial expressions, postures, body language, chemical signals and spoken language (Buckley, 2016).

Considering emotions as an important part of human psychology, the concept of emotional intelligence, according to Faria et al. (2006), refers to the ability to recognize the meaning of emotional patterns and solve problems involving an emotional context. Emotional skills and competence, in this context, include the practical and cognitive tools needed to develop an individual's emotional intelligence, which plays a critical role in ensuring success in social relationships and professional settings (Papoutsi et al., 2021).

An individual's success in life is influenced by various characteristics and behavior patterns (Gündoğdu et al., 2005). Today's world offers more options for individuals when focusing on their search for meaning and choosing the resources that will provide meaning in their lives, which complicates the decision-making process related to success (Demirbaş, 2010). In this context, life orientation plays a decisive role in how individuals experience, understand and evaluate these processes (Kahleoğulları, 2017). Life orientations for the planned future can affect psychological and physical health through their effects on coping responses (Hirsch et al., 2010). According to McKnight and Kashdan (2009), the lack of meaningfulness or purpose in life leads people to a void and thus to different psychological and physiological diseases.

Developments in modern medicine have made great progress in the diagnosis and treatment of diseases, however, the emotional and psychological needs of patients beyond their physical ailments should not be ignored (Mevlâna and Karaaziz, 2021). There are significant changes in the way a disabled person with special needs or those who receive inpatient treatment as a result of an accident or disability perceive time and spend time in this process (Gassaway et al., 2011). According to Tasiemski et al. (2005), typical changes in leisure activities include a decrease in sports participation and an increase in indoor and passive activities, especially watching television, listening to the radio and listening to music. Considering these changes, efforts to maintain emotional balance and the meaning of life throughout the disease process can affect treatment outcomes (Witkiewitz et al., 2020). In this context, the importance of therapeutic recreation activities, in which recreation activities aiming at individual and social well-being are seen as health services, is increasing.

Therapeutic recreation is an approach that aims to improve the physical, mental and emotional health of individuals through structured activities. Such activities help patients to handle the treatment process from a more positive perspective without being stuck in the hospital environment (Heo et al., 2019). In addition to being a preventive healthcare service (Groff and Zoerink, 2012), therapeutic recreation practices are considered as a valuable element of the recovery process for individual skills, interests and the goals of the person's treatment (Andrew et al., 2014). Therapeutic recreation, which has the potential to improve the quality of life of individuals by encouraging active participation, significantly supports the overall well-being of individuals by positively affecting health outcomes at both physical and mental levels (Reza, 2021).

This study aims to investigate the effects of patients' participation in therapeutic recreational activities on their emotional skills and competence levels and life orientations. It is thought

that the results of this study will help to make sense of how patients approach their treatment processes emotionally and to evaluate what role therapeutic recreational activities can play in this process. In this context, the following research questions were posed.

1. What impact does participation in therapeutic recreational activities have on patients' emotional skills?

H1: Patients who participate in therapeutic recreational activities score higher on emotional skills levels.

2. What impact does participation in therapeutic recreational activities have on patients' life orientation?

H2: Patients who participate in therapeutic recreational activities score more positively in terms of life orientation.

3. How do demographic variables such as age, gender, and educational level affect emotional skills and life orientation?

H3: Demographic variables such as age, gender and educational level show differential effects on emotional skills and life orientation.

4. How are the treatment unit and daily treatment frequency related to patients' emotional skills and life orientation?

H4: Treatment unit and daily treatment frequency show a significant relationship with emotional skills and life orientation.

Material and Method

Research Design

The relational survey model was used in this study. Relational survey model is a model that examines in which direction and to what extent two or more variables differ together (Karasar, 2009).

Universe and Sampling

A total of 51.8% (n=162) of the individuals who participated in the study reported that they participated in therapeutic recreational activities, while 48.2% (n=151) reported that they did not. In terms of gender distribution, approximately half of the participants were male (49.2%, n=154) and half were female (50.8%, n=159). In terms of age groups, 32.6% (n=102) were aged 30 years and below, 33.2% (n=104) were between 31 and 50 years and 34.2% (n=107) were over 50 years. Regarding marital status, 29.7% (n=93) of the participants were single, while 70.3% (n=220) were married. Regarding education level, 54.6% (n=171) had high school education or less, while 45.4% (n=142) had higher education. In terms of treatment units, 28.1% (n=88) were in the internal medicine group, 51.8% (n=162) in the surgical group and 20.1% (n=63) in the specialty group. According to daily treatment frequency, 67.4% (n=211) received treatment once or twice a day, while 32.6% (n=102) received treatment more than twice a day (Table 1).

Table 1. Percentage and frequency values for demographic variables of the participants participants

		F	%
Participation in Therapeutic Recreational Activities	Yes	162	51,8
	No	151	48,2
Gender	Male	154	49,2
	Woman	159	50,8
Age	30 Years or Below	102	32,6
	Between 31 and 50 years old	104	33,2
	Over 50 Years	107	34,2
Marital Status	Single	93	29,7
	Married	220	70,3
Education Level	High School or Below Graduates	171	54,6
	Higher Education	142	45,4
Unit of Treatment	Internal Diseases Group	88	28,1
	Surgery Group	162	51,8
Daily Frequency of Treatment	2 or 1 times	211	67,4
	More than 2 times	102	32,6

Data Collecting

Data were collected from a total of 313 inpatients at GATA (Ankara Gülhane Training and Research Hospital), 154 males and 159 females, through face-to-face interviews with questionnaires. In addition to the personal information form, "Emotional Skills and Competence Scale (ESCQ-45) and Life Orientation Test (LOT) were used as data collection tools.

Emotional Skills and Competence Scale (ESCQ-45): The Emotional Skills and Competence Scale (ESCQ-45), developed by Taksic (1998) and adapted into Turkish by Vatan (2015) to assess emotional skills and competencies, consists of 3 sub-dimensions (Perception and Understanding, Display and Naming and Regulation) and 45 questions. The scale is a 5-point Likert type. In the original study, the internal consistency coefficients for the ESCQ-45 were .92 for the total scores and .90, .89, and .79 for the subscales, respectively. In the current study, it was found to be ,96, ,91, ,89, and ,91. Higher scores on the scale indicate more skills and competence in these areas.

Life Orientation Test (LOT): The Life Orientation Test, developed by Carver, Scheier, Bridges (1994) to reveal the differences in optimism and pessimism among individuals, is a 10-item, 5-point Likert-type scale. The Life Orientation Test was adapted into Turkish by Kahleoğulları (2017). Item 3, item 7 and item 9 in the scale are reverse scored items. At the same time, item 2, item 5, item 6 and item 8 are filler items and are not scored. In the original study, the internal consistency coefficients for the LOT were .78. Scale's total score is formed by adding the responses of the individuals to the items to each other. Low scores indicate pessimism, while high scores indicate optimism.

Data Analysis

In the analysis of the data, frequency and percentage from descriptive statistics methods will be used for personal information. In order to test whether all three scales and their sub-dimensions are normally distributed, kurtosis and skewness values will be examined and it will be determined whether the data are normally distributed according to the significance level, and parametric tests (independent sample t-test, one-way analysis of variance ANOVA)

will be applied if they are normally distributed. If the data are not normally distributed, nonparametric tests will be used.

Findings

In this section, the findings obtained as a result of the analysis of the data collected from the participants through the scales for the solution of the research problem are presented.

Table 2. Arithmetic mean, standard deviation, normality distributions of measurement tools

	Min.	Max.	$\overline{x}$	S	Skewness	Kurtosis	α
ESCQ-45	1,96	5,00	3,81	0,55	-,719	,197	,96
Perception and Understanding	1,88	5,00	3,79	0,56	-,728	,299	,91
Display and Naming	1,53	5,00	3,89	0,56	-,953	1,082	,89
Regulation	2,00	5,00	3,76	0,63	-,535	-,444	,91
Life Orientation Test (LOT)	1,00	4,33	2,00	0,69	1,388	1,692	,92

It is seen that the participants' responses to the measurement tools are normally distributed. In order for the data to be normally distributed, it should be between +2.0 and -2.0 (George & Mallery, 2010). Accordingly, it was determined that the data were normally distributed. It was concluded that the mean scores of the participants from the Emotional Skills and Competence Scale were at a high level ($\bar{x}$ =3.81) and the highest mean scores were obtained from the display and naming sub-dimension ($\bar{x}$=3.89) and the lowest mean scores were obtained from the regulation sub-dimension ($\bar{x}$=3.76). It can be said that the mean scores of the participants' answers for the LOT were at a low level ($\bar{x}$=2.00). Accordingly, it is concluded that the participants are closer to pessimistic emotions.

Table 3. Independent sample t test results between measurement tools and participation in therapeutic recreation activities

	Participation	n	$\overline{x}$	S	t	p
ESCQ-45	Yes	162	4,01	0,50	7,095	0,076
	No	151	3,60	0,53		
Perception and Understanding	Yes	162	3,98	0,51	6,862	0,110
	No	151	3,57	0,54		
Display and Naming	Yes	162	4,07	0,50	6,004	0,046*
	No	151	3,70	0,56		
Regulation	Yes	162	3,99	0,58	7,184	0,304
	No	151	3,51	0,59		
Life Orientation Test (LOT)	Yes	162	1,91	0,65	-2,385	0,064
	No	151	2,09	0,72		

*p<0,05

Statistically significant differences were found between the status of participation in therapeutic recreation activities and the display and naming sub-dimension of the Emotional Skills and Competence Scale. It was concluded that these significant differences were in favor of individuals participating in therapeutic recreation activities.

Table 4. Independent sample t test results between measurement tools and gender variables

Participation in TR		Age	n	$\overline{x}$	S	t	p	LSD
Yes	**ESCQ-45**	≤30[1]	77	4,03	0,49	1,164	0,315	
		31-50[2]	52	4,07	0,44			
		≥51[3]	33	3,90	0,58			
	Perception and	≤30[1]	77	4,01	0,50	1,756	0,176	
		31-50[2]	52	4,04	0,43			

	Understanding	≥51[3]	33	3,84	0,62			
	Display and Naming	≤30[1]	77	4,06	0,49	1,320	0,270	
		31-50[2]	52	4,14	0,42			
		≥51[3]	33	3,96	0,59			
	Regulation	≤30[1]	77	4,01	0,58	,350	0,705	
		31-50[2]	52	4,02	0,55			
		≥51[3]	33	3,92	0,61			
	Life Orientation Test (LOT)	≤30[1]	77	1,99	0,74	1,305	0,274	
		31-50[2]	52	1,86	0,57			
		≥51[3]	33	1,78	0,54			
No	**ESCQ-45**	≤30[1]	25	3,43	0,59	1,670	0,192	
		31-50[2]	52	3,66	0,52			
		≥51[3]	74	3,62	0,50			
	Perception and Understanding	≤30[1]	25	3,44	0,58	,933	0,396	
		31-50[2]	52	3,60	0,55			
		≥51[3]	74	3,60	0,51			
	Display and Naming	≤30[1]	25	3,50	0,62	2,074	0,129	
		31-50[2]	52	3,78	0,56			
		≥51[3]	74	3,72	0,54			
	Regulation	≤30[1]	25	3,33	0,69	1,741	0,179	
		31-50[2]	52	3,60	0,59			
		≥51[3]	74	3,52	0,56			
	Life Orientation Test (LOT)	≤30[1]	25	2,52	0,97	5,659	0,004*	1>2
		31-50[2]	52	1,98	0,64			1>3
		≥51[3]	74	2,02	0,62			
Total	**ESCQ-45**	≤30[1]	102	3,88	0,58	3,247	0,040*	1>3
		31-50[2]	104	3,86	0,52			2>3
		≥51[3]	107	3,70	0,54			
	Perception and Understanding	≤30[1]	102	3,87	0,58	3,351	0,036*	1>3
		31-50[2]	104	3,82	0,54			
		≥51[3]	107	3,68	0,56			
	Display and Naming	≤30[1]	102	3,93	0,58	2,630	0,074	
		31-50[2]	104	3,96	0,53			
		≥51[3]	107	3,79	0,56			
	Regulation	≤30[1]	102	3,84	0,67	3,041	0,049*	1>3
		31-50[2]	104	3,81	0,60			
		≥51[3]	107	3,64	0,60			
	Life Orientation Test (LOT)	≤30[1]	102	2,12	0,83	2,429	0,090	
		31-50[2]	104	1,92	0,61			
		≥51[3]	107	1,95	0,60			

Statistically significant differences were found between age and measurement tools. For participants who did not participate in therapeutic recreation activities, it was concluded that significant differences between LOT and gender were found between participants aged 30 years and under and between 31 and 50 years and between participants aged 30 years and under and 50 years and over in favor of participants under 30 years. When these results are considered, it is seen that the participants exhibit low and medium level of LOT level according to the age variable and accordingly, they are closer to pessimistic emotions and this situation increases with increasing age. According to the results of the analysis including all participants, significant differences were found between the age variables of the participants and ESCQ-45 total scores, perception and understanding sub-dimension and regulation sub-dimensions.

Table 5. Independent sample t test results between measurement tools and education level variables

Participation in TR		Education level	n	$\bar{x}$	S	t	p
Yes	ESCQ-45	High School or Below	68	3,87	0,54	-3,200	0,060
		Higher Education	94	4,12	0,44		
	Perception and Understanding	High School or Below	68	3,84	0,57	-3,097	0,046*
		Higher Education	94	4,09	0,44		
	Display and Naming	High School or Below	68	3,92	0,55	-3,162	0,031*
		Higher Education	94	4,17	0,43		
	Regulation	High School or Below	68	3,83	0,59	-3,068	0,213
		Higher Education	94	4,11	0,54		
	Life Orientation Test (LOT)	High School or Below	68	1,96	0,59	0,954	0,505
		Higher Education	94	1,87	0,69		
No	ESCQ-45	High School or Below	103	3,63	0,52	1,093	0,966
		Higher Education	48	3,53	0,53		
	Perception and Understanding	High School or Below	103	3,60	0,54	0,853	0,749
		Higher Education	48	3,52	0,53		
	Display and Naming	High School or Below	103	3,75	0,56	1,372	0,808
		Higher Education	48	3,61	0,57		
	Regulation	High School or Below	103	3,54	0,58	0,833	0,409
		Higher Education	48	3,45	0,62		
	Life Orientation Test (LOT)	High School or Below	103	2,03	0,72	-1,502	0,826
		Higher Education	48	2,22	0,70		
Total	ESCQ-45	High School or Below	171	3,72	0,54	-3,168	0,820
		Higher Education	142	3,92	0,55		
	Perception and Understanding	High School or Below	171	3,70	0,56	-3,179	0,527
		Higher Education	142	3,90	0,54		
	Display and Naming	High School or Below	171	3,82	0,56	-2,570	0,310
		Higher Education	142	3,98	0,55		
	Regulation	High School or Below	171	3,66	0,60	-3,239	0,310
		Higher Education	142	3,89	0,65		
	Life Orientation Test (LOT)	High School or Below	171	2,00	0,67	0,249	0,710
		Higher Education	142	1,99	0,71		

The education level variable significantly differentiates the ESCQ-45 scale in the perceiving and understanding and displaying and naming sub-dimensions. These significant differences are in favor of the participants who received higher education in both sub-dimensions among the participants participating in therapeutic recreation activities. Accordingly, as the level of education increases, significant differences emerge in perception and understanding and display and naming emotions. Although significant differences were not detected for the LOT scale, it is seen that participants who do not participate in therapeutic recreation activities have higher averages than those who participate.

Table 6. One way anova test between measurement tools and the variable of unit level of treatment

Participation in TR Activities		Unit	n	$\bar{x}$	S	t	p	LSD
Yes	ESCQ-45	Internal Diseases	43	3,94	0,57	1,614	0,202	
		Surgery	80	4,00	0,48			
		Specialization	39	4,13	0,42			
	Perception and Understanding	Internal Diseases	43	3,90	0,59	1,749	0,177	
		Surgery	80	3,97	0,48			
		Specialization	39	4,11	0,46			
	Display and	Internal Diseases	43	4,00	0,58	0,805	0,449	
		Surgery	80	4,07	0,49			

	Naming	Specialization	39	4,14	0,41			
	Regulation	Internal Diseases	43	3,91	0,64	1,972	0,143	
		Surgery	80	3,96	0,58			
		Specialization	39	4,15	0,47			
	Life Orientation Test (LOT)	Internal Diseases	43	2,11	0,88	3,010	0,052	
		Surgery	80	1,85	0,46			
		Specialization	39	1,80	0,66			
No	**ESCQ-45**	Internal Diseases	45	3,42	0,45	5,473	0,005*	3>1
		Surgery	82	3,63	0,52			3>2
		Specialization	24	3,84	0,59			
	Perception and Understanding	Internal Diseases	45	3,42	0,50	4,594	0,012*	3>1
		Surgery	82	3,59	0,53			
		Specialization	24	3,82	0,55			
	Display and Naming	Internal Diseases	45	3,54	0,48	3,776	0,025*	3>1
		Surgery	82	3,73	0,54			
		Specialization	24	3,92	0,71			
	Regulation	Internal Diseases	45	3,28	0,49	6,382	0,002*	3>1
		Surgery	82	3,56	0,62			3>2
		Specialization	24	3,78	0,57			
	Life Orientation Test (LOT)	Internal Diseases	45	2,31	0,83	3,102	0,048*	1>2
		Surgery	82	2,01	0,60			
		Specialization	24	1,96	0,79			
Total	**ESCQ-45**	Internal Diseases	88	3,67	0,57	7,523	0,001*	3>1
		Surgery	162	3,81	0,53			3>2
		Specialization	63	4,02	0,51			
	Perception and Understanding	Internal Diseases	88	3,65	0,59	7,166	0,001*	3>1
		Surgery	162	3,78	0,54			3>2
		Specialization	63	4,00	0,51			
	Display and Naming	Internal Diseases	88	3,77	0,57	5,031	0,007*	3>1
		Surgery	162	3,89	0,54			3>2
		Specialization	63	4,06	0,55			
	Regulation	Internal Diseases	88	3,59	0,64	8,264	0,000*	3>2>1
		Surgery	162	3,76	0,63			
		Specialization	63	4,01	0,54			
	Life Orientation Test (LOT)	Internal Diseases	88	2,21	0,86	6,496	0,002*	1>2
		Surgery	162	1,93	0,54			1>3
		Specialization	63	1,86	0,71			

Statistically significant differences were found between the unit of treatment in the hospital and ESCQ-45 and LOT. These significant differences were observed in total scores and all sub-dimensions for both conditions and for participants who did not participate in TR activities. It was concluded that the total and sub-dimensions of ESCQ-45 for the participants who did not participate in TR activities were in favor of the participants who were treated in the specialty group. The specialty group includes patients treated in dermatology, gynecology and oncology units. For LOT, significant differences between the internal medicine group and the surgical group were in favor of the participants treated in the internal medicine group. The treatment units in the internal medicine group are internal medicine, nephrology and pulmonology units. The same situation is observed in the analysis results where both groups are included. Significant differences were found in favor of the participants treated in the specialty group for ESCQ-45 and in favor of the participants treated in the internal medicine group for LOT.

Table 7. Independent sample t test between measurement tools and number of daily treatments

Participation in TR. Activities		Daily treatments	n	$\bar{x}$	S	t	p
Yes	ESCQ-45	1 or 2	120	4,00	0,51	-0.669	0,634
		>2	42	4,06	0,46		
	Perception and Understanding	1 or 2	120	3,98	0,53	-0.269	0,766
		>2	42	4,00	0,47		
	Display and Naming	1 or 2	120	4,04	0,51	-1.434	0,341
		>2	42	4,15	0,43		
	Regulation	1 or 2	120	3,98	0,58	-0.294	0,804
		>2	42	4,02	0,57		
	Life Orientation Test (LOT)	1 or 2	120	1,95	0,69	1,555	0,092
		>2	42	1,79	0,52		
No	ESCQ-45	1 or 2	91	3,58	0,52	-0.669	0,920
		>2	60	3,64	0,53		
	Perception and Understanding	1 or 2	91	3,55	0,54	-0.564	0,825
		>2	60	3,60	0,53		
	Display and Naming	1 or 2	91	3,67	0,56	-0.877	0,591
		>2	60	3,75	0,57		
	Regulation	1 or 2	91	3,50	0,60	-0.432	0,450
		>2	60	3,54	0,59		
	Life Orientation Test (LOT)	1 or 2	91	2,20	0,77	2,226	0,029*
		>2	60	1,93	0,61		
Total	ESCQ-45	1 or 2	211	3,82	0,56	0,120	0,649
		>2	102	3,81	0,54		
	Perception and Understanding	1 or 2	211	3,80	0,57	0,404	0,489
		>2	102	3,77	0,54		
	Display and Naming	1 or 2	211	3,88	0,56	-0.599	0,868
		>2	102	3,92	0,55		
	Regulation	1 or 2	211	3,77	0,64	0,510	0,875
		>2	102	3,73	0,62		
	Life Orientation Test (LOT)	1 or 2	211	2,06	0,73	2,185	0,011*
		>2	102	1,87	0,58		

Significant differences were found between the number of treatments per day and only the LOT scale for participants who did not participate in therapeutic recreational activities between participants who were treated less than 2 times per day and participants who were treated more than 2 times per day in favor of participants who were treated more than 2 times per day. It is possible to mention that the average scores of the participants who received less treatment were more optimistic in the life orientation test.

Table 8. Examining the relationship between variables with Pearson product-moment correlation

	ESCQ-45	Perception and U.	Display and Naming	Regulation	LOT
ESCQ-45	1				
Perception and Understanding	0,970**	1			
Display and Naming	0,941**	0,886**	1		
Regulation	0,930**	0,861**	0,791**	1	
LOT	-0,486**	-0,464**	-0,524**	-0,394**	1

There were moderate negative relationships between emotional skills and competence and its sub-dimensions and life orientation. It can be stated that there are relationships at the level of r=-0,486 for emotional skills and competence, r=-0,464 for perception and understanding, r=-0,524 for display and naming, and r=-0,394 for regulation.

Table 9. Results of multiple linear regression analysis to predict life orientation according to emotional skills and competence

	B	Std. Error	β	t	p	R	R^2	F	p
Perception and Understanding	-0,070	0,155	-0,057	-0,448	0,655	0,525	0,276	39,223	0,000*
Display and Naming	-0,658	0,129	-0,535	-5,085	0,000*				
Regulation	0,084	0,105	0,077	0,807	0,420				

According to the results of the multiple linear regression analysis conducted to predict life orientation according to emotional skills and competence, emotional skills and competence is a significant predictor of life orientation (F=39,223; p=<0,001). Together, the three variables explain approximately 27 percent of the variance in life orientation. Only display and naming alone predicted life orientation (p<0,05). The level of prediction of life orientation by displaying and naming is β=-0,535.

Discussion and Conclusion

The study investigated the effects of patients' participation in therapeutic recreational activities on their emotional skills and competence and life orientation. Negative and moderate relationships were found between emotional skills and competence and its sub-dimensions and life orientation, and emotional skills and competence was found to be a significant predictor of life orientation. The findings of the study suggest that participation in therapeutic recreation activities makes a relatively limited difference on emotional skills and competence and life orientation.

Statistically significant differences were found between the status of participation in therapeutic recreation activities and the display and naming sub-dimension of the Emotional Skills and Competence Scale. It was concluded that these significant differences were in favor of individuals participating in therapeutic recreation activities. Within the framework of the findings obtained, it can be said that participation in therapeutic recreation activities increases the emotional skills and competence of individuals. When the literature is examined, it is determined that recreation therapy and leisure activities positively affect physical rehabilitation, recovery and well-being and promote an active lifestyle for individuals with injury, illness or disability (Kang, et. al., 2014). In this respect, therapeutic recreation activities can effectively improve and maintain functional ability and health through regular recreational exercise for individuals with disabilities and chronic conditions (Mobily, 2009), as well as providing a supportive and stimulating environment for disadvantaged individuals, helping to improve mental health (Dobransky-Fasiska, et al., 2010) and helping patients cope with stress. Therapeutic recreation activities therefore significantly improve health outcomes and should be considered as an integral part of a holistic care approach in healthcare (Botner, 2014). Therefore, it is expected that the health outcomes of individuals participating in therapeutic recreation activities will be positive and improvements in psychometric parameters will be observed in parallel. The findings obtained support this assumption.

It was determined that gender did not significantly differentiate life orientation and emotional skills and competence. It has also been revealed by different studies that life orientation does not differ according to gender (Hjelle, Belongia, & Nesser, 1996; Steca et al., 2014). On the other hand, in addition to the studies stating that emotional skills and competence are higher in women (Aithal et al., 2016; David, Lukács, Capatina, 2014; Șițoiu & Pânișoară, 2021), studies that obtain findings parallel to the current study are also frequently found in the literature (Martin, 2017; Šćepović, 2017; Sk & Halder, 2020; Uniyal & Rawat, 2020). The fact that participation in therapeutic recreation activities offers the opportunity to participate without gender discrimination and that the programs are carried out with an egalitarian understanding for both genders may form the basis for gender not to differentiate emotional skills and competence, as well as life orientation.

It was determined with the findings of the study that age differentiates life orientation as well as emotional skills and competence. There are studies that obtained findings parallel to the findings obtained (Awan, Anwar, & Farooq, 2021). It has been stated that emotional competence, which includes expressing and regulating emotions in children and adolescents, contributes to their social success (Denham, 2019; Wijayanti, 2021). Therefore, it can be said that emotional skills and competence play an important role in the maturation processes of individuals under the age of 30. It can be said that life orientation is more positive especially with age (Fagerström, 2010; Pitkala et al., 2004). When the current study group in need of therapeutic support is evaluated, it can be thought that the higher life orientation of the group under the age of 30 is based on the possibility that the treatment processes are based on the possibility that the healing processes are earlier in young people.

It was determined that marital status did not significantly differentiate life orientation and emotional skills and competence levels. Although emotional skills and competence are predicted to positively affect the lives of married individuals (Fashiya & Jayan, 2015; Mirgain & Córdova, 2007; Ortese & Tor-Anyiin, 2008). It can be thought that the quality of social support received through marital status is important, and therefore, in line with negative experiences, marriage does not positively affect life orientation or parameters such as emotional skills and competence as expected.

The variable of education level significantly differentiates the emotional skills and competence scale in the sub-dimensions of perceiving and understanding and displaying and naming. Accordingly, as the level of education increases, significant differences emerge in perceiving and understanding and displaying and naming emotions. Although significant differences were not detected for the YYT-R scale, it is seen that participants who do not participate in tr activities have higher averages than those who participate. Therefore, it can be said that as the level of education increases, both life orientation and emotional skills and competence increase in parallel.

When the findings of the study that the perceived income level of individuals does not significantly differentiate their life orientations and emotional skills and competence levels are examined, it is observed that although there is no significant difference, participants who describe their income group as medium exhibit higher life orientation and emotional skills and competence. Although it is stated that perceived financial status and control over life increase life satisfaction (Johnson & Krueger, 2006), it is seen that the fact that optimal income level creates positive outcomes is also supported by the findings of the study.

It was determined that decreasing the duration of hospitalization significantly differentiated life orientation and emotional skills and competence. In this respect, it can be said that the factors of shortening the duration of treatment and accelerating the return to living standards

positively change life orientation and emotional skills and competence. In addition, no significant differences were found between the measurement tools and the status of staying individually or with others in the room where the patient stayed during the treatment process. It is evaluated that the relevant situation, which can be attributed different meanings according to individual differences, is not an effective parameter for the sample group participating in the study.

As a result, when the research findings were examined, it was concluded that the participants' age, education level, daily treatment frequency, unit of treatment, and length of stay in the hospital significantly differentiated the measurement tools, while the variables of gender, marital status, perceived income, and the number of patients in the room during the treatment process did not differ significantly. The related findings show that various variables of individuals participating in therapeutic recreation activities significantly change their life orientation and emotional skills, as well as their emotional competence. It is recommended to conduct extended research to determine life orientation and emotional skills with different sample groups. It is evaluated that more research on examining the effect of therapeutic recreation practices on the lives of individuals in recovery processes should be added to the national literature.

It is predicted that increasing the frequency of therapeutic recreation practices and presenting them in a formal scheme will make a significant difference on different psychometric characteristics of individuals. Considering the quantity of the sample group in the study, it is recommended that more therapeutic recreation practices be carried out in a wider framework and compared with similar control groups. It is considered that therapeutic recreation planning, which is thought to contribute to the revitalization and recovery processes of individuals, should be more visible in public spaces, physical therapy centers and hospitals.

Conflict of interest

There is no conflict of interest between the authors.

Funding

This study is not supported by any institution or organization.

Authors' contributions

Concept:T.A.D, Fk.. Design: T.A.D., F.K. Data Collection or Processing: E.T., F.K. Analysis or Interpretation: T.A.D., F.K. Literature Search: B.M.A., F.K. Writing: T.A.D., F.K., E.T.

Acknowledgments

We would like to thank all the participants of our survey and wish them a speedy recovery.

Ethical Statement

This study was discussed by the Ethics Commission of Gazi University Rectorate at its meeting dated 05.09.2023 and numbered 15 and was found ethically appropriate with the number E-77082166-604.01.02-764486.

This research was previously presented as an oral presentation at the 9th International Science Culture and Sports Congress, September 11-14, 2023 in Prague, Czech Republic.

REFERENCES

Aithal A, Kumar N, Gunasegeran P, Sundaram S, Rong L, Prabhu S. (2016). A survey-based study of emotional intelligence as it relates to gender and academic performance of medical students. *Education for Health*, 29, 255-258. https://doi.org/10.4103/1357-6283.204227

Andrew N, Wolfe R, Cameron P, Richardson M, Page R, Bucknill A, Gabbe B. (2014). The impact of sport and active recreation injuries on physical activity levels at 12 months post-injury. *Scandinavian Journal of Medicine & Science in Sports*, 24(2), 377-385. https://doi.org/10.1111/j.1600-0838.2012.01523.x

Anwar MN, Farooq S. (2021). The role of elementary teachers' emotional intelligence competencies in improving students' motivation and student-teacher relationship. *SJESR*, 4(2), 492-499. https://doi.org/10.36902/sjesr-vol4-iss2-2021(492-499)

Botner E. (2014). Imagine the poss-ABILITIES! therapeutic recreation: An integral aspect of whole-person health care. *International Journal of Whole Person Care*, 1(1). https://doi.org/10.26443/IJWPC.V1I1.78

Buckley R. (2016). Aww: The emotion of perceiving cuteness. *Frontiers in Psychology*, 7(1740), 1-3. https://doi.org/10.3389/fpsyg.2016.01740

Cakırlar A, Yaman Ç. (2022). Pozitif psikoloji bağlamında terapötik rekreasyon ve iyi oluş ilişkisi: bir literatür taraması. *The Online Journal of Recreation and Sports*, 11(4), 47-58. https://doi.org/10.22282/ojrs.2022.108

David S, Lukács E, Capatina A. (2014). Influence of gender on emotional intelligence: The case of Romanian software development companies. *Risk in Contemporary Economy*, 237-243.

Demirbaş N. (2010). *Meaning in life and ego-resiliency* [dissertation]. Hacettepe University.

Denham S. (2019). Emotional competence during childhood and adolescence. In: LoBue V, Pérez-Edgar K, Buss KA, editors. *Handbook of Emotional Development*. Springer; p. 493-541. https://doi.org/10.1007/978-3-030-17332-6_20

Dobransky-Fasiska D, Nowalk M, Pincus H, Castillo E, Lee B, Walnoha A, Reynolds C, Brown C. (2010). Public-academic partnerships: Improving depression care for disadvantaged adults by partnering with non-mental health agencies. *Psychiatric Services*, 61(2), 110-112. https://doi.org/10.1176/ps.2010.61.2.110

Fagerström L. (2010). Positive life orientation--an inner health resource among older people. *Scandinavian Journal of Caring Sciences*, 24(2), 349-356. https://doi.org/10.1111/j.1471-6712.2009.00728.x

Faria L, Lima Santos N, Takšic V, Räty H, Molander B, Holmström S, et al. (2006). Cross-cultural validation of the Emotional Skills and Competence Questionnaire (ESCQ). *Psicologia*, 20(2), 95-127.

Fashiya P, Jayan C. (2015). Role of emotional competence on marital well-being. *ZENITH International Journal of Multidisciplinary Research*, 5, 157-166.

Gassaway J, Dijkers M, Rider C, Edens K, Cahow C, Joyce J. (2011). Therapeutic recreation treatment time during inpatient rehabilitation. *The Journal of Spinal Cord Medicine*, 34, 176-185. https://doi.org/10.1179/107902611X12971826988138

Groff D, Zoerink D. (2012). Demonstrating how collaborative efforts positively impact consumer health. *Therapeutic Recreation Journal*, 46(3), 165-167.

Gündoğdu M, Korkmaz S, Karakuş K. (2013). Üniversite öğrencilerinde yaşam yönelimi. *Marmara Üniversitesi Atatürk Eğitim Fakültesi Eğitim Bilimleri Dergisi*, 22(22), 151-160.

Heo MR, Son BY, Yoo-soon B. (2019). Effects of client-centered leisure activities on the physical function, self-efficacy and life satisfaction of stroke patients. *Korean Journal of Occupational Therapy*, 27(3), 15-31. https://doi.org/10.14519/kjot.2019.27.3.02

Hirsch JK, Britton PC, Conner KR. (2010). Psychometric evaluation of the Life Orientation Test—Revised in treated opiate dependent individuals. *International Journal of Mental Health and Addiction*, 8(3), 423-431.

Hjelle L, Belongia C, Nesser J. (1996). Psychometric properties of the Life Orientation Test and Attributional Style Questionnaire. *Psychological Reports*, 78, 507-515. https://doi.org/10.2466/pr0.1996.78.2.507

Johnson W, Krueger R. (2006). How money buys happiness: Genetic and environmental processes linking finances and life satisfaction. *Journal of Personality and Social Psychology*, 90(4), 680-691. https://doi.org/10.1037/0022-3514.90.4.680

Kahleoğulları G. (2010). *Validity, reliability and factor structure of the revised Turkish version of the purpose in life scale, meaning in life questionnaire and life orientation test* [dissertation]. Hasan Kalyoncu University.

Kang L, Palisano R, King G, Chiarello L. (2014). A multidimensional model of optimal participation of children with physical disabilities. *Disability and Rehabilitation*, 36(20), 1735-1741. https://doi.org/10.3109/09638288.2013.863392

Lall M. (2010). Physiological understanding of human emotions for effective management. *Global Business and Management Research: An International Journal*, 1(3), 117.

Le Hénaff Y, Héas S. (2020). Engagement in leisure and physical activities: Analysing the biographical disruptions of a rare chronic disease in France. *Sociology of Health & Illness*, 42(1), 65-79. https://doi.org/10.1111/1467-9566.12987

Martín J. (2017). Inteligencia emocional en estudiantes venezolanos de educación media y universitaria. *REDU*, 20, 28-54. https://doi.org/10.46498/REDUIPB.V20I2.85

McKnight PE, Kashdan TB. (2009). Purpose in life as a system that creates and sustains health and well-being: An integrative, testable theory. *Review of General Psychology*, 13(3), 242-251. https://doi.org/10.1037/a0017152

Mevlana CA, Karaaziz M. (2021). Sosyal izolasyon, karantina ve psikolojik etkileri. *YDÜ Mimarlık Fakültesi Dergisi*, 3(2), 158-170.

Mirgain S, Córdova J. (2007). Emotion skills and marital health: The association between observed and self-reported emotion skills, intimacy, and marital satisfaction. *Journal of Social and Clinical Psychology*, 26(9), 983-1009. https://doi.org/10.1521/JSCP.2007.26.9.983

Mobily KE. (2009). Role of exercise and physical activity in therapeutic recreation services. *Therapeutic Recreation Journal*, 43(2), 9-26.

Ortese P, Tor-Anyiin S. (2008). Effects of emotional intelligence on marital adjustment of couples in Nigeria. *African Journal Online*, 16(2), 101-112. https://doi.org/10.4314/ifep.v16i2.23804

Papoutsi C, Drigas A, Skianis C. (2021). Virtual and augmented reality for developing emotional intelligence skills. *International Journal of Recent Contributions from Engineering Science & IT*, 9(3), 35-53. https://doi.org/10.3991/ijes.v9i3.23939

Pitkala K, Laakkonen M, Strandberg T, Tilvis R. (2004). Positive life orientation as a predictor of 10-year outcome in an aged population. *Journal of Clinical Epidemiology*, 57(4), 409-414. https://doi.org/10.1016/J.JCLINEPI.2003.07.013

Reza MP. (2021). The role of recreation in rehabilitation: A systematic review. *Medicine*, 1, 52-56.

Šćepović D. (2017). Functionality of family and children in relation to gender, age and emotional abilities of children and family structure. *European Journal of Social Science Education and Research*, 4(4), 75-88. https://doi.org/10.26417/ejser.v10i2.p101-114

Sk S, Halder S. (2020). Critical thinking disposition of undergraduate students in relation to emotional intelligence: Gender as a moderator. *Heliyon*, 6(11), 1-10. https://doi.org/10.1016/j.heliyon.2020.e05477

Steca P, Monzani D, Greco A, Chiesi F, Primi C. (2014). Item response theory analysis of the life orientation test-revised. *Assessment*, 22(3), 341-350. https://doi.org/10.1177/1073191114544471

Şitoiu A, Pânişoară G. (2021). The relationship between the emotional intelligence of a 21st century adult and his or her parental competence. *Educatia 21 Journal*, 20(3), 25-31. https://doi.org/10.24193/ed21.2021.20.03

Tasiemski T, Kennedy P, Gardner BP, Taylor N. (2005). The association of sports and physical recreation with life satisfaction in a community sample of people with spinal cord injuries. *NeuroRehabilitation*, 20(4), 253-265.

Uniyal D, Rawat S. (2020). Exploring emotional intelligence in school and college teachers. *International Journal of Scientific and Research Publications*, 10(6), 510-520. https://doi.org/10.29322/ijsrp.10.06.2020.p10260

Wijayanti N. (2020). Kompetensi emosi pada remaja. *Psychological Journal Science and Practice*, 1(1), 16-22. https://doi.org/10.22219/PJSP.V1I1.15828

Witkiewitz K, Montes KS, Schwebel FJ, Tucker JA. (2020). What is recovery? *Alcohol Research: Current Reviews*, 40(3). https://doi.org/10.35946/arcr.v40.3.01

International Journal of Sport Culture and Science
December 2024 : 12(4)
ISSN : 2148-1148
Doi : 10.14486/IntJSCS.2024.724

Examining Fans' Levels of Respect for Opposing Opinions and Self-Control in Sports

Fuat Orkun TAPŞIN[1], Faik Orhun TAPŞIN[2]
[1]Kocaeli University, İzmit, Turkey
https://orcid.org/0000-0001-6374-534X
[2] Dicle University, Diyarbakır, Turkey
https://orcid.org/0000-0002-7099-6929

Email: fuat_orkun@hotmail.com, tpsnorhun@gmail.com

*Type: **Research** Article (Received: 03.07.2024– Accepted: 20.12.2024)*

Abstract

The purpose of this research is to examine the fans' levels of respect for opposing views and self-control in sports. Fans over the age of 18 who support Galatasaray, Fenerbahçe and Beşiktaş teams were included in the research. A 5-question information survey and the respect for opposing views and self-control scale in sports developed by Gülle (2018) were administered to fans who wanted to participate in the research. Surveys were collected using Google Forms. The survey link was shared on social media groups where Galatasaray, Fenerbahçe and Beşiktaş fans are active. Since the data showed normal distribution, independent t test was used for double groups and analysis of variance was used for more than two groups. As a result of the research, it was found that there is a significant difference in favor of the hatred towards the opponent of the fans who do not participate in recreational activities and the hatred towards the opponent of the fans who use licensed products. It was found that there was a significant difference in the sub-dimensions of respect for the opponent and hatred towards the opponent according to the educational level of the fans. In our research, it was found that as the educational level increases, respect for the opponent increases, and as the education level decreases, the fans' hatred towards the opponent increases.

Keywords: Opposing opinion, Sports, Self-control in sports, Respect in sports.

Introduction

Sport has been a powerful social phenomenon that brings societies together and unites them around a common experience (Tanriverdi, 2012). Sport is a global medium through which people from different cultures and social backgrounds come together and unite around a common passion (Sunay and Saracaloğlu 2003). In today's society, sport has become more than just a stage where athletic skills are displayed, it has also become a reflection of cultural identities and social dynamics (Üçüncüoğlu, 2018).

Self-control is the ability of an individual to control their thoughts, emotions, and behaviors (Baumeister and Vohs, 2007) and plays a critical role in both personal and social success (Sinha et al., 2002). This skill facilitates the individual's achievement of goals, emotional balance, and social adaptation (Baumeister et al., 1998). In addition, it is known that lack of self-control can lead to negative consequences in academic, professional, and personal life (Ridder et al., 2012). Self-control in sports environments is important for athletes to optimize their performance and maintain a sense of fair play by controlling their behaviors in the face of stress, competition, and emotional pressure.

Sports competitions are areas where individuals form a strong sense of belonging through team and athlete loyalty and where these feelings are expressed in passionate manifestations (Arıkan and Yazıcı, 2022). However, this high level of emotional bonding can also bring negative side effects such as intolerance and even hostility towards different opinions and rival teams. Understanding the effect of fans' enthusiasm and competitive spirit in favor of their own teams on their level of respect for opposing views and self-control is of critical importance in order to evaluate the contribution of sports to social integration in a healthy way.

Team identification can be defined as the psychological bond that an individual establishes with a team (Aycan et al. 2009). Dilbaz and Karagün (2014) stated in their study that identification with a team or athlete causes people who are fans of that team or athletes to be psychologically interested in, admire and establish a psychological bond with that team or athlete. They also emphasized that this identification plays an important role in reflecting the personalities of the fans.

Fandom is an important dimension of sports culture (Akbal, 2014). Fans acquire a strong sense of identity and unity through the teams they support (Çakmak et al., 2021). Fans are an integral part of sporting events and show a strong commitment to the teams or athletes they support (Polat et al., 2019). However, the nature of sports competition can occasionally lead to conflicts and the emergence of opposing views among fans. It is clear that for sports competitions to take place in a peaceful and respectful environment, fans should respect opposing views and develop self-control skills (Gülle, 2018). The purpose of this study is to examine the levels of self-control and respect for opposing views of fans in sports. Examining the level of respect and self-control of fans in sports is important to prevent negative behaviors such as violence and discrimination by preserving the unifying power of sports.

Material and Method

Research Model

This study was conducted using the survey model, one of the quantitative research methods. Before the start of the research, approval necessary were obtained from Dicle University Social and Humanities Ethics Committee (decision dated 05/03/2024 and numbered 669694).

Research Group

In this study, data was collected using Google Forms in order to reach a wider audience. The link to the survey prepared via Google Forms was shared on the social media accounts of football fans and participants were encouraged to participate in the survey voluntarily. The study included fans supporting Beşiktaş, Galatasaray and Fenerbahçe. A total of 139 male participants were included in the study; only male fans were evaluated due to the very small number of female fans. IP restrictions were applied to prevent the same person from responding more than once and the study included individuals aged 18 and over.

Table 1. Demographic characteristics of the participants

Variables		F	%
Age Status	18-24	58	41.7
	24-30	59	42.4
	31 and above	22	15.8
Educational Status	Middle school	12	8.6
	High School	76	54.7
	University	51	36.7
Participation in Recreational Activities Other than Sports	Yes	65	46.8
	No	74	53.2
The Team Fans Support	Galatasaray	49	35.3
	Fenerbahçe	62	44.6
	Beşiktaş	28	20.1
Use of Licensed Products by Fans	Yes	80	57.6
	No	59	42.4

Considering the socio-demographic characteristics of the fans participating in the research; Regarding the age variable, it was answered that 58 (41.7%) were 18-24 years old, 59 (42.4%) were 24-30 years old, and 22 (15.8%) were 31 years old and above. In terms of education, it was stated that 12 (8.6%) were secondary school graduates, 76 (54.7%) were high school graduates, and 51 (36.7%) were university graduates. It was stated that 65 (46.8%) responded yes and 74 (53.2%) responded no to participating in recreational activities other than sports. Among the team supported by the fans, 49 (35.3%) were Galatasaray fans, 62 (44.6%) were Fenerbahçe fans, and 28 (20.1%) were Beşiktaş fans. Regarding the use of licensed products, 80 (57.6%) of the fans answered yes and 59 (42.4%) answered no.

Data Collection Tools

In the study, a 5-question survey questioning socio-demographic characteristics prepared by the researchers and a 15-item scale of respect for opposing views and self-control in sports developed by Gülle (2018) were used as data collection tools.

Respect for Opposing Opinion and Self-Control Scale in Sport

In this study, the Respect for Opposing Opinions in Sport and Self-Control Scale, which was developed by Gülle (2015) and consists of 15 statements and two sub-dimensions, was used to evaluate the participants' attitudes towards respect for opposing views in sport. In this study, Gülle (2015) determined that the Hate Towards Opponent sub-dimension consists of items 1, 2, 3, 4, 5 and 10, and the Respect Towards Opponent sub-dimension consists of items 6, 7, 8, 9, 11, 12, 13, 14 and 15, and determined the total internal consistency coefficient of the scale as 0.80.

Statistical Analysis of Data

The data were analyzed using SPSS 25.00 software. Skewness and kurtosis values were examined for normal distribution control and since these values were found to be between -1.5 and +1.5, it was concluded that the data were suitable for normal distribution (Tabachnick & Fidell, 2013). Due to the homogeneous distribution of the data, Independent Samples T Test was applied to compare two independent groups and ANOVA test was applied to compare more than two groups. Tukey test was used to determine the source of the differences between the groups. Descriptive statistics such as standard deviation, frequency and percentage were also used to analyze the data.

Findings

Table 2. Descriptive statistics of respect for opposing opinions and self-control scores in sports of fans participating in the research

Sub-Dimensions	N	Min	Max	x̄	Sd
Respect for the Opponent	139	11.00	45.00	31.38	6.96
Hatred towards the Opponent	139	6.00	30.00	15.94	5.26

When the average score of the participating fans in the sub-dimension towards the opponent was examined, it was found that it was 31.38 ±6.96, while the sub-dimension of respect towards the opponent was 15.94 ±5.26.

Table 3. Independent t-test results of the respect for opposing opinions and self-control scores of the fans participating in the research

Participation in Recreational Activities		N	x̄	Sd	T	P
Respect for the Opponent	Yes	65	32.24	7.86	1,367	,174
	No	74	30.63	6.00		
Participation in Recreational Activities		**N**	**X**	**SS**	**T**	**P**
Hatred towards the Opponent	Yes	65	14.49	4.94	-3,137	**,002**
	No	74	17.21	5.24		
Use of Licensed Products by Fans		**N**	**X**	**SS**	**T**	**P**
Respect for the Opponent	Yes	80	30.52	7.09	-1,716	,088
	No	59	32.55	6.63		
Use of Licensed Products by Fans		**N**	**X**	**SS**	**T**	**P**
Hatred towards the Opponent	Yes	80	16.72	4.95	2,063	**,041**
	No	59	14.88	5.53		

*p<0.05

When Table 3. is examined, it is found that there is no significant difference in the sub-dimension of respect for the opponent according to the participation status of the individuals participating in the research in recreational activities (p>.05). However, a significant difference was found in the sub-dimension of hatred towards the opponent in the case of participation in recreational activities (p=0.002, p<.05). In this study, it was found that individuals who do not participate in recreational activities have higher scores of hatred towards their opponents than individuals who participate in recreational activities. There is no significant difference in the rivals sub-dimension according to the fans' use of licensed products (p>.05). There is a significant difference in the sub-dimension of hatred towards the competitor according to the use of licensed products (p=0.041, p<.05). In this research, it was concluded that the use of licensed products by fans increases their feelings of hatred towards the opposing team.

Table 4. Varıance (ANOVA) analysis results of respect for opposing opinion and self-control scores of ındividuals participating in the research according to age and educational status

Age Status		N	x̄	Sd	F	P	TUKEY
Respect for the Opponent	18-24	58	30.68	6.60	1,864	,159	
	24-30	59	32.66	6.83			
	31 and above	22	29.81	7.86			
Hatred towards the Opponent	18-24	58	16.70	4.89	1,296	,277	
	24-30	59	15.64	5.19			
	31 and above	22	14.72	6.29			
Educational Status		**N**	**X**	**Ss**	**F**	**P**	**TUKEY**
Respect for the Opponent	Middle school [a]	12	24.83	6.30	7,118	**,001**	**A-b,**
	High School [b]	76	31.40	6.68			
	University [c]	51	32.90	6.71			
Hatred towards the Opponent	Middle school [a]	12	20.33	4.45	7,460	**,001**	**A-b,**
	High School [b]	76	16.34	5.10			
	University [c]	51	14.31	5.05			

When the respect and hatred subscale scores of the fans participating in the research were examined, it was found that there was no significant difference in the age variable (p>.05). However, when education status was examined, it was found that there was a significant difference in both the respect for the opponent (p=0.001, p<.05) and the hatred towards the opponent (p=0.001, p<.05) sub-dimension. In the Tukey test, which was conducted to find out which groups caused the significant difference in these two sub-dimensions, it was found that the average scores of the high school and university graduate fans who participated in the research in the education status in the respect towards the opponent sub-dimension were higher than the average scores of the secondary school graduate fans who participated in the research. When looking at the sub-dimension of hatred towards the opponent, it was found that the average scores of the fans who were secondary school graduates were higher than the fans who were high school and university graduates.

Table 5. Variance (ANOVA) analysis results of respect for opposing opinion and self-control scores according to the team supported by the fans participating in the research

The Team Fans Support		N	X	SS	F	P
Respect for the Opponent	Galatasaray	49	31.32	6.28	,030	,970
	Fenerbahçe	62	31.30	7.62		
	Beşiktaş	28	31.67	6.74		
Hatred towards the Opponent	Galatasaray	49	15.28	4.86	,733	,482
	Fenerbahçe	62	16.09	5.62		
	Beşiktaş	28	16.75	5.18		

When Table 5 is analyzed, no significant difference was found in the sub-dimensions of respect for the opponent and hatred towards the opponent (p>.05). However, in our research, it was found that the average scores of the fans who support Beşiktaş in respect for the opponent and hatred towards the opponent were higher than the fans who support other teams.

Discussion

It was found that there was no significant difference in the respect for the opponent sub-dimension according to the participation of the fans in recreational activities. However, it was found that there was a significant difference in the hatred towards the opponent sub-dimension according to the participation of the fans in recreational activities. In this study, it was found that the level of hatred towards the opponent was higher in fans who did not participate in recreational activities than in fans who participated in recreational activities. When the studies on the subject were examined, it was seen that there were studies finding that participation in recreational activities affected the hatred towards the opponent (Havard et al., 2018; Dalakas and Melankon, 2012). It has been reported that participation in recreational activities generally reduces people's stress levels (Altuntaş et al., 2022; Bedir, 2016), increases social ties (Emir, 2012; Gümüşboğa, 2023) and improves general mood (Akgönül et al., 2023). These effects can help reduce negative emotions such as hatred, anger and intolerance. In our study, it was concluded that fans who did not participate in recreational activities had higher average scores of hatred towards the opponent than fans who participated in recreational activities, and that the effect of not participating in recreational activities was effective in achieving this result.

No significant difference was found in the mean scores of the sub-dimension of respect for the opponent according to the fans' licensed product usage. When the sub-dimension of hatred towards the opponent was examined according to the fans' licensed product usage, a significant difference was found. In this study, it can be said that the fans who use licensed products have higher hate scores than the fans who do not use licensed products. Factors such as the fans' level of loyalty to their teams, their sense of identity, and the social dynamics created by competition may be responsible for this result. In a study, it was found that there is a statistically significant relationship between the fans' intention to purchase licensed sports team products and their hatred towards their arch-rival teams and their love for their own teams (Özsoy and Karlı, 2022). When the studies conducted on the subject are examined, it is stated that the tendency of the fans to purchase licensed products of the team they support increases as their love for their own team and their hatred towards the opposing team increases (Heere and Dickson 2008; Apostolopoulou et al., 2012; Çiftyıldız, 2015). When the studies on the subject are examined, it is seen that the use of licensed products affects the fans' hate scores towards the opponent and that it is important to address and research the subject in depth.

It was found that there was no significant difference in the mean scores of the fans in the sub-dimensions of respect for the opponent and hatred for the opponent according to the age variable. However, it can be said that the hate scores in the sub-dimension of hatred for the opponent decreased as age increased. Göksel and Kul (2023) found in their study that the level of hatred for the opponents of people aged 41 and over was lower than in other age groups, while the level of respect for the opponents was higher in this age group than in all other age groups. In a study conducted by Roversi (1991) on Italian football fans, it was determined that young fans showed more hatred and aggression towards the opposing teams. Demir and Talimciler (2014) examined football and hate speech on social media. In their study, it was emphasized that young individuals use social media more intensively, hateful articles and images are frequently shared, and such content can reflect on daily life and become a social problem. Although there was no significant difference in the age variable in this study, when the studies conducted are examined, it is thought that age is important for the sub-dimensions of respect for the opponent and hatred for the opponent.

It was found that there was a significant difference in the sub-dimension scores of respect for the opponent and hatred for the opponent of the fans participating in the study according to their educational status. In this study, it was found that respect for the opponent increased with the increase in the level of education, while hatred for the opponent increased with the decrease in the level of education. Aycan et al. (2009) stated in their study with football fans that as the level of education decreased, interest in football increased and accordingly, the level of identification with the team and hatred for the opposing team increased. This result is parallel to our study. Topal et al. (2021), on the other hand, in their study titled "Examining the effect of high school and university students' identification levels with the team they support on respect for opposing views in sports", found that educational status had no effect on respect for opposing views in sports and identification in sports. However, the fact that there was a significant difference in both the sub-dimension of respect for the opponent and the sub-dimension of hatred for the opponent in our study reveals that educational status is important in terms of respect for opposing views and self-control in sports.

It was found that there was no significant difference in the sub-dimensions of hatred towards the opponent and respect towards the opponent according to the team the fans support.

Conclusion and Recommendations

As a result of the research, it was seen that there was a significant difference between the points of hatred towards opponents of fans who do not participate in recreational activities and the points of hatred towards opponents of fans who use licensed products. In order to improve this situation, programs should be organized to increase the participation of fans in recreational activities and awareness-raising activities should be carried out to encourage the use of licensed products. It was observed that there was a significant difference in the sub-divisions of respect for opponents and hatred towards opponents according to the level of education of the fans. In order to balance this difference, events, seminars and social responsibility projects emphasizing the ethical values and tolerance of sports should be implemented for fans with low education levels. It is seen that as the level of education increases, respect towards opponents increases, and as the level of education decreases, the hatred of fans towards opponents increases. Informative and educational activities should be organized for fans in order to improve the level of education in the sports environment; clubs should take the lead in this regard with social responsibility projects.

**This study was presented as an oral presentation at the 10th International Science Culture and Sports Congress.*

REFERENCES

Akbal, U. (2014). Partisanship, politics and ideology. Bigi University, Cultural Studies Master's Program, Master's Thesis, Istanbul.

Akgönül, E. K., Mihriay, M., Bozkurt, Ç., & Bayansalduz, M. (2023). Examination of recreation benefit level in adult ındividuals participating in recreational activities. Mediterranean Journal of Sports Sciences, 6(1-Special Issue of the 100th Anniversary of the Republic), 113-124.

Altuntaş, S. B., Başaran, Z., & Çakmak, G. (2022). Examination of coronavirus 19 phobia, perceived stress and trait anxiety levels of individuals who participate and do not participate in recreational activities. International Bozok Sports Sciences Journal, 3(1), 51-61.

Apostolopoulou, A., Papadimitriou, D., Synowka, D., & Clark, J. S. (2012). Consumption and meanings of team licensed merchandise. International Journal of Sport Management and Marketing, 12(1-2), 93-110. doi: 10.1504/IJSMM.2012.051266.

Arıkan, A. N., & Yazıcı, N. A. (2022). Examining athletes' commitment levels: a cross-sectional analysis on team sports. Mediterranean Journal of Sports Sciences, 5 (Special Issue 2), 738-748.

Aycan, A., Polat, E., & Uçan, Y. (2009). Investigating the relationship between team identification level and variables affecting the decision to attend professional football matches as a spectator. SPORTMETRE Journal of Physical Education and Sports Sciences, 7(4), 169-174.https://doi.org/10.1501/Sporm_0000000167.

Baumeister, R. F. & Vohs, K. D. (2007). "Self-regulation, ego depletion, and motivation". Social and Personality Psychology Compass, 1: 1-14.

Baumeister, R. F., Bratslavsky, E., Muraven, M. & Tice, D. M. (1998). "Ego depletion: ıs the active self a limited resource?". Journal of Personality and Social Psychology, 74(5): 1252-1265.

Bedir, F. (2016). Examining the role of recreational activities in overcoming stress. Master's Thesis. Social Sciences Institute. Ataturk University. Erzurum.

Çakmak, G., Tapşın, F. O., & Tapşın, F. O. (2021). Sakaryaspor fans' level of ıdentification with the team and their perceptions of the team ımage. Sportive View: Journal of Sports and Educational Sciences, 8(3), 374-390.

Çiftyıldız, S. (2015). An application to examine the relationships between team identification, emotional brand loyalty and purchase intention in the context of teams' licensed products. Electronic Journal of Social Sciences, 14(53), 232-241. doi: 10.17755/esosder.52015.

Dalakas, V., & Phillips Melancon, J. (2012). Fan identification, schadenfreude toward hated rivals, and the mediating effects of ımportance of winning ındex (IWIN). Journal of Services Marketing, 26(1), 51-59.

Demir, M., & Talimciler, A. (2014). Football and hate speech on social media. International Refereed Journal of Communication and Literary Studies, 2(5), 249-279.

Dilbaz E, and Karagün E. (2014). Factors affecting being a spectator in competitions and the level of identification with the team: a research on Kocaeli University students. E-Journal of New World Sciences Academy, p. (9)2, 22-31.

Emir, E. (2012). Determining the obstacles to participation in recreational activities: The

example of university students. Master's Thesis, Karadeniz Technical University, Institute of Educational Sciences, Trabzon.

Göksel, A. G., and Kul, O. (2023). Examining football fans' levels of team identification and respect for opposing views. Journal of Sports Sciences Research, 8(1), 1-16.9.

Gülle, M. (2018). Respect for opposing views and self-control scale in sports: validity and reliability study. Adıyaman University Social Sciences Institute Journal (29), 262-279. https://doi.org/10.14520/adyusbd.433780.

Gümüşboğa, İ. (2023). Recreational Activities and Social Capital. Different Approaches in Sports Sciences, 95.

Havard, C. T., Wann, D. L., & Grieve, F. G. (2018). Rivalry versus hate: Measuring the influence of promotional titles and logos on fan rival perceptions. Journal of Applied Sport Management, 10(2), 5.

Heere, B., & Dickson, G. (2008). Measuring attitudinal loyalty: Separating the terms of affective commitment and attitudinal loyalty. Journal of Sport Management, 22(2), 227-239.

Özsoy, A., & Karlı, Ü. (2022). Validity and reliability study of sports fan love and hate scale and sports team licensed product purchase intention scale. CBU Journal of Physical Education and Sports Sciences, 17(1), 42-57.

Polat, E., Sönmezoğlu, U., Yıldız, K., & Çoknaz, D. (2019). Determining the team image, team loyalty and team identification levels of football fans. International Journal of Sport Exercise and Training Sciences-IJSETS, 5(3), 143-153.

Ridder, D. T. D., Lensvelt-Mulders, G., Finkenauer, C., Stok, F. M. & Baumeister, R. F. (2012). "Taking stock of self-control: a meta-analysis of how trait self-control relates to a wide range of behaviors". Personality and Social Psychology Review, 16(1), 76-99.

Roversi, A. (1991). Football violence in Italy. International Review for the Sociology of Sport, 26(4), 311-331. https://doi.org/10.1177/101269029102600406.

Sinha, S. P., Nayyar, P. & Sinha, P. (2002)." Social support and self control as variables in attitude toward life and perceived control among older people in ındia". The Journal of Social Psychology, 142 (4), 527–540.

Sunay, H., & Seda Saracaloğlu, A. (2003). Expectations of Turkish athletes from sports and factors that direct them to sports. Spormetre Journal of Physical Education and Sports Sciences, 1(1), 43-48.

Tabachnick, B. G., & Fidell, L. S. (2013). Using Multivariate Statistics. Boston: Pearson.

Tanriverdi, H. (2012). Spor ahlaki ve şiddet. The Journal of Academic Social Science Studies. Publication of Association Esprit, Société et Rencontre Strasbourg/FRANCE, 5(8), 1071-1093.

Topal, A., Yıldız, O., Semerci, A., & Yıldız, M. (2021). Investigation of the effect of high school and university students' identification levels with their favorite teams on their respect for opposing views in sports. Journal of Physical Education and Sports Sciences, 23(3), 1-14.

Üçüncüoğlu, M. (2018). E-sports as a sportive reflection of the information society and its interaction with modern sports. Master's Thesis. Istanbul University, Cerrahpaşa Graduate Education Institute, Istanbul.

International Journal of Sport Culture and Science
December 2024 : 12(4)
ISSN : 2148-1148
Doi : 10.14486/IntJSCS.2024.725

Examining Students' School Climate and Academic Motivation Levels with Various Demographic Variables

Kültiğin Acar[1], Alptuğ Soyer[2]
[1] Balıkesir University, Graduate School of Health Sciences, Bigadiç/Balıkesir, Türkiye
https://orcid.org/0000-0002-1771-6262
[2] Niğde Ömer Halisdemir University, Sport Science Faculty, Bor/Niğde, Türkiye
https://orcid.org/0000-0002-7149-6897

Email: kultiginacar3@gmail.com , alptug.soyer1@gmail.com

*Type: **Research** Article (Received: 10.11.2024– Accepted: 30.11.2024)*

Abstract

The aim of this research is to examine the effects of academic motivation and school climate on students in the Faculty of Sports Sciences, considering various demographic variables. The study encompasses processes in which two scales were evaluated to determine the levels of academic motivation and school climate among young individuals. The research sample consists of 519 students, with 278 males (53.6%) and 241 females (46.4%) currently enrolled in sports sciences. The data collection tools used in the study include the School Climate Scale and the Academic Motivation Scale. A relational survey model was employed in the research. Due to the normal distribution of the data sets, parametric tests were used in the analysis process. According to the score range determined in the Academic Motivation Scale, participants were found to have a moderate level of academic motivation. However, the statistical scores obtained from the School Climate Scale revealed that participants had a negative perception of school climate. Additionally, it was determined that academic motivation and school climate levels did not differ based on the gender variable of the participants, nor did they differ according to class level. Another finding of the study was that married individuals had lower levels of academic motivation and school climate compared to single individuals. A moderate relationship was found between the values obtained from the Academic Motivation and School Climate scales. In conclusion, it is recommended that students' academic and athletic obligations be balanced to ensure the harmonious development of school climate and academic motivation. It is believed that the findings of this study will provide valuable insights for future research in this area.

Keywords: Organization, Organizational Climate, School Climate, Motivation, Academic Motivation

Introduction

The presence of academically successful, qualified, and well-equipped individuals can be considered a significant force in the development of a society. Academic failures experienced by individuals may lead them to engage in various behaviors, such as dropping out of school. This situation can cause individuals to lose self-confidence and experience a sense of uselessness (Yıldırım, 2000). There are numerous factors, both positive and negative, that influence academic success (Razon, 1987). Among these factors, the family plays a significant role; however, it is not limited to just the family. Various variables, such as students' social and emotional development levels, study habits, and motivation, also impact academic success (Razon, 1987; Kasatura, 1990; Atılgan 1998; Şerefli, 2003; Balkıs et al., 2006; Yapıcı & Keskin, 2008; Keskin & Sezgin, 2009; Eymur & Geban, 2011). Failure is inevitable when motivating factors are insufficient (Soyer et al., 2010).

When viewed in general, it is impossible to overlook the significant impact of motivation on academic success. In this context, one of the most important factors that play a role in individuals' attainment of academic success is their attitudes towards learning (Güngör and Yenel, 2020). Therefore, studies conducted in this area have demonstrated that motivation has a substantial effect on academic achievement (Şevik, 2014). A review of the literature reveals that the concepts of academic success and school climate are often considered inseparable (Bahçetepe, 2013; Ma & Klinger, 2000). Consequently, the concept of motivation frequently arises in organizational settings. Motivation refers to the efforts individuals make within an organization to achieve specific goals. An organization is a system of norms, values, behaviors, and beliefs that influence the behavior of individuals within the organization (Dinçer, 1998). An organization also provides a structure, a shared language, and similar approaches to problem-solving within the organization (Atay, 2001). Just as each individual has a unique structure, organizations also have their own distinct structure that sets them apart from others. This distinct structure differentiates the organization and gives it a specific culture. Moreover, individuals who embrace and internalize this culture enhance their morale while working harmoniously with their colleagues within the organization, leading to a significant increase in productivity (Berberoğlu & Baraz, 1999). Consequently, due to changing cultural differences, various definitions of organizations have emerged. Barnard (1994) defined an organization as "a formation of the activities or forces of two or more individuals coordinated according to their own desires." Schein (1970) described an organization as "efforts made by individuals, who come together with specific objectives, within a hierarchy with a high sense of responsibility." Etzioni (1964, as cited in Güçlü, 2003) defined it as "units created with specific objectives in mind and aimed at achieving these objectives." In this context, each organization reflects its own climate based on its structure and culture.

The term "climate" originates from the Greek language. This term not only encompasses natural phenomena such as weather events or pressure but also describes how individuals within an organization perceive and interpret their surroundings, thus carrying psychological significance (Gilmer, 1971). Gellerman (1960) addressed the concept of psychological climate as industrial psychology. Can (1996) emphasized the notable connection between an organization's psychological structure and organizational climate. In other words, the concept of Organizational Climate, intertwined with terms such as environment, atmosphere, and

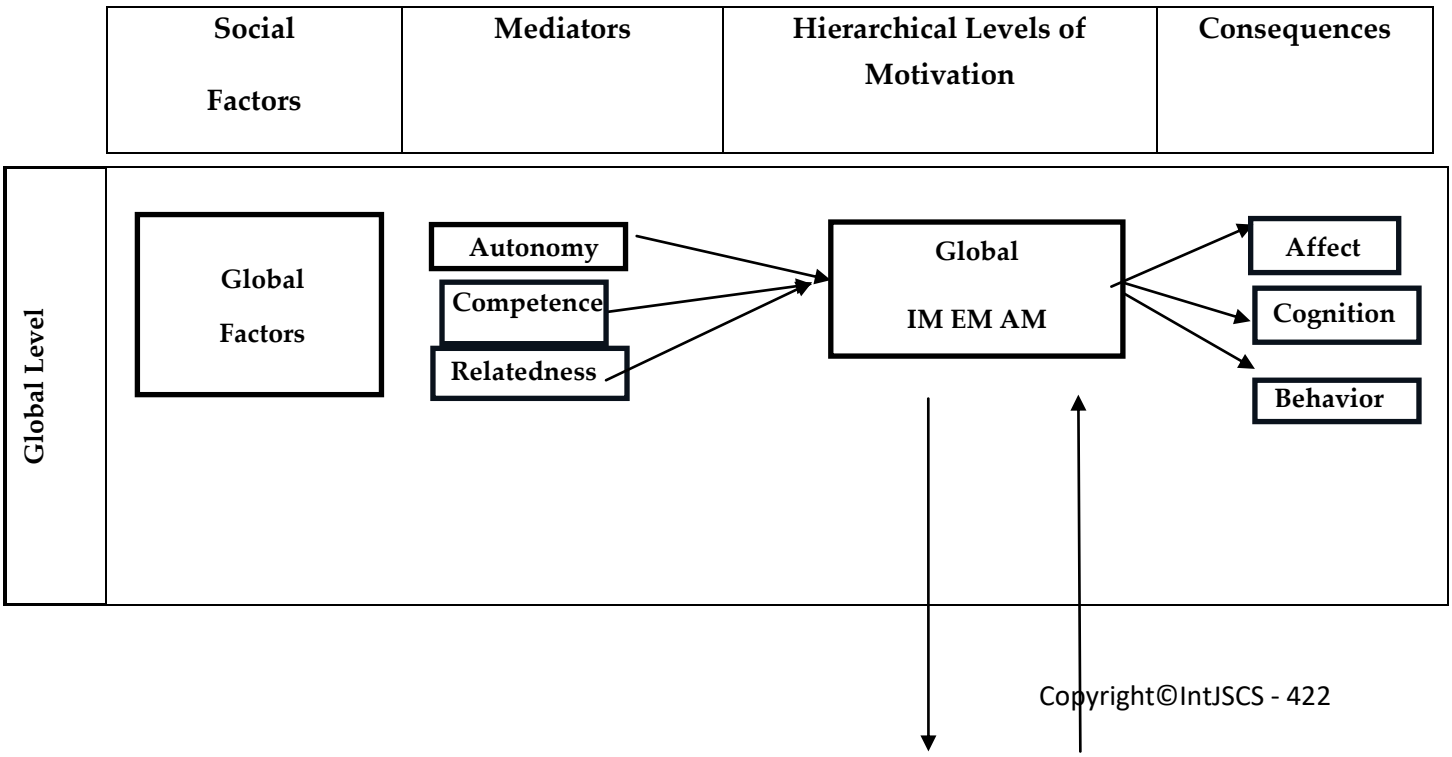
emotion, reflects the internal structure and quality of the organization, particularly the emotional states of individuals (Tagiuri, 1968).

Cherrington (1994) defines organizational climate as “the set of structures and qualities that distinguish an organization from others.” He further elaborates by stating, “this definition is often likened to the concept of personality, as organizational climate is frequently referred to as the personality of the organization.” Halpin emphasizes this by stating, "Just as personality is crucial for individuals, climate is equally important for organizations." Organizational climate is a psychological structure that encompasses the attributes that constitute the organization, differentiate it from others, maintain a stable and continuous structure within the organization, and influence, as well as are influenced by, the attitudes and behaviors of the individuals within the organization. Although it is intangible, it is perceived and valued by the members of the organization and encompasses all these characteristics (Karcıoğlu, 2001). Consequently, as a result of these definitions and concepts, organizational climate is not confined solely to the organization but is also applicable in public institutions, schools, and many other domains. Since schools possess their own management style and hierarchy, they inherently embody their own climate. School climate refers to the collective values and beliefs that determine the attitudes towards maintaining unity, solidarity, and continuity among individuals within the school (Welsh, 2000). For a school to achieve its established objectives and to build a structure unique to itself, it is necessary to adopt a healthy and positive organizational climate among individuals (Ellis, 1988; Özdemir et al., 2010). The concept of school climate emerged as the term organizational climate found its place within the field of education. It forms a structure that determines the attitudes and behaviors of individuals within the school, fosters a shared mindset among them, and expresses the unity among members of the school (Cohen et al., 2009; Göcen & Kaya, 2014; Hoy & Miskel, 2015). School climate is an atmosphere that not only embodies the core characteristics of school life but also reflects the values and goals of the school. In this context, it also encompasses organizational structures and activities (Clifford et al., 2012). Studies indicate that a positive school climate provides conducive learning conditions for students, enhances academic achievement, and positively contributes to the commitment of staff members to the organization, leading to increased job satisfaction (Macneil, Prater & Busch, 2009). Additionally, school climate boosts satisfaction through positive teacher-student relationships and unity among students, further contributing to their academic success (Fraser, 1986). However, the school climate does not always foster a positive atmosphere; at times, a negative climate may prevail. In such instances, collaboration and solidarity may be lacking within the institution. A negative school climate can lead to employees feeling undervalued and perpetually engaged in a competitive environment. In schools where administrators do not uphold the school's objectives and where a negative school climate persists, the behaviors exhibited by them may fail to support the developmental processes of both teachers and students. Teachers in such environments may perform their duties under certain conditions without harboring any emotional connection towards their colleagues, students, or the school itself (Hoy, Tarter & Kottkamp, 1991). Furthermore, it has been observed that teachers, due to a lack of personal development concerns, do not prioritize their students' academic success, resulting in low achievement levels (Hoy & Miskel, 2013). Consequently, in environments where the climate is unhealthy, there is a tendency towards a more rigid, strict, and oppressive structure, where individuals are not accorded sufficient importance and value. Such environments are characterized by limited communication, low participation in activities, and minimal interpersonal interaction. Due to the inability of administrators to effectively demonstrate various leadership styles, individuals are subjected to an oppressive working environment that lacks job satisfaction and enjoyment (Varol, 1989). In contrast to a negative

structure, the existence of a positive school climate fosters positive human relationships, enabling individuals to feel valued and leading to more effective collaboration in achieving the school's objectives. As a result, the concept of school climate becomes more prominent, as it establishes a sense of order within the school (Çalık et al., 2011).

School climate has become a concept that significantly impacts students' academic success and learning skills in education (Loukas, 2007). When organizational climate is perceived positively, employees interact within the organization with a sense of trust. The climate within schools is directly related to students' academic achievement. Moreover, organizational climate greatly influences the behaviors, emotions, and attitudes of employees (Gök, 2009; Halis & Uğurlu, 2008; Çelik, 2016). The effect of school climate on students' emotions and thoughts is undeniable, and it has been demonstrated through various studies that school climate encompasses self-esteem as well as various relationships (Cairns, 1987; Way, Reddy & Rhodes, 2007). Therefore, a positive school climate not only contributes to the personal development of students but also plays a crucial role in enhancing the overall well-being of teachers and other staff members (UNESCO, 2017). Students' perceptions and experiences of the school climate contribute to their behaviors, emotions, and academic achievements (Wilson, 2004). The successful implementation and positivity of the school climate offer numerous benefits, including influencing behaviors. Since the primary goal of education is to achieve the highest level of success in line with students' predetermined goals, it is vital for students to continue their educational lives in a positive climate. Research has shown that school climate reflects the interaction between students' academic achievements (Bektaş & Nalçacı, 2013), their attachment to the school (İhtiyaroğlu & Demirbolat, 2016), and their satisfaction (Özdemir, Sezgin, Şirin, Karip & Erkan, 2010). In environments with such positive climates, trust among colleagues will increase, and there will be a heightened sense of responsibility. At the same time, more sincere relationships will be developed, leading to higher levels of morale and motivation (Şişman, 2002). Teachers have successfully supported students' development by challenging them under more difficult conditions (Özdemir, 2002). In schools where the school climate is maintained positively, senior administrators have specific expectations from students and teachers. To meet these expectations, administrators provide teachers with all the necessary resources and opportunities. Furthermore, when any adverse effect arises, solidarity and unity are promoted among teachers and students, fostering a supportive attitude (Hoy et al., 1998). A positive school climate not only contributes to individuals' personal development but also has a significant impact on the academic motivation of teachers and university students' perceptions within the school climate (Terzi & Uyangör, 2017). The term motivation, which is present in many aspects of our lives, is derived from the Latin word "movere," meaning "to move." It is generally described as the power source that supports sustaining an activity that has been initiated and completing it (Schunk, Meece & Pintrich, 2013). In Turkish, the word has been defined by the Turkish Language Association as "incentive" and "motivation" (TDK, 2011). Motivation is a crucial factor that can influence individuals' behaviors in various fields. In this context, academic achievement is one of the areas where motivation can be exemplified. In their academic careers, students are required to exhibit various behaviors, such as regular school attendance, showing interest in lessons, taking responsibility, and completing homework. Academic motivation, known as the most critical element in fulfilling these tasks and responsibilities, serves as a reminder to students and emerges as a significant factor determining their academic success (Wentzel & Wigfield, 2007). Academic motivation is a concept that represents the necessary power within the academic process (Karataş & Erden, 2012). It holds great importance in education, and in this context, low motivation among students emerges as a structure that affects and hinders the tasks to be carried out (Grunschel et al., 2016).

Motivation continues to have an impact as a crucial driving force from the beginning to the end of students' educational lives (Bacanlı & Şahinkaya, 2011). Many researchers who have studied this area assert that motivation affects many fields but is particularly rooted in academic skills and educational life in the context of academic motivation (Uyulgan & Akkuzu, 2014). It has been shown that students' interest and attachment to school throughout their educational lives influence their academic success. Deci and Ryan (1985) have revealed that academic motivation is closely linked to the efforts students put forth with curiosity throughout their educational lives. Therefore, the interest and attention students demonstrate toward their school during their educational journey are among the most valuable factors contributing to their academic success, with motivation being another critical element (Uyulgan & Akkuzu, 2014). Academic motivation emerges as a driving force that encourages students to participate in the learning process or motivates them to learn (Ryan & Deci, 2002). Academic motivation is generally categorized into two groups: intrinsic motivation and extrinsic motivation (Ryan & Deci, 2000). Intrinsic motivation has been conceptualized as an internal driving force that encourages an individual to engage in a particular activity out of curiosity, interest, or satisfaction (Deci, Cascio & Krusell, 1975). It is associated with other components such as research, learning goals, and intrinsic intellectuality (Vallerand, 1992). On the other hand, extrinsic motivation appears as the effort exerted to earn certain rewards or avoid punishments in order to engage in a particular activity (Dev, 1997). Academic motivation is considered one of the most effective driving forces in student learning (Tucker et al., 2002). Therefore, academic motivation is regarded as the sole factor that guarantees students' academic success (Griffin et al., 2012). Among the many factors that contribute to students' performance and academic achievement, academic motivation is considered one of the most important elements (Tucker et al., 2002). In this context, it plays a crucial role in students' participation and active involvement (Pavlou, 2006), learning autonomy, and academic performance (Rana, Mahmood & Reid, 2015). More importantly, intrinsic academic motivation has a positive significance in reducing stress and depression among undergraduate students, which in turn helps create a positive atmosphere in the classroom free from interpersonal conflicts (Huang, Lv & Wu, 2016). Vallerand's motivation model presents a different perspective on academic motivation.



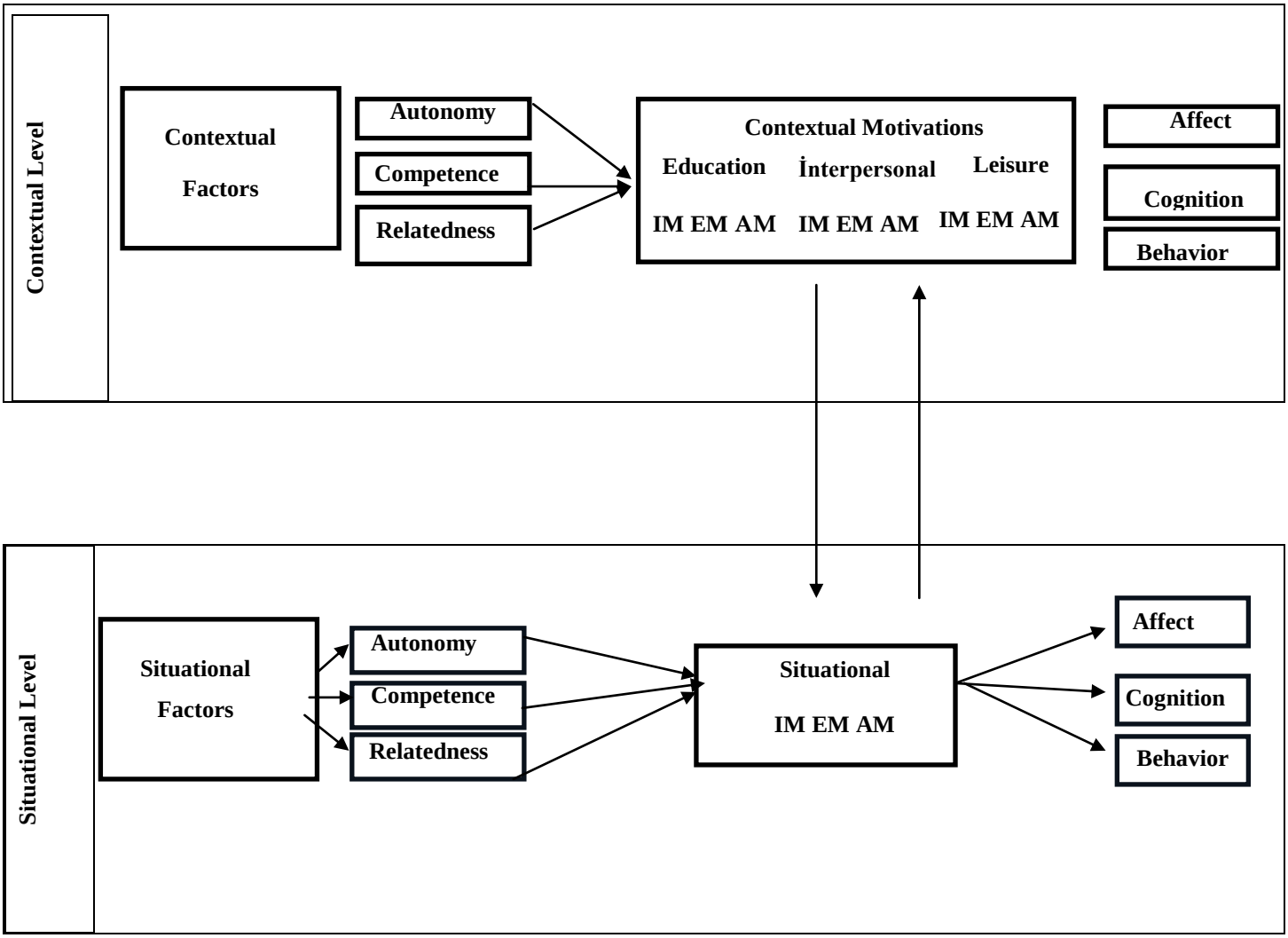


Figure 1: The Hierarchical Model of Motivation (Vallerand, 1997)

IM: Represents Internal Motivation, EM: Reflects External Motivation, and AM: Corresponds to Amotivation.

To distinguish between short-term and long-term motivation, the Self-Determination Theory (SDT) can be utilized as a role model. SDT emerges as a comprehensive motivation theory that aids individuals in self-motivation and guiding their behaviors. This theory allows for the examination of individuals' internal and external motivations, enabling an analysis of their effects on quality of life, success, and overall well-being. Consequently, Vallerand mapped SDT into a hierarchical model of motivation, analyzing motivation across three different levels (Guay, Mageau, & Vallerand, 2003; Vallerand, 1997; Vallerand, 2000). As illustrated in the figure, IM represents Internal Motivation, EM represents External Motivation, and AM represents Amotivation.

The global level is highly abstract as it relates to a person's motivational orientation due to personal identity. The contextual level is less abstract because it defines an individual's perceived relationship with other tangible entities, such as organizations like schools. The situational level, which is the focus of this study, is more specific compared to the global and

contextual levels. It reflects an individual's motivational response to a particular activity. In an educational setting, students' emotions towards school and learning influence their approach to learning environments and tasks. In this context, in-class learning activities also affect students' overall approach to learning (Stolk, Jacobs, Girard, & Pudvan, 2018). Therefore, academic motivation plays a crucial role in shaping students' cognitive, emotional, and behavioral patterns, both directly and through their personal goal orientations (Church et al., 2001; Daniels et al., 2014; Kaplan & Maehr, 2007). Generally, academic motivation is explained as "the provision of the necessary motivation for academic success" (Bozanoğlu, 2004). Ultimately, the aim of this study is to examine the academic motivation and perceptions of school climate among students of the Faculty of Sports Sciences in relation to various demographic variables. The significance of this research lies in its findings, which highlight that fostering a positive school climate and supporting high levels of academic motivation can contribute to students' academic success and learning processes, while also helping them balance their academic and athletic responsibilities, thereby enhancing their overall performance.

Material and Method

Research Model

This study aimed to investigate the effects of academic motivation and school climate on the educational experiences of students enrolled in the Faculty of Sports Sciences, considering different variables. The research was conducted using a descriptive approach and employed a correlational survey model. This model is used to identify relationships between two or more variables and to obtain clues within the framework of cause-and-effect relationships (Creswell & Creswell, 2018).

Research group

The study group consisted of 519 participants, including 241 (46.4%) female and 278 (53.6%) male students, who were enrolled in the Faculty of Sports Sciences at a public university offering undergraduate sports education. Of these participants, 164 (31.6%) were studying coaching education, 159 (30.6%) were in physical education and sports teaching, 187 (36.0%) were in sports management, and 9 (1.7%) were studying recreation. The participants were distributed across different academic years as follows: 114 (22.0%) were first-year students, 114 (22.0%) were second-year students, 107 (20.6%) were third-year students, and 184 (35.5%) were fourth-year students. The average age of the participants was identified as 23.00.

Data Collection Tools

The data collection tools used in this study included a demographic information form, the Academic Motivation Scale, and the School Climate Scale. The data were collected on a voluntary basis from the participants using these scales.

Academic Motivation Scale

The Academic Intrinsic Motivation Scale, developed by Shia (1998), is a 28-item scale with a 7-point Likert-type format. The scale includes items related to needs, fear, competence, mastery, peer, and power motivations. The reliability of the scale was calculated through internal consistency, and it was found to be highly reliable. The internal consistency coefficient of the Academic Intrinsic Motivation Scale ranges from .70 to .90. In the final study, this coefficient (Cronbach's alpha) was .90. Only one reverse item (item 18: "I am not affected if someone gets better grades than me in class.") was identified and analyzed after

being reversed. The final version of the scale, adapted into Turkish and studied by Coşkun (2019), has been presented.

School Climate Scale

The School Climate Scale, developed by Terzi (2015), consists of 17 items and uses a 5-point Likert scale. As a result of the Exploratory Factor Analysis (EFA), the total variance explained by the scale was found to be 56%. The factor loadings for the three dimensions of the scale range from .46 to .76, while the item-total correlations vary between .34 and. 60. The reliability analysis of the scale was conducted by the researcher using Cronbach's Alpha. For the first dimension, school attachment, the alpha value was found to be α = .75; for the second dimension, communication, α = .86; and for the third dimension, learning environment, α =.81. The overall reliability of the scale was calculated as α =.90. Although some adaptation studies measuring the school climate scale for primary and secondary school students exist, no school climate scale specifically designed for university students has been encountered.

The School Climate Scale for university students is a 5-point Likert-type scale rated as follows: 1—Never, 2—Rarely, 3—Sometimes, 4—Often, 5—Always. The arithmetic means of the scores obtained from the scale (at each dimension level or overall scale) indicate that means ranging from 1.00 to 2.60 reflect a negative (closed) climate, means ranging from 2.61 to 3.40 reflect a moderate (average) climate, and means ranging from 3.41 to 5.00 indicate a positive (open) climate.

Data Analysis

The data for the study, conducted during the fall and spring semesters of the 2023-2024 academic year, were collected from voluntary participants who were students in the Faculty of Sports Sciences. IBM SPSS Statistics 24 software was used to analyze the data. Descriptive statistical analyses were performed on the data related to demographic variables, the Academic Motivation Scale, and the School Climate Scale. The skewness and kurtosis values were found to be between +1.5 and -1.5, indicating that the data followed a normal distribution (Tabachnick & Fidell, 2013). Given the normal distribution of the data, independent samples t-tests, one-way ANOVA, and Pearson correlation tests were used for the parametric relational analyses.

Findings

Table 1. Participants' Mean Scale Scores for School Climate and Academic Motivation

Scales	N	Min	Max	x̄	S
Academic Motivation	519	1,00	4,39	2,02	,63
School Climate	519	1,00	4,06	1,95	,58

The mean total score of the participants from the Academic Motivation scale is (x̄=2.02). The total score they received from the school climate scale was determined as (x̄=1.95).

Table 2. T-Test Results of Mean Scores of Academic Motivation and School Climate Scales according to Gender Variable

Scales	Gender	N	x̄	S	sd	t	p

Academic Motivation	Male	278	1,96	,61	517	,561	,575
	Female	241	1,93	,55			
School Climate	Male	278	2,05	,63	506,3	1,01	,310
	Female	241	1,99	,63			

When the mean scores of the participants from the academic motivation and school climate scales were examined, it was determined that there was no statistically significant difference according to the gender variable (p>0.05).

Table 3. T-Test Results of the mean scores obtained from school climate and academic motivation scales according to marital status variable

Scales	Marital Status	N	x̄	S	sd	t	p
Academic Motivation	Married	32	1,78	,71	34,2	-2,01	,052
	Single	487	2,04	,63			
School Climate	Married	32	1,66	,58	35,2	-2,91	,006
	Single	487	1,97	,58			

Upon examining the data obtained from the School Climate Scale, a significant difference in favor of single individuals was identified between married and single individuals for the School Climate Scale (p<0.05).

Table 4. One Way Analysis of Variance Comparison Results of Mean Scores from Academic Motivation and School Climate Scales According to Department Variable (One Way-ANOVA)

Scales	Departments	N	x̄	Ss	VK	KT	Sd	KO	f	p
Academic Motivation	Sport Management	187	2,11	,70	B. Groups	2,8	3	,956	2,36	,070
	Training Education	164	1,98	,64	W. Groups	208,2	515	,404		
	Physical and Sports Education	159	1,99	,54	Total	211,1	518			
	Recreation	9	1,67	,56						
	Total	519	2,02	,63						
School Climate	Sport Management	187	2,01	,64	B. Groups	1,70	3	,567	1,64	,178
	Training Education	164	1,95	,58	W. Groups	177,5	515	,345		
	Physical and Sports Education	159	1,87	,49	Total	179,2	518			
	Recreation	9	2,00	,79						
	Total	519	1,95	,58						

In the comparative analysis of the participants' Academic motivation scale according to the department variable, it was determined that there was no statistically significant difference. (p>0.05).

Table 5. One-Way Variance Analysis Comparison Results of Students' School Climate Scale According to Department Variable (One Way-ANOVA)

Scales	Class	N	x̄	Ss	VK	KT	Sd	KO	f	p
Academic Motivation	1st grade	114	1,93	,67	B. Groups	1,5	3	0,501	1,2	,298

	2nd grade	114	2,08	,68	W. Groups	209,6	515	,407		
	3rd grade	107	2,05	,52	Total	211,1	518			
	4th grade	184	2,03	,64						
	Total	519	2,02	,63						
School Climate	1st grade	114	1,89	,60	B. Groups	2,5	3	,853	2,48	,060
	2nd grade	114	1,88	,57	W. Groups	176,6	515	,343		
	3rd grade	107	1,92	,56	Total	179,2	518			
	4th grade	184	2,04	,59						
	Total	519	1,95	,58						

Comparative analyzes made according to the department variable of the participants' school climate scale revealed that there was no statistically significant difference ($p>0.05$).

Table 6. T-Test Results of Mean Scores from Academic Motivation and School Climate Scales According to Sports Participation Variable

Scales	Participation in Sport	N	x̄	S	sd	t	p
Academic Motivation	Exist	452	2,01	,62	82,1	-894	,074
	Absent	67	2,10	,70			
School Climate	Exist	452	1,93	,57	82,7	-1,80	,374
	Absent	67	2,08	,64			

When the average scores obtained in line with the answers given by the participants to the academic motivation and school climate scales were examined, it was determined that there was no statistically significant difference according to the variable of participation in sports ($p>0.05$).

Table 7. T-Test Results of the Mean Scores of Academic Motivation and School Climate Scales According to the Variable of Being an Athlete in the Family

Scales	Athlete Status in Family	N	x̄	S	sd	t	p
Academic Motivation	Exist	134	1,91	,68	214	-2,2	,027
	Absent	385	2,06	,61			
School Climate	Exist	134	1,82	,61	217	-2,7	,006
	Absent	385	1,99	,57			

Upon examining the participants' mean scores from the Academic Motivation and School Climate scales, a significant difference in favor of non-athletes was identified.

Table 8. The Relationship Between Academic Motivation and School Climate Scale (Pearson Correlation)

		Academic Motivation	School Climate
Academic Motivation Scale	Pearson Correlation	1	,488**
	Sig. (2-tailed)		,000
	N	519	517
School Climate Scale	Pearson Correlation	,488**	1
	Sig. (2-tailed)	,000	
	N	519	519

**The correlation is significant at the 0.01 level (2-tailed).

A positive significant relationship of (,488**) was found between the Academic Motivation Scale and the School Climate Scale ($p<0.01$). **

Table 9. Regression Analysis Results on the Effect of Academic Motivation on School Climate

Variables		Standardize β	Standard Error	Critical Rate	p	R^2
School Climate	Academic Motivation	.48	.03	1.42	.000	.24

A statistically significant relationship between academic motivation and school climate has been identified (ß = .48, $p < .05$). Upon examining the R-squared value presented in the table, it can be stated that academic motivation explains 24% of the variance in school climate.

Discussion and Conclusion

This study aimed to examine the perceptions of academic motivation and school climate among students enrolled in the Faculty of Sports Sciences, considering various demographic variables. The findings revealed significant differences and relationships with respect to certain variables. Specifically, the average score on the academic motivation scale was identified as ($\bar{x}$ = 2.02), and the corresponding score on the school climate scale was ($\bar{x}$ = 1.95). This indicates that students' perceptions of the school climate are negative. The data obtained from the school climate scale suggests that students hold negative perceptions of the school environment, which could potentially impact their academic motivation. The findings related to students' academic motivation reveal that they exhibit a moderate level of desire and effort in achieving their academic goals. However, it should not be overlooked that this level of motivation, being less than optimal, might hinder students from maximizing their academic performance. Ultimately, the results indicate that while students are academically motivated, their levels of motivation are not particularly high.

When demographic variables were examined according to the sub-dimensions of the scales, no statistically significant difference was found in the perceptions of both the school climate scale and the academic motivation scale according to the gender variable. The correlation analysis indicated a positive significant relationship between the academic motivation scale and the school climate scale ($r = 0.488$, $p <0.01$). This suggests that higher academic

motivation among students is associated with more positive perceptions of the school climate. In the study conducted by Terzi (2015), it was found that, in terms of gender values among university students, there were significant differences in the perception of organizational climate, particularly in the communication and school commitment dimensions, in favor of female students. However, no significant differences were observed between genders regarding the learning environment. A high level of academic motivation among students is a desirable condition. The findings of this study are consistent with the research by Gömleksiz and Serhatlıoğlu (2013) on students' perceptions and opinions regarding their levels of academic motivation. Additionally, the findings related to school climate align with the study conducted by Terzi (2015) on university students' perceptions of school climate. Although there are studies conducted in different educational fields, there are studies in the literature that show similar results (Aka, 2014; Akman, 2010; Aydın, 2010; Karaman, 2011; Özdemir, Sezgin, Şirin, Karip & Erkan, 2010). Academic motivation, which plays an important role in the continuity of students' success in their educational lives, is a crucial factor affecting students' responsibilities, interests, and continuity in their educational journeys. School climate, on the other hand, plays a significant role in shaping students' emotional, physical, and social environments. The strong connection between school climate and academic achievement has been frequently emphasized in the literature (Yıldırım, 2000; Şevik, 2014; Bahçetepe, 2013; Ma & Klinger, 2000; Ellez, 2004; Madran, 2006; Acat ve Dereli, 2012). Upon reviewing the conducted studies, it has been supported that when students' motivation levels are high, there is an increase in success and the emergence of a positive school climate. In the study conducted by Çelik (2017), it was also concluded that in all studies on university students' perceptions of school climate, the perceptions of school climate were found to be at a moderate level, with a score range of 3.12.

The literature supports the relationship between academic motivation and school climate among students in the Faculty of Sport Sciences. Not only is a positive school climate associated with higher motivation among students, but it also plays a critical role in enhancing their academic success. Therefore, the findings suggest that improving students' perceptions of the school climate will enhance their academic motivation, which, in turn, contributes to their success. To determine the relationship between the independent and dependent variables, both correlation and regression analysis results were emphasized. The data demonstrate that academic motivation significantly contributes to students' perceptions of school climate. The R^2 value indicates that academic motivation explains 24% of the variance in school climate. This finding suggests that academic motivation is a key factor in understanding how students perceive their school environment. The data also highlights the important role that academic motivation plays in increasing students' commitment to their schools. Ultimately, the stronger and more solid students' commitment to their schools is, the greater their academic motivation will be. Simons et al. (1999) proposed that student-athletes experience higher levels of stress due to their responsibilities, which reduces the time they dedicate to academic work, particularly during exam periods. Therefore, some studies have shown that student-athletes who are overly committed to sports may have lower academic averages. When examining related studies (Filiz & Demirhan, 2018; Sevilmiş & Şirin, 2016; Çelenlioğlu, 2020; Terzi & Uyangör, 2017; Küçükosmanoğlu, 2015), Terzi and Uyangör's (2017) study found that students had high levels of school climate and motivation, whereas students in the Faculty of Sport Sciences exhibited lower levels. The findings of the present study are consistent with Küçükosmanoğlu's (2015) results, which indicated low motivation levels among students. The role of school climate and motivation is a significant factor in the sustainability of the academic lives of students in the Faculty of Sports Sciences. In this context, student-athletes face unique challenges in their academic lives, as they strive to

maintain both physical and mental balance. Students aiming to sustain a successful and exemplary athletic identity may encounter difficulties in making healthy decisions, implementing those decisions, and maintaining their motivation for success if they lack high motivation. Therefore, school climate plays a crucial role in the continuity of students' academic lives and the enhancement of their motivation. Without considering the perspectives of motivation and school climate, it is challenging to address these issues meaningfully. Hence, it is evident that academic motivation and perceptions of school climate serve as strong and encouraging decision-making mechanisms. Based on all the findings, it is recommended that programs be developed to balance students' academic and athletic responsibilities. In addition, providing various seminars aimed at enhancing academic motivation, strengthening academic counseling systems, and offering support programs such as career planning assistance could help improve the academic motivation and school climate perceptions of students in the Faculty of Sports Sciences.

**** The following text was prepared as part of the TÜBİTAK 2209 Project***
***** This research was produced from the summary paper presented at the ERPA International Congress on Education 2024.***

REFERENCES

Aka, F. N. (2014). *Okul iklimi ile öğretmen öz yeterliği ilişkisine yönelik öğretmen görüşleri* (Yayımlanmamış yüksek lisans tezi). Çanakkale On sekiz Mart Üniversitesi Eğitim Bilimleri Enstitüsü, Çanakkale.

Akman, Y. (2010). *İlköğretim ikinci kademe öğrencilerinin şiddet ve okul iklimi algıları arasındaki ilişki* (Yayımlanmamış yüksek lisans tezi). Gazi Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara.

Atay, K. (2001). Öğretmen yönetici ve denetmenlerin bakış açısından okul kültürü ve öğretmen verimliliğine etkisi. *Kuram ve Uygulamada Eğitim Yönetimi, 26*(26), 179-194.

Atilgan, M. (1998). *Üniversite öğrencilerinin ders çalışma alışkanlıkları ile akademik başarılarının karşılaştırılması* (Gaziantep Üniversitesi öğrencileri üzerine bir araştırma) (master's thesis, Sosyal Bilimler Enstitüsü).

Aydın, F. (2010). *Özel okullardaki okul ikliminin öğretmen ve öğrenci algılarına göre incelenmesi* (Yayımlanmamış yüksek lisans tezi). Yeditepe Üniversitesi Sosyal Bilimler Enstitüsü, İstanbul.

Bahçetepe, Ü., & Giorgetti, F. M. (2015). Akademik başarı ile okul iklimi arasındaki ilişki. *Istanbul Journal of Innovation in Education, 1*(3), 83-101.

Bakay, E., & Kalem, G. (2008). Ulusal araştırma raporu (Türkiye): Türk Eğitim Sistemi ve etkili okul göstergeleri projesi, PROject Based SCHOOL Management.

Balkis, M., Duru, E., Buluş, M., & Duru, S. (2006). Üniversite Öğrencilerinde Akademik Erteleme Eğiliminin Çeşitli değişkenler Açisindan İncelenmesi. *Ege Eğitim Dergisi, 7*(2), 57-73.

Barnard, C. (1994). *The Functions of Executive.* Cambridge: Harward University Press.

Berberoğlu, G., & Baraz, B. (1999). Tusaş Motor Sanayi A. Ş.'de örgüt kültürü araştırması. *Anadolu Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 14*(1-2), 29-52.

Bozanoğlu, İ. (2004). Akademik güdülenme ölçeği: Geliştirmesi, geçerliği, güvenirliği. *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Dergisi, 37*(2), 83-98.

Brookmeyer, K., Fanti, K., & Henrich, C. (2006). Schools, parents, and youth violence: A multilevel, ecological analysis. *Journal of Clinical Child and Adolescent Psychology, 35*(4), 504-514.

Çalık, T., Kurt, T., & Çalık, C. (2011). Güvenli okulun oluşturulmasında okul iklimi: Kavramsal bir çözümleme. *Pegem Eğitim ve Öğretim Dergisi, 1*(4), 73-84.

Can, H. (1996). *Organizasyon ve Yönetim.* Adım Yayıncılık, Ankara.

Çelik, H. (2016). *Demokratik liderlik ve örgütsel güven ilişkisi: Balıkesir merkez ilçeleri örneği* (Yayınlanmamış yüksek lisans tezi). Balıkesir Üniversitesi Sosyal Bilimler Enstitüsü, Balıkesir.

Çelik, H., & Gültekin, A. R. T. S. (2024). Üniversite öğrencilerinin akademik motivasyonlari ve okul iklimi ilişkisi. *The Journal of Academic Social Science, 48*(48), 422-434.

Çelik, H., Terzi, A., & Gültekin, S. (2017). Üniversite öğrencilerinin akademik motivasyonları ve okul iklimi ilişkisi. *Akademik Sosyal Araştırmalar Dergisi,* 5, 422-434.

Cherrington, D. J. (1994). *Organisational Behavior: The Management Individual and Organisational Performance*. Allyn and Bacon Inc., Boston.

Church, M. A., Elliot, A. J., & Gable, S. L. (2001). Perceptions of classroom environment, achievement goals, and achievement outcomes. *Journal of Educational Psychology*, *93*(1), 43.

Clifford, M., Menon, R., Gangi, T., Condon, C., Hornung, K., & American Institutes for Research. (2012). Measuring school climate for gauging principal performance: A review of the validity and reliability of publicly accessible measures. Washington, DC: American Institutes for Research.

Cohen, J., Pickeral, T., & McCloskey, M. (2009). Assessing school climate. *The Education Digest, 74*(8), 45.

Daniels, L. M., Perry, R. P., Stupnisky, R. H., Stewart, T. L., Newall, N. E., & Clifton, R. A. (2014). The longitudinal effects of achievement goals and perceived control on university student achievement. *European Journal of Psychology of Education*, 29, 175-194.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.

Deci, E. L., Cascio, W. F., & Krusell, J. (1975). Cognitive evaluation theory and some comments on the Calderand Staw critique. *Journal of Personality and Social Psychology, 31*(1), 81– 85.

Dev, P. C. (1997). Intrinsic motivation and academic achievement: What does their relationship imply for the classroom teacher? *Remedial and Special Education, 18*(1), 12-19.

Dinçer, Ö. (1998). *Stratejik Yönetim ve İşletme Politikası*. İstanbul: Timaş Matbaası.

Ellis, T. I. (1988). School climate. Research Roundup, 4(2), Routledge.

Eymur, G., & Geban, Ö. (2011). An Investigation of the Relationship between Motivation and Academic Achievement of Pre-service Chemistry Teachers. *Education & Science/Egitim ve Bilim, 36*(161).

Fraser, B.J. (1990). Students' perceptions of their classroom environments. In K. Tobin,

Gellerman, S. W. (1973). *The Uses of Psychology in Management*. New York: Collier.

Gilmer, B. V. H. (1971). *Industrial and Organizational Psychology*. New York: McGraw-Hill.

Göcen, G., & Kaya, Z. (2014). İmam-hatip liselerinde çalışan öğretmen ve yöneticilerin okul iklim algısı ve bu algıya etki eden faktörler (İstanbul Örneği). *On Dokuz Mayıs Üniversitesi İlahiyat Fakültesi Dergisi, 0*(36), 67-102.

Gök, S. (2009). Örgüt ikliminin çalışanların motivasyonuna etkisi üzerine bir araştırma. *Uluslararası İnsan Bilimleri Dergisi, 6*(2), 587-605.

Griffin, R., MacKewn, A., Moser, E., & VanVuren, K. W. (2012). Do learning and study skills affect academic performance? --An empirical investigation. *Contemporary Issues in Education Research, 5*(2), 109-116.

Grunschel, C., Schwinger, M., Steinmayr, R., & Fries, S. (2016). Effects of using motivational regulation strategies on students' academic procrastination, academic performance, and well-being. *Learning and individual differences*, 49, 162-170.

Guay, F., Mageau, G. A., & Vallerand, R. J. (2003). On the hierarchical structure of self-determined motivation: A test of top-down, bottom-up, reciprocal, and horizontal effects. *Personality and Social Psychology Bulletin, 29*(8), 992-1004.

Güçlü, N. (2003). Örgüt kültürü. *Gazi Üniversitesi Sosyal Bilimler Dergisi, 23*(2), 61-85.

Güdül, M. D. (2016). *Üniversite öğrencilerinin akademik motivasyon profillerinin psikolojik ihtiyaç doyumu, akademik erteleme ve yaşam doyumu ile ilişkisi* (Yayımlanmamış doktora tezi). Anadolu Üniversitesi, Türkiye.

Güngör, N. B., & Yenel, F. (2020). Öğrenmeye ilişkin tutumun spor bilimleri fakültesi öğrencilerinin akademik motivasyonlarının yordanmasına etkisi. *Avrasya Spor Bilimleri ve Eğitim Dergisi, 2(1), 40-55.*

Halis, M., & Uğurlu, Ö. Y. (2008). Güncel çalışmalar ışığında örgüt iklimi. ISGUC The *Journal of Industrial Relations and Human Resources, 10*(2), 101-123.

Halpin, A. W., & Croft, D. B. (1963). *The organizational climate of schools.* Midwest Administration Center, Chicago.

Hoy, W. K., & Miskel, C. G. (2013). *Educational administration: Theory, research, and practice* (9th ed.). New York: McGraw-Hill.

Hoy, W. K., & Miskel, C. G. (2015). *Eğitim yönetimi: Teori, araştırma ve uygulama* (Çev. S. Turan). Ankara: Nobel.

Hoy, W. K., Hannum, J., & Tschannen-Moran, M. (1998). Organizational climate and student achievement: A parsimonious and longitudinal view. *Journal of School Leadership, 8*(4), 336-359.

Hoy, W. K., Tarter, C. J., & Kottkamp, R. B. (1991). *Open schools/healthy schools: Measuring organizational climate.* Beverly Hills: Sage Publications.

Huang, Y., Lv, W., & Wu, J. (2016). Relationship between intrinsic motivation and undergraduate students' depression and stress: The moderating effect of interpersonal conflict. *Psychological Reports, 119*(2), 527-538.

İhtiyaroğlu, N., & Taşdelen, K. (2010). Okul iklimi ve öğrenci başarıları arasındaki ilişkiler. *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi, 11*(2), 211-227.

J.B. Kahle & B.J. Fraser (Eds.), *Windows into science classrooms: problems associated with higher-level cognitive learning* (pp. 199–221). Bristol, PA: Falmer Press

Kaplan, A., & Maehr, M. L. (2007). The contributions and prospects of goal orientation theory. *Educational psychology review*, 19, 141-184.

Kasatura, İ. (1990). *Okul başarısından hayat başarısına: Başarıyı yaratan ya da engelleyen faktörler.* İstanbul, Altın Kitaplar.

Kaya, M., & Çetinkaya, Y. (2010). Okul iklimi ve öğrencilerin okul başarıları arasındaki ilişki. *Eğitim Araştırmaları Dergisi, 10*(2), 26-35.

Keskin, G., & Sezgin, B. (2009). Bir grup ergende akademik başarı durumuna etki eden etmenlerin belirlenmesi. *Fırat Sağlık Hizmetleri Dergisi, 4*(10), 3-18.

Keskin, H. K., & Yapıcı, Ş. (2008). Başarılı ve başarısız öğrencilerin kişilik özellikleri ile ilgili öğretmen ve veli görüşleri. *Kuramsal Eğitimbilim, 1*(1), 20-32

Kılıç, H. (2005). *Örgütlerde karar verme ve örgüt iklimi* (Yayımlanmamış doktora tezi). Gazi Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara.

Kline, P. (1999). *The Handbook of Psychological Testing.* Routledge, London.

Kurt, A. (2010). *Eğitim yönetimi ve liderlik* (Genişletilmiş 3. baskı). Ankara: Nobel.

Kurt, T., & Alparslan, A. (2009). İki farklı ilköğretim okulu yöneticisinin ve öğretmenlerinin okul iklimi algılarına yönelik bir araştırma. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi,* 26, 79-92.

Kuş, C. (2011). *Örgütsel bağlılık ve okul iklimi* (Yayımlanmamış yüksek lisans tezi). Eskişehir Osmangazi Üniversitesi Sosyal Bilimler Enstitüsü, Eskişehir.

Lawson, D. B., & Hitt, M. A. (2009). Achieving high performance: The role of the learning organization. *Journal of Management, 35*(6), 1660-1683.

Loukas, A., & Murphy, J. L. (2007). Middle school student perceptions of school climate: Examining protective functions on subsequent adjustment problems. *Journal of school psychology*, *45*(3), 293-309.

Ma, X., & Klinger, D. A. (2000). Hierarchical linear modelling of student and school effects on academic achievement. *Canadian Journal of Education/Revue canadienne de l'education*, 41-55.

MacCallum, R. C., & Austin, J. T. (2000). Applications of structural equation modeling in psychological research. *Annual Review of Psychology*, 51, 201-226.

MacNeil, A. J., Prater, D. L., & Busch, S. (2009). The effects of school culture and climate on student achievement. *International Journal of leadership in Education*, *12*(1), 73-84.

Mardin, T., & Koç, E. (2009). Eğitim ortamlarında okul iklimi ve yönetici öğretmen ilişkisi. *Eğitim Araştırmaları Dergisi, 9*(1), 67-76.

Merdan, S. (2004). *Örgütsel kültür, iklim ve liderlik* (Yayımlanmamış yüksek lisans tezi). Süleyman Demirel Üniversitesi Sosyal Bilimler Enstitüsü, Isparta.

Mertler, C. A. (2014). *Introduction to educational research: A critical thinking approach* (2nd ed.). Pearson Education, Inc.

Misener, K. E., & Doherty, A. J. (2009). Sport management and leadership: From the inside out. *Journal of Sport Management, 23*(5), 710-734.

Moore, W. L., & Griffith, A. R. (1990). The influence of school climate on student achievement: A review of the research. *Journal of Educational Research, 83*(6), 357-368.

Mulford, B. (2003). *School leaders: Changing roles and impact on reform*. Australian Council for Educational Research.

Murphy, J., & Hallinger, P. (1988). *The principalship in an era of reform.* State University of New York Press.

Noe, R. A., & Wilk, S. L. (1993). Investigation of the determinants of successful mentoring relationships. *Journal of Vocational Behavior, 43*(3), 281-298.

Ozen, S., & Arslan, M. (2017). Öğretmenlerin okul iklimine yönelik algılarının çeşitli değişkenler açısından incelenmesi. *Journal of Education and Training Studies*, *5*(3), 93-102.

Pavlou, V. (2006). Pre-adolescents' perceptions of competence, motivation and engagement in art activities. *International Journal of Art & Design Education*, *25*(2), 194-204.

Peşken, Y. (2008). Okul iklimi ve okul başarısı. *Eğitim ve Bilim, 33*(149), 75-88.

Popham, W. J. (2011). *Classroom assessment: What teachers need to know* (6th ed.). Pearson Education, Inc.

Rahman, A., & Hossain, M. S. (2014). The relationship between school climate and students' academic achievement. *Journal of Education and Practice, 5*(12), 20-30.

Rana, R. A., Mahmood, N., & Reid, N. (2015). Motivation and science performance: influence on student learning in science. *Science Institute (Lahore), 27*(2), 1445-1452.

Rani, A. (2007*). Exploring the impact of school climate on student achievement in secondary schools.* University of New South Wales.

Razon, N. (1987). Öğrenme olgusu ve okul başarısını etkileyen faktörler. *Eğitim ve Bilim, 11*(63).

Sarıkaya, S., & Varol, S. (2007). Eğitimde liderlik ve okul ikliminin öğrenci başarısına etkisi. *Eğitim ve Bilim, 32*(146), 45-55.

Sarıtaş, A. (2008). Okul ikliminin, öğretmen ve öğrenci tutumlarına etkisi. *Eğitim Araştırmaları Dergisi, 8*(2), 68-79.

Schunk, D. H., Meece, J. L., & Pintrich, P. R. (2014). *Motivation in education: Theory, research, and applications* (4th ed.). Boston, MA: Pearson Education.

Şen, A. (2002). *Örgütsel iklim ve iş doyumu* (Yayımlanmamış yüksek lisans tezi). Uludağ Üniversitesi Sosyal Bilimler Enstitüsü, Bursa.

Şerefli, A. (2003). *İlköğretim ikinci kademe öğrencilerinin akademik başarılarını etkileyen zihinsel olmayan faktörler* (Yayınlanmamış yüksek lisans tezi). Niğde Üniversitesi Sosyal Bilimleri Enstitüsü, Niğde.

Şevik, Y. (2014). *İlkokul müdür ve müdür yardımcılarının öğrencilerin akademik başarısını etkileyen faktörlere ilişkin görüşleri ile akademik başarısına katkıları.* (Yayımlanmamış yüksek lisans tezi). Mehmet Akif Ersoy Üniversitesi Eğitim Bilimleri Enstitüsü, Burdur.

Simons, H. D., Van Rheenen, D., & Covington, M. V. (1999). Academic motivation and the student athlete. *Journal of college student development*, 40, 151-162.

Soyer, F., Can, Y., Güven, H., Hergüner, G., Bayansalduz, M., & Tetik, B. (2010). Sporculardaki başarı motivasyonu ile takım birlikteliği arasındaki ilişkinin incelenmesi. *Uluslararası İnsan Bilimleri Dergisi, 7(1), 225-239.*

Stolk, J. D., Jacobs, J., Girard, C., & Pudvan, L. (2018). *Learners' needs satisfaction, classroom climate, and situational motivations: evaluating self-determination theory in an engineering context.* In 2018 IEEE Frontiers in Education Conference (FIE) (pp. 1-5). IEEE.

Terzi, A. R. (2015). Üniversite öğrencilerine yönelik okul iklimi ölçeğinin geliştirilmesi. *Eğitim ve Öğretim Araştırmaları Dergisi, 4*(4), 111-117.

Tucker, C. M., Zayco, R. A., Herman, K. C., Reinke, W. M., Trujillo, M., Carraway, K., ... & Ivery, P. D. (2002). Teacher and child variables as predictors of academic engagement among low-income African American children. *Psychology in the Schools, 39*(4), 477-488.

Tuncer, N., & Uzun, K. (2008). Okul iklimi ile öğrenci başarısı arasındaki ilişki. *Uluslararası Sosyal Araştırmalar Dergisi, 1*(3), 123-135.

Tuzun, S. (2006). *Okul iklimi ve başarı* (Yayımlanmamış yüksek lisans tezi). Sakarya Üniversitesi Eğitim Bilimleri Enstitüsü, Sakarya.

Vallerand, R. J. (1997). Toward a hierarchical model of intrinsic and extrinsic motivation. In Advances in experimental social psychology. *Academic Press*, 29, 271-360.

Vallerand, R. J., Pelletier, L. G., Blais, M. R., Briere, N. M., Senecal, C., & Vallieres, E. F. (1992). The Academic Motivation Scale: A measure of intrinsic, extrinsic, and amotivation in education. *Educational and psychological measurement*, *52*(4), 1003-1017.

Van Maanen J., Schein E. H. (1979). Toward a theory of organizational socialization. *Research in Organizational Behavior*, 1, 209-264.

Way, N., Reddy, R., & Rhodes, J. (2007). Students' perceptions of school climate during the middle school years: Associations with trajectories of psychological and behavioral adjustment. *American journal of community psychology*, 40, 194-213.

Wentzel, K. R., & Wigfied, A. (2007). Promoting motivation at school: Interventions that work. *Educational Psychologist*, *42*(4), 261-271.

Williams, K., & Anderson, S. E. (1991). Job satisfaction and organizational commitment as predictors of organizational citizenship and in-role behaviors. *Journal of Management, 17*(3), 601-617.

Wilson, D. (2004). The interface of school climate and school connectedness and relationships with aggression and victimization. *Journal of school health, 74*(7).

Yavuz, F. (2012). *Öğretmenlerin örgütsel bağlılık düzeyleri ve okul ikliminin örgütsel bağlılık üzerindeki etkileri* (Yayımlanmamış yüksek lisans tezi). Sakarya Üniversitesi Sosyal Bilimler Enstitüsü, Sakarya.

Yıldırım, A. (2010). *Eğitimde etkili liderlik ve okul iklimi* (Yayımlanmamış yüksek lisans tezi). Çanakkale Onsekiz Mart Üniversitesi Eğitim Bilimleri Enstitüsü, Çanakkale.

Yılmaz, B. (2010). *Okul iklimi ve öğrenci başarıları arasındaki ilişki* (Yayımlanmamış yüksek lisans tezi). İstanbul Üniversitesi Sosyal Bilimler Enstitüsü, İstanbul.

Zengin, M. (2007). Okul iklimi ve öğretmenlerin iş doyumu. *Gazi Üniversitesi Eğitim Bilimleri Dergisi*, *27*(2), 55-70.

Zinser, H., & Vukovich, S. (2007). The relationship between perceived school climate and the academic achievement of high school students. *Journal of Research in Education, 17*(2), 120-128.

International Journal of Sport Culture and Science
December 2024 : 12(4)
ISSN : 2148-1148
Doi : 10.14486/IntJSCS.2024.726

Examining the Impact of Sports and Physical Activities on Basic Motor Skills in Primary School Children

Yücel ÇOLAK[1], Fatih GÜR [2],Vedat AYAN[3]
[1]Gazipaşa Special Education Application School, Antalya, TÜRKİYE
https://orcid.org/0009 - 0006 - 8657 - 5252
[2]Pamukkale University, Faculty of Sport Sciences, Denizli, TÜRKİYE
https://orcid.org/0000-0003-0776-5754
[3]Trabzon University, Faculty of Sport Sciences, Trabzon, TÜRKİYE
https://orcid.org/0000-0003-1887-5334

Email: ycl.clk.61@gmail.com, fatihgur@pau.edu.tr, vayan@trabzon.edu.tr

Type: *Research Article (**Received:** 16.07.2024 – **Accepted:** 20.12.2024)*

Abstract

The aim of this study is to examine the effects of sports and physical activities on the fundamental motor skills of primary school children. The research was conducted with 54 volunteer students, including 27 in the experimental group and 27 in the control group, at Beyrebucak Primary School in Gazipaşa, Antalya. Necessary permissions were obtained from the Antalya Governorship and the parents of the students before the study.Within the scope of the research, the experimental group participated in activities using the Physical Activity Cards (PAC) referred to as yellow cards, which were implemented in physical education and game classes for 8 weeks, 3 days a week. In addition to measuring the students' height and body weight, their fundamental motor skills were evaluated using the Test of Gross Motor Development (TGMD-2). On the other hand, no intervention related to physical activity cards was provided to the control group.The research findings showed a significant difference in favor of the experimental group in terms of the total score of the TGMD-2 ($p<0,001$). Moreover, there was a significant improvement in the experimental group in the subcategories of the TGMD-2, namely locomotor and object control skills ($p<0,001$), whereas no significant changes were observed in the control group ($p>0,05$).In conclusion, the study suggests that sports and physical activities can have a positive impact on the fundamental motor skills of primary school children.

Keywords: Gross motor development, motor skill, TGMD-2

Introduction

Motor development is a key factor in children's physical, cognitive, and social growth. Basic motor skills encompass all fundamental motor movements utilized in daily life, such as walking, running, throwing, jumping, and holding. However, it also encompasses a fundamental concept that forms the basis of more complex physical and sporting activities (Tang & Wang, 2023). The development of motor skills is a process that begins at an early age and continues throughout one's lifetime. During childhood, individuals acquire fundamental motor abilities, which then evolve into more sophisticated movements as they grow older (Goodway et al., 2019). In many countries, studies have shown that participation in physical activities and sports is an effective strategy for enhancing motor skill proficiency in children (Jia et al., 2024; Lemos et al., 2012; Zhang & Zhang, 2023).

In Turkey, the only course where children in primary school could previously engage in educational games and physical activities was the "Games and Physical Activities" course. However, following a change in 2008, the course was renamed "Physical Education and Games" (Yılmaz & Kurt, 2019). One of the key objectives of physical education and games is to enhance students' movement abilities and facilitate their motor development. PAC yellow cards are activity- and game-based materials designed for use in primary school "Physical Education and Games" lessons. The objective of these cards is to facilitate the development of fundamental movement skills, movement concepts, and game strategies in children. The yellow cards encompass displacement, balancing, object control, and combined movements, all in accordance with the developmental characteristics of children. The front side of the cards contains brief descriptions and visual depictions of the movements and games, while the back side contains learning keys and suggestions for diversifying the activities. Additionally, it offers constructivist assessments to support children's development and includes health-related information (İnce et al., 2018).

A review of the literature reveals that structured physical activity and sporting activities are effective in promoting fundamental motor development in children during the preschool and primary school years. For instance, Lemos et al. (2012) demonstrated that structured physical education, delivered by an expert, positively influenced the advancement of gross motor skills in kindergarten students. The positive impact of sports training on fundamental motor skills and life skills has also been demonstrated in autistic children (Huseyin, 2019). Furthermore, Boat et al. (2022) demonstrated that structured physical activity enhances cognitive functions and fundamental motor skill development in primary school children aged 8-9 years. This is achieved by incorporating more active lessons into the curriculum of subjects such as mathematics and English, where passive teaching methods are prevalent.

When the national literature is examined, various academic studies have been conducted to evaluate the development of Physical Activity Cards in different areas of children. As an illustration, Esen and Mirzeoğlu (2018) indicated that activities conducted through PAC cards resulted in an increase in children's academic learning time. In a 2013 study, Irez et al. (2013) found that PAC cards increased the amount of time teachers spent on in-class activities and encouraged students to engage in physical activity at a higher rate.

There are limited studies in the existing literature on the effects of using PAC cards for primary school children in Turkey. The aim of this study is to evaluate the effect of PAC yellow cards on primary school students' basic motor skills.

Material and Method

Research Design

In this research, the experimental method with pre-test post-test control group was used.

Research Group

The study was conducted with a total of 54 students, 27 in the experimental group and 27 in the control group, all of whom were enrolled at educational institutions in the Gazipaşa district of Antalya province during the 2022-2023 academic year.

Procedure

The necessary permissions were obtained from the Antalya Governorate for the implementation of the TGMD-2 Test and for sports and physical activities. Subsequently, a meeting was held with the administrators and classroom teachers at Antalya Gazipaşa Beyrebucak Primary School, during which the days and hours of the practices were decided. With the purposeful sampling method, the students who volunteered to participate in the study were divided into two groups: a control group and an experimental group. Both groups of students continued to teach physical education and game lessons in accordance with their annual plans, under the guidance of their class teachers. The experimental group was provided with the activities from the physical activity cards, which align with the curriculum outcomes for physical education and games, at the conclusion of each lesson. Following the initial assessment, the post-test was conducted after the 8-week program, which was implemented for 40 minutes, three days a week. The students' skills were then evaluated.

Data Collection

Test of Gross Motor Development (TGMD-2)

The Test of Gross Motor Development, Second Edition (TGMD-2) is a standardized protocol designed to evaluate the gross motor skills of children. It comprises 12 activities, divided into two subtests: locomotor and object control. The locomotor subtest encompasses running, galloping, hopping, leaping, horizontal jumping, and sliding, while the object control subtest includes striking a stationary ball, stationary dribbling, catching, kicking, overhand throwing, and underhand rolling. Each skill is demonstrated and scored based on specific criteria, with two trials for each activity (Ulrich et al., 2000).

Data analysis

IBM SPSS Statistics 22.0 (IBM Corp. Released 2013) was utilized to analyze the data of this study. Comparative tables were utilized to ascertain the class distribution in the experimental and control groups, and frequency and percentage values for the variables were provided. Kolmogorov-Smirnov and Shapiro-Wilk tests and graphs were employed to ascertain whether the Test of Large Muscle Motor Development (TGMD-2) sub-dimension scores and total scores exhibited a normal distribution. The dependent group t-test was used to determine within-group differences. All tests were conducted with a statistical significance level of $\alpha=0.05$.

Findings

The study's participant group consisted of 54 students, 27 in the experimental group and 27 in the control group, who were enrolled at Beyrebucak Primary School during the 2023-2024 academic year. The mean age of the participants was 8.4 ± 0.81.

The results consist of comparisons between pre-test and post-test measurements for height, body weight, displacement skills, object control skills, and TGMD-2 scores between an experimental group and a control group (table 1).

Table 1. Comparison of Pre- and Post-Test Measurements of Height, Weight, Displacement, Object Control and Gross Muscle Motor Development Test in the Experimental and Control Groups

	Group	Pre-Test X ± SD	Post-Test X ± SD	Mean Difference	Comparison
Height (cm)	Experiment	129,44 ± 7,78	130,43 ± 7,58	-0,99 ± 0,69	t=7,457; p<0,001
	Control	130,06 ± 10,59	130,7 ± 10,64	-0,64 ± 0,59	t=5,715; p<0,001
Body Weight (kg)	Experiment	29,54 ± 5,70	29,64 ± 6,12	-0,10 ± 1,49	t=0,349; p=0,730
	Control	31,89 ± 8,70	32,40 ± 9,43	-0,51 ± 1,82	t=1,462; p=0,156
Displacement Skill	Experiment	30,26 ± 5,53	39,07 ± 5,20	-8,81 ± 5,12	t=8,943; p<0,001
	Control	30,15 ± 7,66	31,26 ± 7,07	-1,11 ± 5,58	t=1,035; p=0,310
Object Control Skill	Experiment	20,41 ± 4,67	28,15 ± 4,95	-7,74 ± 3,86	t=10,423; p<0,001
	Control	20,78 ± 7,22	22,15 ± 7,01	-1,37 ± 5,12	t=1,390; p=0,176
TGMD-2	Experiment	50,67 ± 7,79	67,22 ± 7,20	-16,56 ± 4,72	t=18,235; p<0,001
	Control	50,93 ± 12,88	53,41 ± 11,81	-2,48 ± 7,40	t=1,742; p=0,093

For height, both groups showed a statistically significant increase, with the experimental group (t=7.457, p<0.001) and the control group (t=5.715, p<0.001) improving. Body weight changes were not significant for either group, with the experimental group showing a minor increase (t=0.349, p=0.730) and the control group showing a also small decrease (t=1.462, p=0.156). Displacement skill and object control skill improved significantly in the experimental group (t=8.943, p<0.001 and t=10.423, p<0.001, respectively) but not in the control group (t=1.035, p=0.310 and t=1.390, p=0.176, respectively). TGMD-2 scores also showed a significant improvement in the experimental group (t=18.235, p<0.001) but not in the control group (t=1.742, p=0.093).

Discussion and Conclusion

The experimental group showed significant improvements in displacement skills (p<0.001), object control skills (p<0.001), and TGMD-2 scores (p<0.001). The control group did not show significant improvements in these areas.

Participation in organized sports has been associated with increased childhood motor performance, suggesting that sports involvement can enhance motor skill development from an early age (Vallence et al., 2019). Research indicates that interventions aimed at improving gross motor competence can enhance fundamental movement skills and motor coordination in children and adolescents (Barnett et al., 2016). Williams et al. (2008) found that preschool children with higher motor skill scores, particularly in locomotor skills, were more physically active, spending more time in moderate-to-vigorous and vigorous physical activity. integrated sports games have been found to positively impact the training of basic motor skills in young children (Zhang & Zhang, 2023). The results of this study suggest that the structured activities provided by the PAC yellow cards were highly effective in enhancing these specific motor skills ((p<0.001). In contrast, the control group did not show significant improvements in these areas. This underscores the importance of targeted interventions in developing motor skills. The structured nature of the PAC yellow cards likely provided the necessary repetition and progression needed for skill acquisition.

The TGMD-2 scores, which reflect overall gross motor development, also showed significant improvement in the experimental group (t=18.235, p<0.001). The control group, however, did not exhibit significant changes. This finding aligns with previous research indicating that

structured physical activity interventions are effective in promoting motor skill development (Boat et al., 2022; Lemos et al., 2012). The PAC yellow cards, by incorporating a variety of movement activities and progressive challenges, seem to have provided a comprehensive structure for motor skill enhancement.

The findings of this study support the hypothesis that structured physical activity programs, such as those utilizing PAC yellow cards, should be integrated into the school physical education curriculum. The significant improvements observed in the experimental group demonstrate the potential of these interventions to enhance motor skill proficiency, which is crucial for children's physical, cognitive, and social development (Zeng et al., 2017). Schools and educators may consider adopting structured approaches to physical education classes to maximize the benefits of such programs.

One limitation of this study is the relatively short duration of the intervention, which was only eight weeks. Longer-term studies could provide more insight into the sustained effects of such interventions on motor skill development. Furthermore, this study did not control for external factors such as diet and extracurricular physical activities, which could influence the results. Future research should consider these factors and also explore the impact of such interventions on other aspects of child development, such as cognitive and social skills.

As a result, the use of PAC yellow cards in primary school physical education classes significantly improves basic motor skills. This study provides evidence that structured physical activity interventions are effective in supporting motor development in children. Given the critical role of motor skills in overall child development, increasing the coverage of such approaches in the school curriculum could provide far-reaching benefits for children's physical, cognitive and social well-being.

**We thank the participants involved in the research. This research is derived from a master's thesis and was presented as a paper at the 10th International Conference Science, Culture, and Sport.*

REFERENCES

Barnett, L. M., Lai, S. K., Veldman, S. L. C., Hardy, L. L., Cliff, D. P., Morgan, P. J., Zask, A., Lubans, D. R., Shultz, S. P., Ridgers, N. D., Rush, E., Brown, H., & Okely, A. D. (2016). Correlates of Gross Motor Competence in Children and Adolescents: A Systematic Review and Meta-Analysis. *Sports Medicine*, *46*(11), 1663–1688. https://doi.org/10.1007/s40279-016-0495-z

Boat, R., Cooper, S. B., Carlevaro, F., Magno, F., Bardaglio, G., Musella, G., & Magistro, D. (2022). 16 Weeks of Physically Active Mathematics and English Language Lessons Improves Cognitive Function and Gross Motor Skills in Children Aged 8–9 Years. *International Journal of Environmental Research and Public Health*, *19*(24), 16751. https://doi.org/10.3390/ijerph192416751

Esen, E., & Mirzeoğlu, A. D. (2018). Beden Eğitimi ve Spor Derslerinde Kullanılan Fiziksel Etkinlik Kartlarının Akademik Öğrenme Zamanına Etkisi. *Kastamonu Education Journal*, *26*(4), 1091–1100. https://doi.org/10.24106/kefdergi.433411

Goodway, J. D., Ozmun, J. C., & Gallahue, D. L. (2019). *Understanding motor development: Infants, children, adolescents, adults: Infants, children, adolescents, adults*. Jones & Bartlett Learning.

Huseyin, O. (2019). The Impact of Sport Activities on Basic Motor Skills of Children With Autism. *Pedagogics Psychology Medical-Biological Problems of Physical Training and Sports*, *23*(3), 138–144. https://doi.org/10.15561/18189172.2019.0305

İnce, M. L., Mirzeoğlu, D., Altay, F., Koçer, S., Akgün, A., Gazioğlu, E., & Çebi, H. (2018). *Oyun ve fiziki etkinlikler dersi öğretim programı (İlkokul 1-4. Sınıflar)* (1st ed.). Milli Eğitim Bakanlığı.

İrez, S. G., Yaman, M., İrez, G. B., & Saygın, Ö. (2013). The effects of physical activity cards on teacher behaviours in elementary physical education classes. *Journal of Human Sciences*, *10*(1), 1717–1724.

Jia, Z., Bin Abdullah, B., Omar Dev, R. D., & Samsudin, S. B. (2024). Effects of Parent-Child Physical Activity Intervention on Gross Motor Skills Among Preschoolers in China. *International Journal of Academic Research in Business and Social Sciences*, *14*(5), 1279-1290. https://doi.org/10.6007/ijarbss/v14-i5/21661

Lemos, A. G., Avigo, E. L., & Barela, J. Â. (2012). Physical Education in Kindergarten Promotes Fundamental Motor Skill Development. *Advances in Physical Education*, *02*(01), 17–21. https://doi.org/10.4236/ape.2012.21003

Tang, F., & Wang, T.-. (2023). The Relationship Between Fundamental Movement Skills and Physical Activity in Children and Adolescents: A Systematic Review. *Journal of Advances in Sports and Physical Education*, *8*(03), 20–27. https://doi.org/10.36348/jaspe.2023.v06i03.001

Ulrich, D., Soppelsa, R., & Albaret, J. (2000). TGMD-2. *Test of Gross Motor Development Examiner's Manual*.

Vallence, A.-M., Hébert, J. J., Jespersen, E., Klakk, H., Rexen, C. T., & Wedderkopp, N. (2019). Childhood Motor Performance Is Increased by Participation in Organized Sport: The CHAMPS Study-Dk. *Scientific Reports*, *9*(1). https://doi.org/10.1038/s41598-019-54879-4

Williams, H. G., Pfeiffer, K. A., O'Neill, J., Dowda, M., McIver, K. L., Brown, W. H., & Pate, R. R. (2008). Motor Skill Performance and Physical Activity in Preschool Children. *Obesity*,

16(6), 1421–1426. https://doi.org/10.1038/oby.2008.214

Yılmaz, M., & Kurt, M. (2019). Türkiye'de Beden Eğitimi Ve Oyun Dersi Kapsamında Yapılan Çalışmaların Analizi. *Avrasya Sosyal ve Ekonomi Araştırmaları Dergisi*, *6*(10), 46–61.

Zeng, N., Ayyub, M., Sun, H., Xu, W., Xiang, P., & Gao, Z. (2017). Effects of Physical Activity on Motor Skills and Cognitive Development in Early Childhood: A Systematic Review. *Biomed Research International*, *2017*, 1–13. https://doi.org/10.1155/2017/2760716

Zhang, Y., & Zhang, G. (2023). Effects of Integrated Sports Games on Motor Training of Children. *Revista Brasileira De Medicina Do Esporte*, *29*. https://doi.org/10.1590/1517-8692202329012023_0027

International Journal of Sport Culture and Science
December 2024 : 12(4)
ISSN : 2148-1148
Doi : 10.14486/IntJSCS.2024.727

2024 European Football Championship: An Analysis of Goal-Scoring Patterns

Selman KAYA[1], Hüseyin Emirhan KILINÇ [2]
[1] Yalova University, Faculty of Sport Sciences, Yalova, Türkiye
https://orcid.org/0000-0002-2185-6436
[2] Milli Eğitim Müdürlüğü, Kocaeli, Türkiye
https://orcid.org/0009-0009-2224-8406

Email: selman.kaya@yalova.edu.tr, 26emirhank@gmail.com

Type: *Review Article (**Received:** 18.09.2024 – **Accepted:** 30.11.2024)*

Abstract

The aim of this study is to analyze the goal-scoring patterns observed in the UEFA 2024 European Football Championship held in Germany. In this study, 117 goals scored across 51 matches played during the tournament were analyzed. Of the goals scored, 56.4% occurred in the second half, while 43,6% were scored in the first half. The highest number of goals was scored between the 16th and 30th minutes (19,7%), while the fewest goals were recorded between the 90th-105th and 106th-120th minutes. When examining the number of touches before the goal, the majority of goals were scored through direct shots (59%). The analysis also revealed that most assists were made from Zone 4 inside the penalty area (22%) and through short ground passes (34%). Additionally, the study found that the most frequent shot type was with the inside of the right foot (29%) and that midfielders were the players who scored the most goals (35%). VAR decisions were used 25 times, with offside and penalty situations being the most frequently reviewed. This study emphasizes the need for reconsideration of offensive and defensive strategies, suggesting that coaches should develop their game plans based on these findings.

Keywords: Soccer, Match Analysis, European Championship, Goal-Scoring Patterns

Introduction

Football, one of the most popular sports globally, played by millions, features several prestigious international tournaments, with the UEFA European Football Championship standing out as one of the most significant. Held every four years by UEFA, this tournament captivates billions of viewers worldwide. For instance, it was reported that the 2024 UEFA European Championship, hosted in Germany, attracted 5 billion television viewers (UEFA, 2024). esides its significance in European football, the European Championship offers coaches and clubs a unique opportunity to evaluate the top national teams and players across Europe. Thus, beyond its status as the pinnacle of European football, it serves as a critical platform for match analysis and data-driven approaches. In recent years, technical and tactical analyses of on-field player performance have gained considerable popularity, complementing physiological, psychological, and anthropometric studies (Clarys et al., 2003). Match analysis has become a widely used tool in football for systematically observing and evaluating the performances of both players and teams (Reilly, 2003). By providing a deep understanding of a match's statistical data, match analysis aids coaches and managers in making informed strategic decisions, enhancing player performance, and refining team tactics.

In football, performance indicators such as high ball possession, creating numerous scoring opportunities, shots on goal, or corner kicks, do not always correlate with success. A team can triumph even when performing below the ideal level, as the ultimate goal in any match is to score at least one more goal than the opposition (Wright et al., 2011). Goals represent the core of football, encompassing a range of in-game developments, tactical decisions, and individual performances. Consequently, goals are central to match analysis. Due to the significance of major tournaments in football, numerous researchers have recently focused on analyzing the goals scored in these events (Ağyol & Tanyeri, 2022; Alberti et al., 2013; Armatas et al., 2009; Başkaya, 2023; Çoban, 2019; Çobanoğlu & Terekli, 2018; Erdal & Apaydın, 2022; Ergin et al., 2023; Ertetik & Müniroğlu, 2021; Gürkan et al., 2017; Gürkan et al., 2018; İmamoğlu et al., 2011; Jones et al., 2004; Kubayi, 2020; Leite, 2013; Marques Junior, 2012; Mitrotasios, 2014; Yavuz & Saygın, 2021; Yiannakos & Armatas, 2006; Yolgörmez & Kayatekin, 2023). Researchers argue that major tournaments like these represent the pinnacle of football development and reflect the current state of the modern game, making them valuable for various research topics (Silva and Campos Júnior, 2006). Consequently, goals remain the most prominent component of performance in football matches. Analyzing how goals are scored can reveal critical insights into the most effective offensive strategies, providing a potential blueprint for success (Mitrotasios, 2014). Furthermore, such analysis can greatly assist coaches in developing training programs and implementing optimal goal-scoring tactics. Hence, this study aims to analyze the goal-scoring patterns observed during the 2024 UEFA European Championship.

Material and Method

The sample for this study consists of the 51 matches played and 117 goals scored during the group and knockout stages of the 2024 UEFA European Football Championship, held in Germany from June 14 to July 14, 2024. All goals scored in the tournament were included in the analysis, which was conducted across 14 different categories (Table 1).

Data Collection

The data for this study was collected through an analysis of the goals scored in the 51 matches played by 32 teams during the group and knockout stages of the 2024 UEFA European Championship. The data was sourced from the publicly accessible website of the Turkish

Radio and Television Corporation (TRTSpor, 2024). One of the authors, who holds a UEFA B coaching license, conducted the analysis of all the goals. To determine the area from which each goal was scored, the football field was divided into 10 sections, and for the area where the assist originated, the field was divided into 5 sections. A standardized analysis form, where these sections were numbered, was used (Figure 1, Figure 2). In the tournament, 10 own goals were identified and categorized accordingly. The collected data was recorded using Microsoft Excel® without the use of any additional analysis software. The players who scored the goals and provided the assists were evaluated based on their positional roles during that specific match.

Data Analysis

Descriptive statistics, such as frequency and percentage, were used to analyze the collected data. All statistical analyses were conducted using the SPSS 26.0 (*IBM, USA*) software package.

Table 1. Parameters Analyzed in The Study

Category	Parameter	Titles
Goal	Time of Goals (Minute)	0-15;16-30;31-45;45+;45-60;61-75;76-90;90+;90-105;105+;106-120;120+
	Goal Area	Defined goal areas (Figure 2)
	Pre-Goal	No touch (Penalty or Own Goal); Direct shot; 1 touch + Direct Shot; 2 touch + Direct Shot; 3 touch + Direct Shot; By dribbling past an opponent; By dribbling past an opponent +2 touch; By dribbling past an opponent +3 touch
	Goal Shot	Inside of Right Foot; Top of Right Foot; Outside of Right Foot; Inside of Left Foot; Top of Left Foot; Outside of Left Foot; Header; Other; Own Goal or Penalty
	The Side Where The Goal Was Scored	Goalkeeper's Right; Aerial Goalkeeper's Right; Ground Goalkeeper's Left;, Aerial Goalkeeper's Left; Ground Over The Goalkeeper; Open Goal
	The Position Of The Goal-Scoring Player	Centre Back; Midfielder; Forward; Left Winger; Right Winger; Own Goal Left Back; Right Back
	Methods of Goal Scoring	Open Play; Corner; Penalty; Rebound From Goalkeeper; Own goal
Assist	Assist Area	Defined Assist Areas (Figure 1)
	Assist Type	No Assist; Ground Cross From The Flank; Aerial Cross From The Flank; Ground Pass; Aerial Pass
	Position of Assist Player	Centre Back; Midfielder; Forward; Left Winger; Right Winger; Left Back; Right Back
	The Impact of The First Goal	Draw; Won; Lose

Penalty Shot in Open Play	Penalty Kicks	Shot Type
	Shot Type	Inside of Right Foot; Top of Right Foot; Inside of Left Foot
	Side of The Penalty Kick	Goalkeeper's Right, Aerial; Goalkeeper's Right Ground; Goalkeeper's Left; Aerial Goalkeeper's Left Ground
	Goalkeeper's corner preferences	The Correct Choice; The Wrong Choice
	Video Assistant Referee (VAR)	Defined parameters (Table 2)

Figure 1. Assist areas

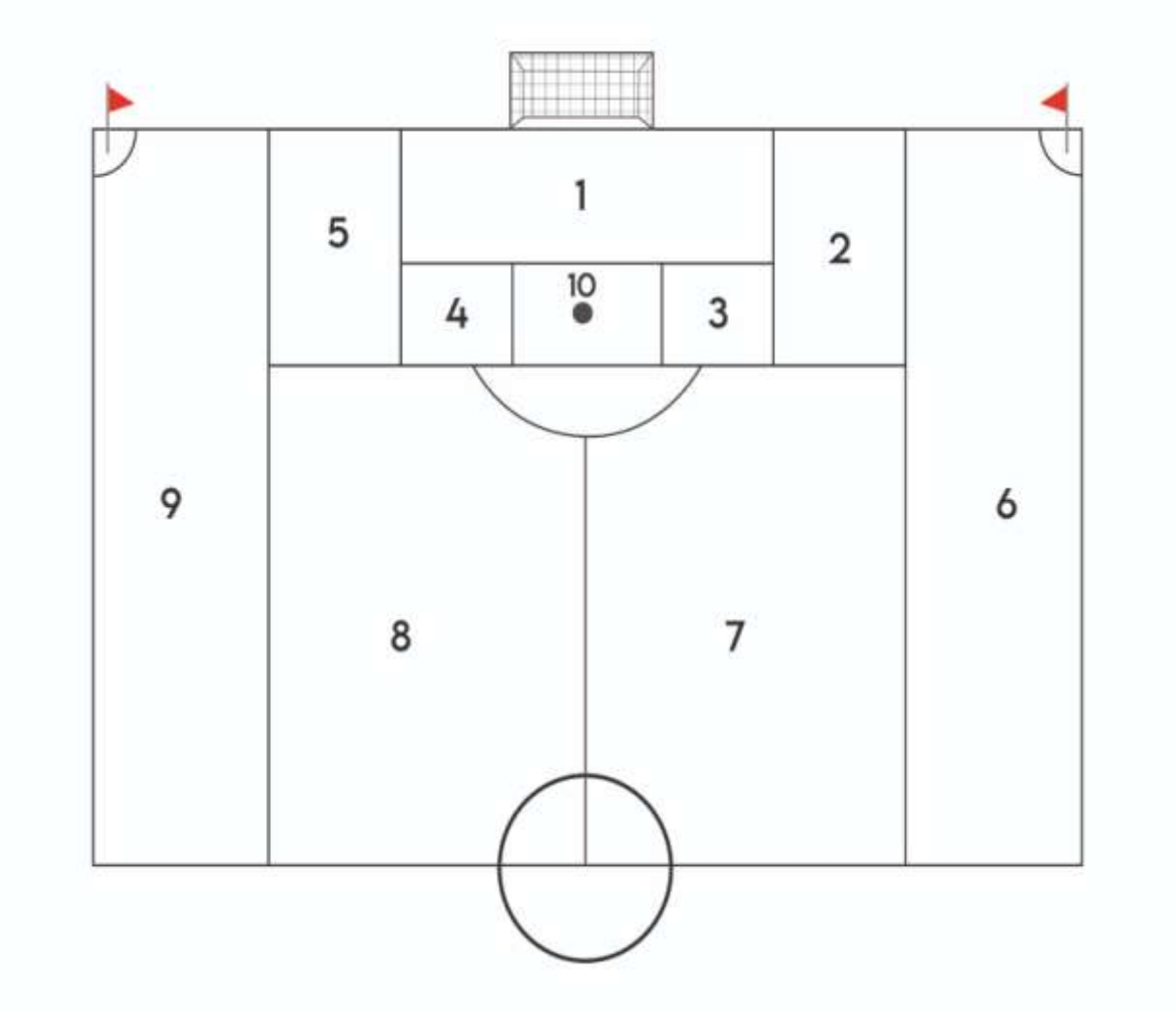


Figure 2. Goal areas

Findings

An examination of Table 2 shows that 51 (43,6%) of the 117 goals scored in the tournament occurred in the first half of the matches, while 66 goals (56,4%) were scored in the second half. The highest number of goals was scored between the 16-30th minutes (23 goals; 19,7%), whereas the fewest goals were scored between the 90-105th minutes (1 goal; 0.9%) and the 106-120th minutes (1 goal; 0.9%) (Table 2).

Table 2. Time Intervals and Number of Goals Scored in The Tournament.

Minute	n	%
0-15 dk	16	13,7
16-30 dk	23	19,7
31-45 dk	8	6,8
45+ dk	4	3,4
45-60 dk	18	15,4
61-75 dk	18	15,4
76-90 dk	15	12,8
90+ dk	13	11,1
90-105 dk	1	0,9
105+ dk	0	0
106-120 dk	1	0,9
120+ dk	0	0
Total	**172**	**100%**

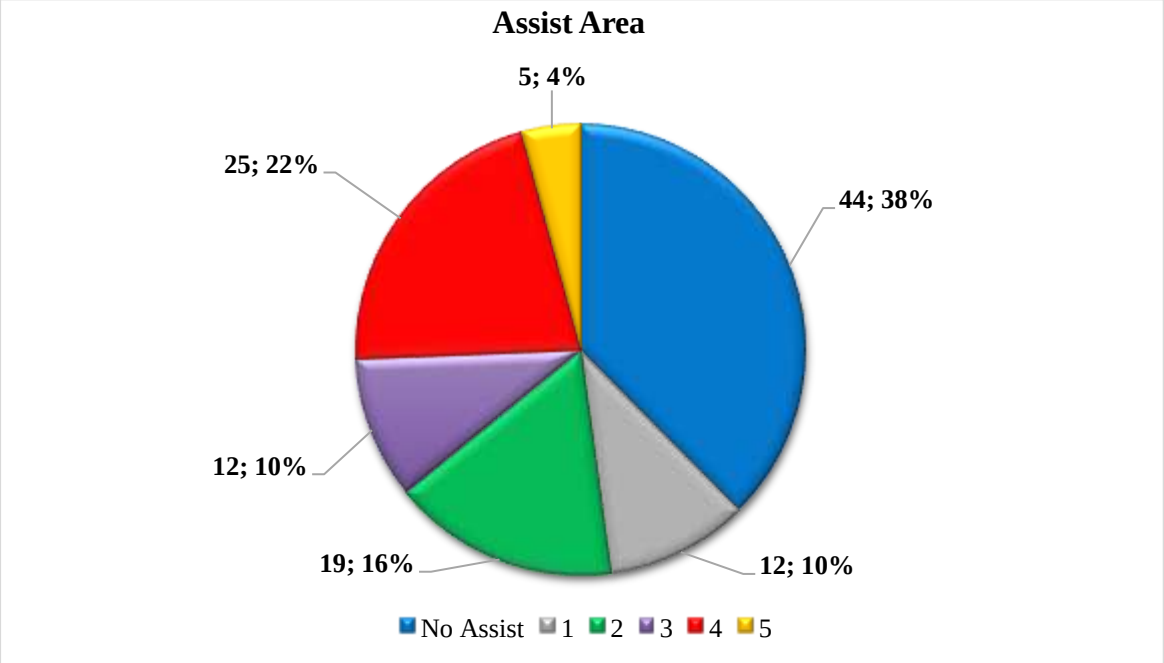


Figure 3. Assist Area

An analysis of Figure 3 reveals that 44 out of the 117 goals scored in the tournament (38%) were without an assist, while 73 goals were assisted. The most assists came from Zone 4 (25 assist; 22%) and Zone 2 (19 assist; 24%), while the fewest assists came from Zone 5 (5 assist; 4%).

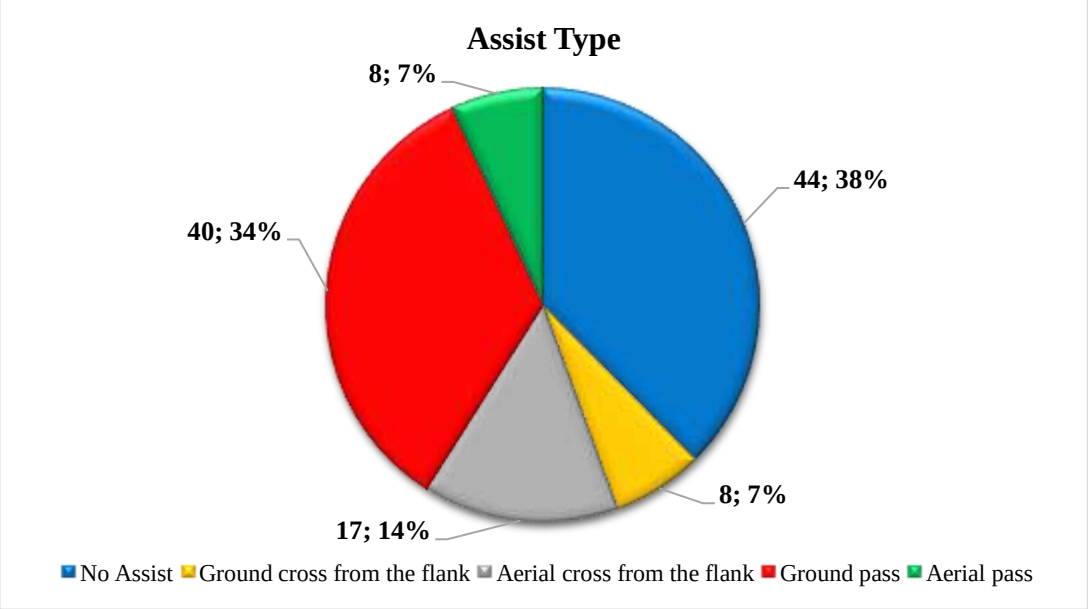


Figure 4. Assist Type

An analysis of the types of assists shows that for the 73 assisted goals, the most frequent assist types were ground passes (40 assist; 34%) and aerial crosses from the flank (17 assist; 14%). The least common assist types were aerial passes (8 assist; 7%) and ground crosses from the flank (8 assists; 7%) (Figure 4).

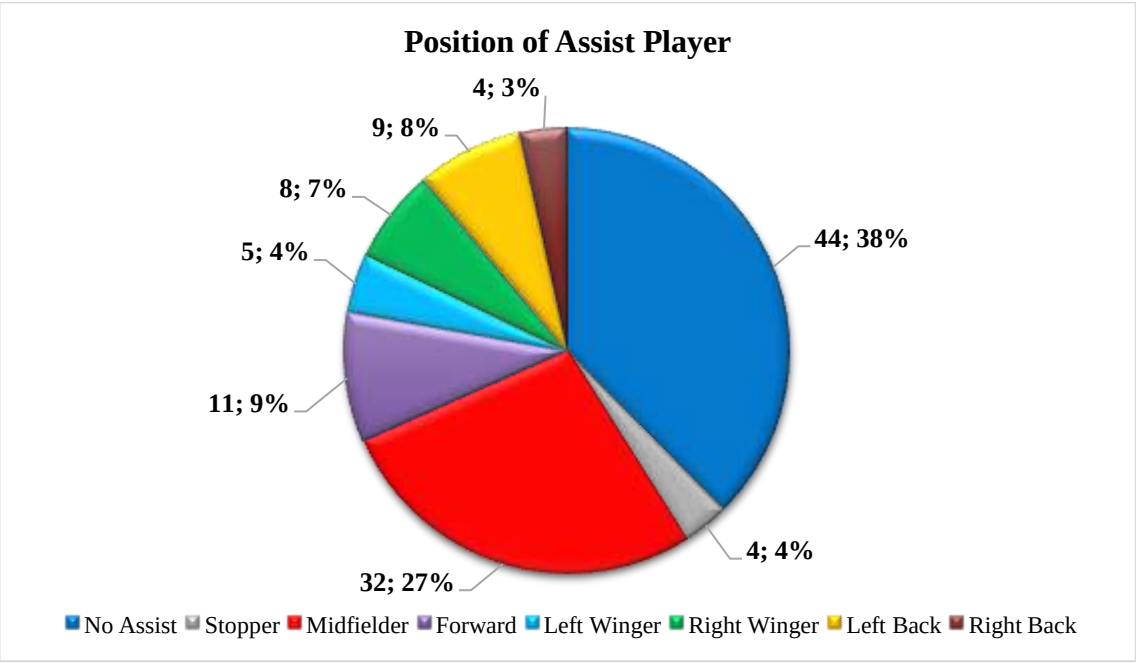


Figure 5. Position of Assist Player

An analysis of Figure 5 shows that in the 73 assisted goals, the most assists were provided by midfielders (32 assists; 27%) and forwards (11 assists; 9%), while the fewest assists came from right-backs (4 assists; 3%).

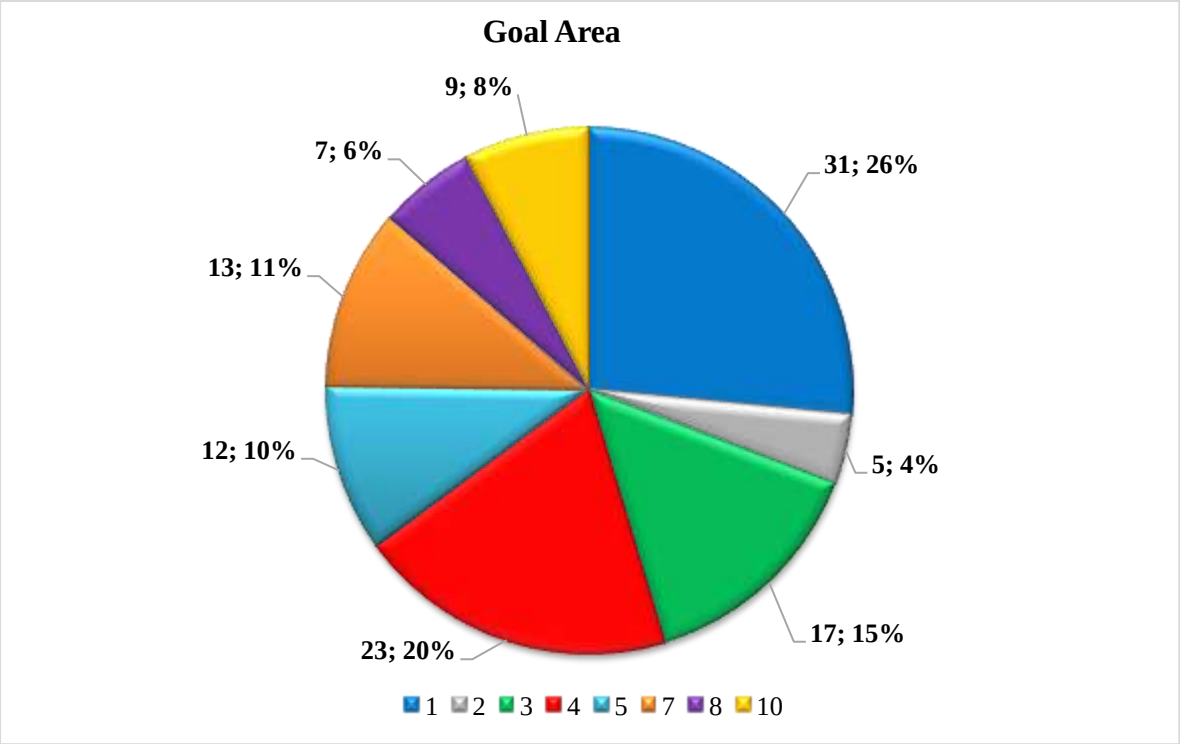


Figure 6. Goal Area

By dividing the half-field into 10 sections and analyzing the defined goal zones (Figure 2), it is observed that the majority of goals were scored from Zone 1 inside the penalty area (31 goals; 26%) and Zone 4 (23 goals; 20%). The fewest goals were scored from Zone 2 (5 goals; 4%), and no goals were scored from Zone 9 (Figure 6).

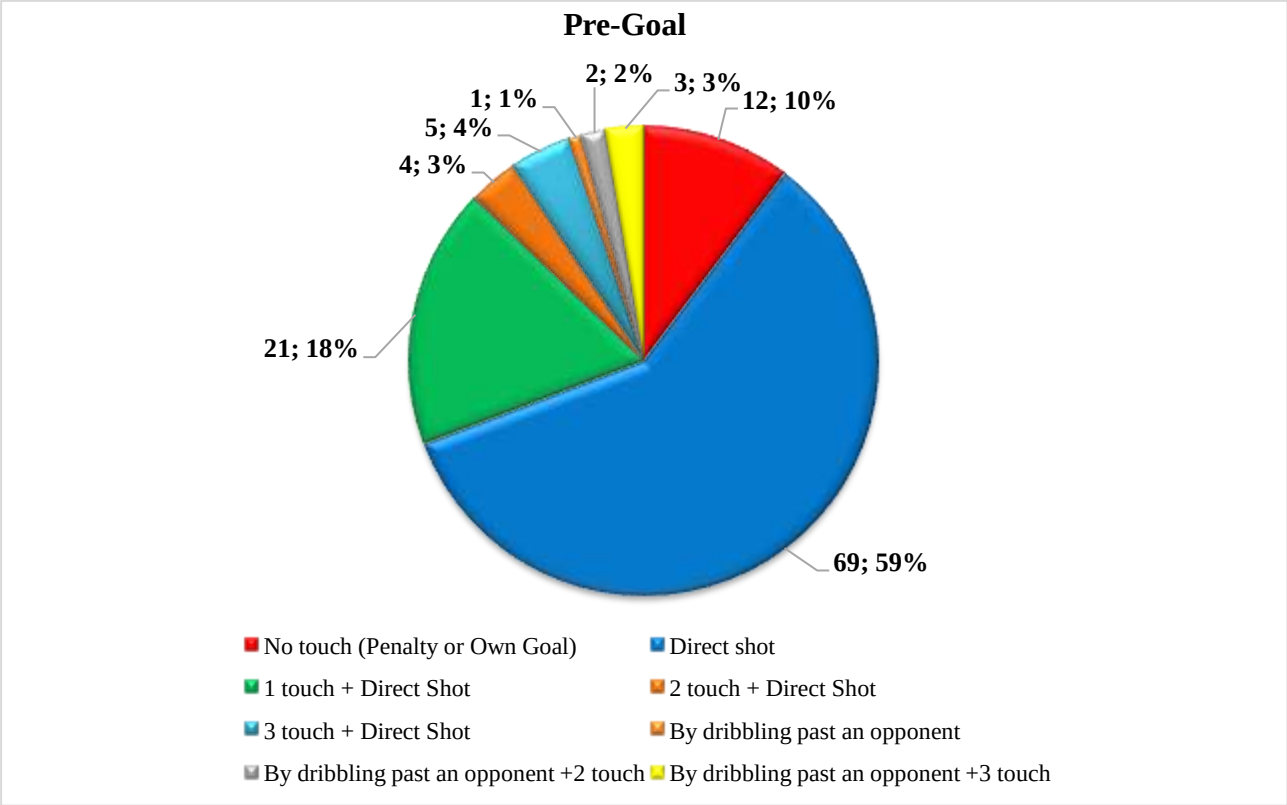


Figure 7. Pre-Goal

An analysis of the number of touches before the goal shows that the majority of goals were scored through direct shots (65 goals; 59%) and 1 touch + direct shots (21 goals; 18%), while the fewest goals were scored by dribbling past an opponent (1 goal; 1%) (Figure 7).

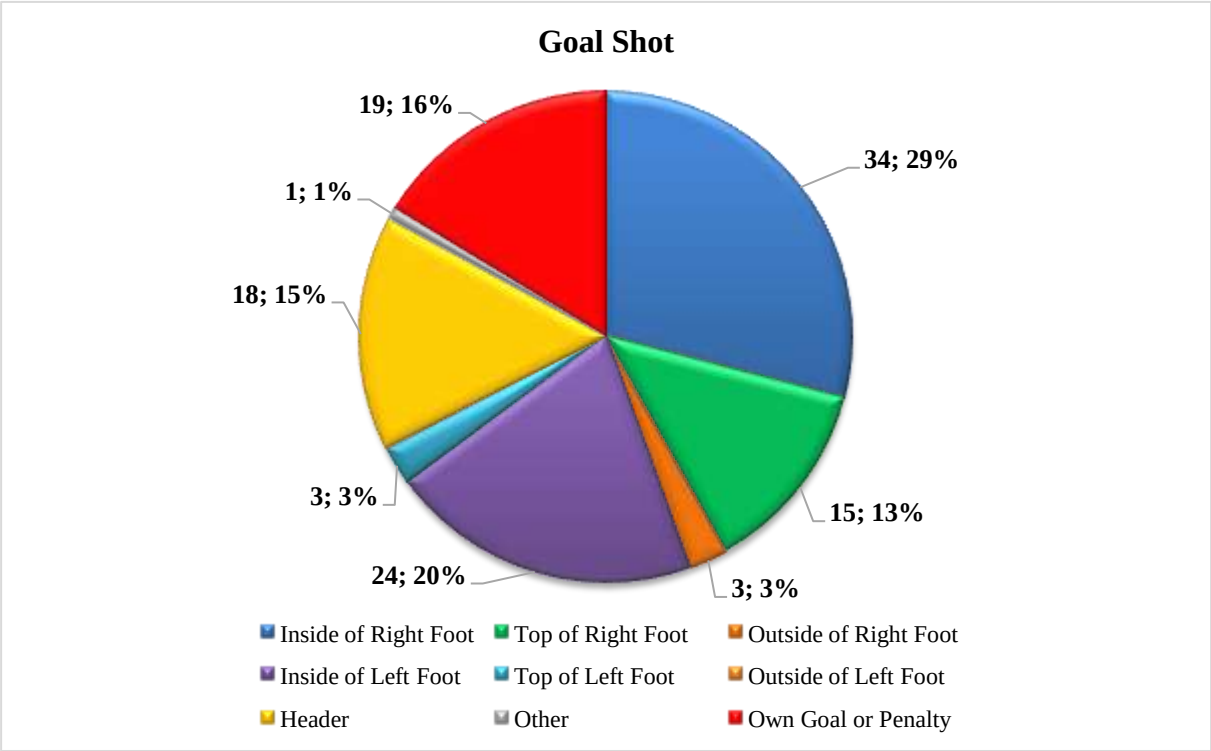


Figure 8. Goal Shot

An analysis of Figure 8 reveals that, excluding penalty and own goals, 79 out of the 98 goals scored in the tournament (68%) were made with the foot, 18 (15%) were headers, and 1 (1%) was scored using other body parts (outside the defined parameters). Among the goals scored with the foot, the most goals were scored with the inside of the right foot (34 goals) and the inside of the left foot (24 goals), while the fewest were scored with the outside of the right foot (3 goals; 1%) and the top of the right foot (3 goals).

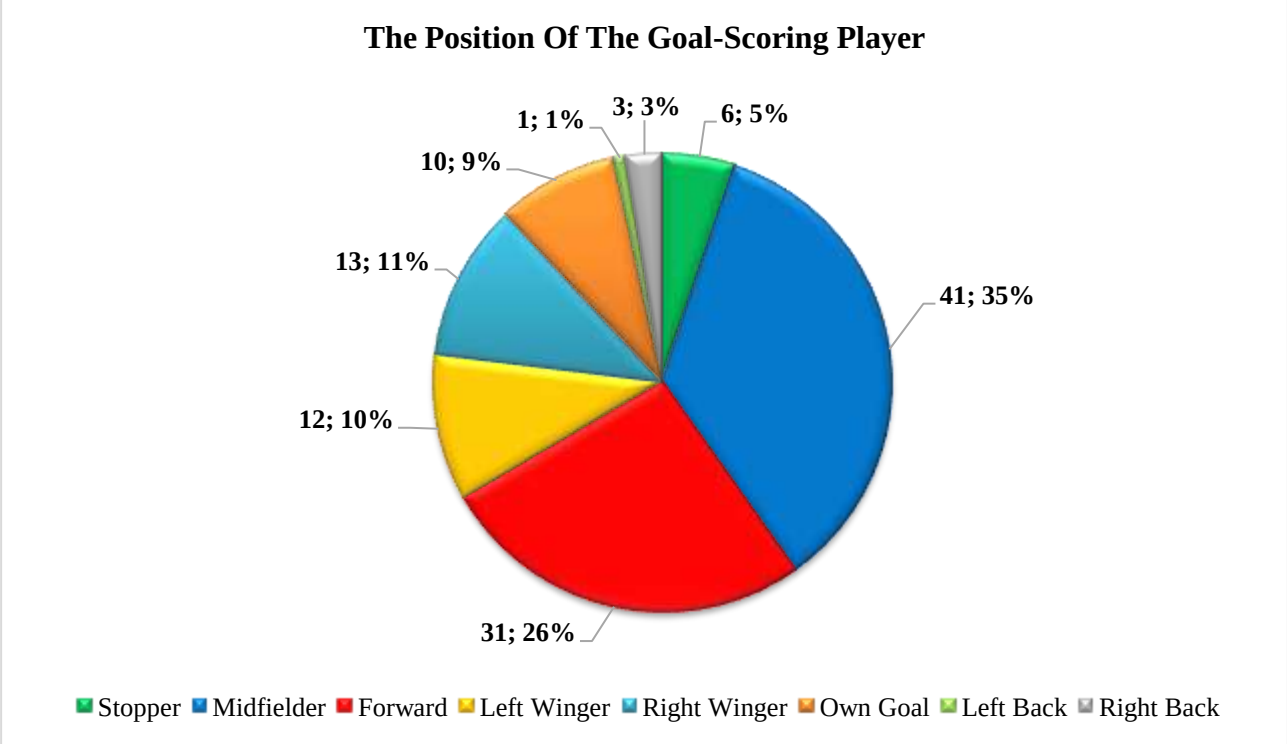


Figure 9. The Position Of The Goal-Scoring Player

An analysis of Figure 9 shows that the majority of goals were scored by midfielders (41 goals; 35%) and forwards (31 goals; 26%), while the fewest goals were scored by left-backs (1 goal; 1%) and right backs (3 goals; 3%).

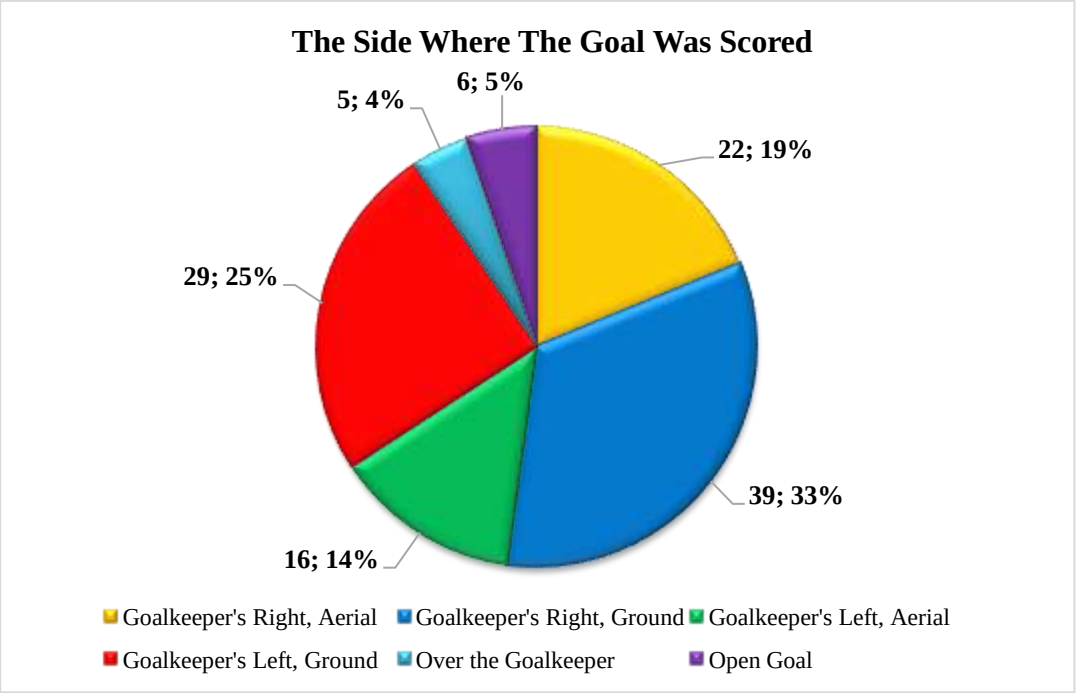


Figure 10. The Side Where The Goal Was Scored

An analysis of the side where the goal was scored shows that the majority of goals were placed to the goalkeeper's right on the ground (39 goals; 33%) and left on the ground (29 goals; 25%), while the fewest goals were scored over the goalkeeper (5 goals; 4%). No goals were scored through the goalkeeper's legs (Figure 10).

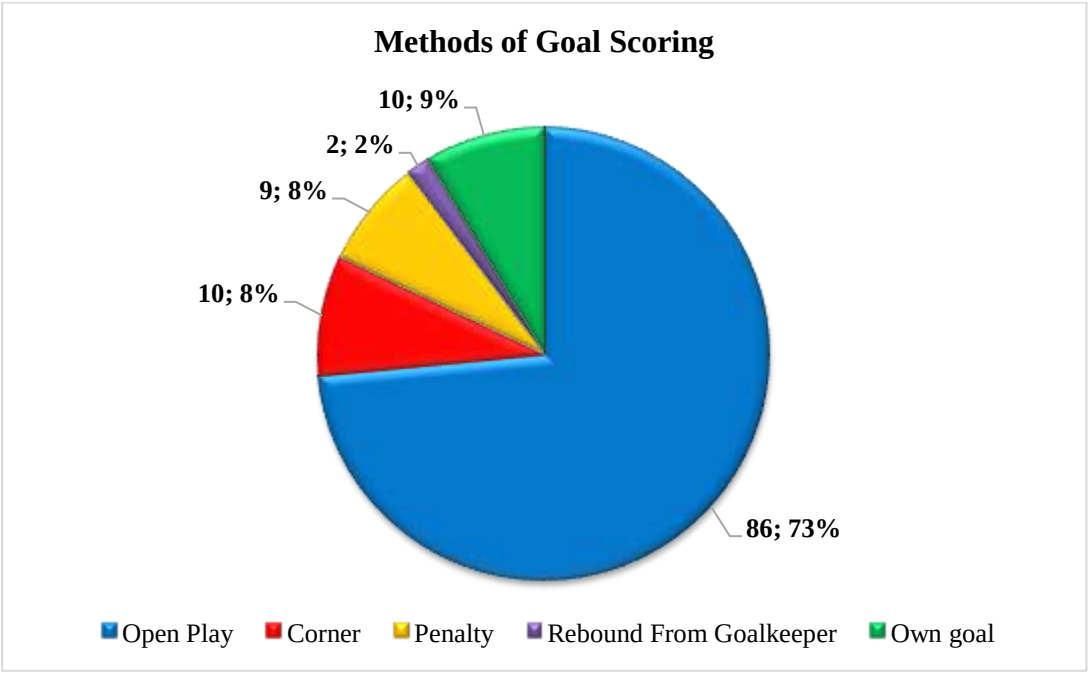


Figure 11. Methods of Goal Scoring

An analysis of the manner in which goals were scored shows that the majority of goals were scored during open play (86 goals; 73%) and from corners (10 goals; 8%), while the fewest goals were scored from rebounds off the goalkeeper (2 goals; 2%).

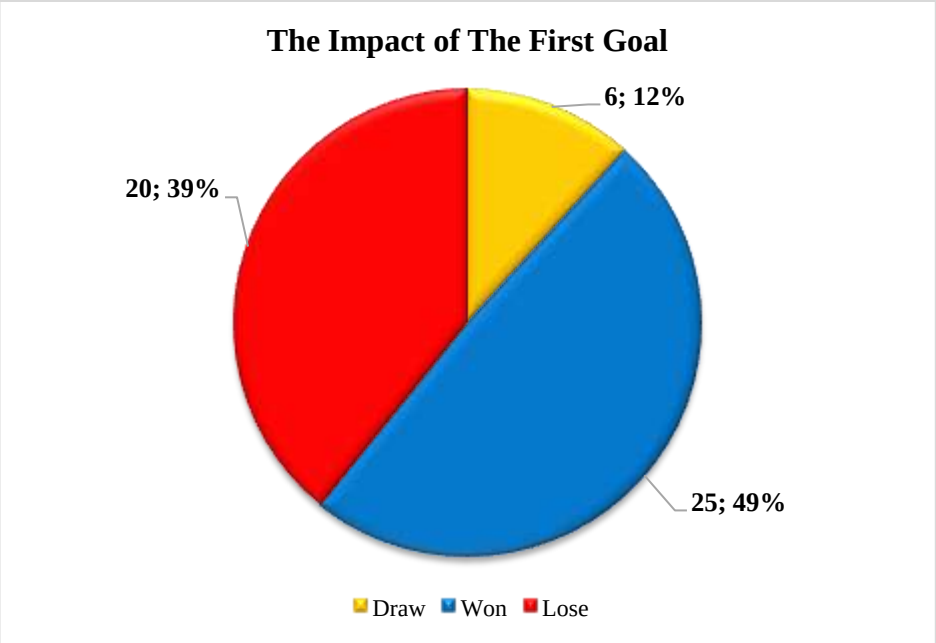


Figure 12. The Impact of The First Goal

When analyzing the impact of the first goal scored in a tournament on the match outcome, it is observed that teams who scored the first goal won 49% of the matches, while 23% of them failed to win despite scoring the first goal. In 6 matches, no goals were scored (Figure 12).

Table 3. Penalty Shot in Open Play

		n	%
Shot Type	Inside of Right Foot	6	66,7
	Top of Right Foot	1	11,1
	Inside of Left Foot	2	22,2
The Side from Which the Shot is Taken	Goalkeeper's Right, Aerial	1	11,1
	Goalkeeper's Right, Ground	3	33,3
	Goalkeeper's Left, Aerial	1	11,1
	Goalkeeper's Left, Ground	4	44,4
Was the Penalty Converted?	Yes	9	%100

	No	0	%0
The Goalkeeper's Corner Preferences	The Correct Choice	4	44,4
	The Wrong Choice	5	55,6

An analysis of penalty shots taken during open play reveals that 9 penalties were taken throughout the tournament. The majority of goals were scored to the goalkeeper's left on the ground (4 goals; 44,4%) using the inside of the right foot (6 goals; 66,7%). During these penalty kicks, goalkeepers made the correct corner choice 4 times and the wrong choice 5 times. All penalties taken during open play resulted in goals (9 goals) (Table 2).

Table 4. Video Assistant Referee (VAR) Decisions

		n	**%**
Reason for VAR	Offside	12	48,0
	Penalty	8	32,0
	Red Card	1	4,0
	Hand Contact With The Ball	3	12,0
	Inside the field of play	1	4,0
	Total	**25**	**100**
Decision	Changed	25	100
	Did Not Change	0	0

VAR was used a total of 25 times throughout the tournament. The most common reasons for VAR interventions were offside and penalty situations, respectively. In all 25 instances where the referees were called to review the VAR footage, their initial decisions were overturned (Table 4).

Discussion and Conclusion

This study examines the goal-scoring patterns observed during the 2024 UEFA European Championship. A total of 117 goals were scored in the tournament, averaging 2.29 goals per match. Of the 117 goals, 51 (43.6%) were scored in the first half, while 66 (56.4%) came in the second half. Previous analyses of goal-scoring patterns in the European Championships, including the 2004, 2012, 2016, and 2020 tournaments, similarly reported that more goals were scored in the second half of matches (Ağyol & Tanyeri, 2022; Çobanoğlu & Terekli, 2018; Leite, 2013; Yiannakos & Armatas, 2006). Likewise, the majority of goals in the 2022 UEFA Women's European Championship were also scored in the second half (Başkaya, 2023). In Kubayi's (2020) analysis of the 2018 FIFA World Cup, the majority of goals were also scored in the second half. The higher number of second-half goals is thought to be a result of the decline in physical performance due to fatigue (Barros, 2007; Rampinini et al.,

2007). Additionally, players entering the second half more motivated and energized, along with tactical and strategic adjustments made by the coaches, could also contribute to the increased number of goals in the second half. When examining the time intervals of the goals, most were scored between the 16th-30th minutes (23 goals), 41st-75th minutes (18 goals), and 76th-90th minutes (18 goals) (Table 2). These results are consistent with those from the 2012 UEFA European Championship (Leite, 2013). This data suggests that teams start the match more cautiously, but as the game progresses, breakdowns occur. Increasing the tempo during these intervals could provide teams with a scoring advantage.

When analyzing assists in the tournament, it was observed that the majority came from Zone 4 (25 assists; inside the penalty area), with ground passes being the most frequent assist type (40 assists), and midfielders contributing the most assists (Figure 3, Figure 4, Figure 5). Similarly, in the 2020 UEFA European Championship, most assists were made by midfielders through ground passes (Ağyol & Tanyeri, 2022). These findings align with our study, highlighting the importance of short passes in assisting goals during the tournament. Short passes provide more security and facilitate quick passing, enabling a fast-paced and fluid style of play, which was a key feature of this tournament. Training focused on developing this playing style could further improve game performance. Moreover, the significant role of midfielders in producing assists was evident, as they play a crucial role in both playmaking and delivering creative passes. Enhancing midfielders' creativity and playmaking abilities could significantly boost the team's offensive effectiveness.

In terms of goal-scoring areas, most goals were scored from Zone 1, Zone 4, and Zone 5 (all inside the penalty area) (Figure 6). Similarly, in the 2016 UEFA European Championship, the majority of goals (90 goals; 83.3%) were also scored from inside the penalty area (Çobanoğlu & Terekli, 2018). Likewise, in the 2010 FIFA World Cup, 82% of goals were scored from within the penalty area (İmamoğlu et al., 2011). The fact that most goals were scored from Zone 1 highlights the high likelihood of scoring when shooting from close range. Shots from this area make it difficult for goalkeepers to react, further increasing the probability of scoring.

When analyzing the number of touches before the goal, the type of shot, the position of the goal-scorer, and the side where the goal was scored, it was found that 69 goals (59%) were scored with a single touch (Figure 7). Similar findings were observed in the 2012 UEFA European Championship, where the majority of goals were also scored with a single touch (Mitrotasios, 2014). These results emphasize the importance of quick decision-making and execution in influencing match outcomes. They also highlight players' technical skills and rapid decision-making during critical moments, offering valuable insights for coaches. In terms of shot types, the most frequent was with the inside of the right foot (34 goals; 29%) (Figure 8). Similar to our study, the 2020 UEFA European Championship also showed that most goals were scored with the right foot (Ağyol & Tanyeri, 2022). Inside-foot shots are known for providing better ball control, which explains why this technique resulted in the most goals. From a defensive perspective, defenders should recognize the inside of the right foot as a threat and adjust their positioning accordingly to enhance defensive performance. Another parameter analyzed was the position of the goal-scorer, with midfielders scoring the most goals (41 goals; 35%) (Figure 9). Similarly, in the 2020 UEFA European Championship, midfielders also scored the most goals (Ağyol & Tanyeri, 2022). The fact that midfielders scored the majority of goals in the tournament may indicate a shift in modern football, where the use of the 4-6-0 formation has increased, and traditional number nines have been replaced by false nines. Thus, it is not surprising that midfielders scored the most goals in the European

Championship. Additionally, this suggests that midfielders making extra runs into the penalty area disrupt the defensive balance, creating situations that are difficult to defend. Coaches could consider these factors when designing offensive training programs. The majority of goals were scored to the goalkeeper's right, on the ground (39 goals; 33%) (Figure 10), and most goals in the tournament were scored during open play (86 goals; 73%) (Figure 11). Similar to our study, the majority of goals in the 2012 UEFA European Championship were also scored during open play (Mitrotasios, 2014). The high percentage of goals (86%) scored during open play demonstrates the effectiveness of players in utilizing the natural flow of the game and capitalizing on opportunities. It also highlights the ability of offensive and midfield players to create and convert chances during the natural progression of play. This further underscores the effectiveness of a fast-paced and dynamic style of play in generating goal-scoring opportunities.

An analysis of the impact of the first goal and parameters during open play indicates that teams scoring the first goal generally won the match (Figure 12). Similarly, teams scoring the first goal also won the match in the 2012 UEFA European Championship (Leite, 2013). Additionally, similar results were observed in the 2024 European Football Championship, as reported by Stafylidis et al. (2024)."

When analyzing penalties during open play, all nine penalties taken in the tournament resulted in goals (Table 3). Most penalties were taken with the inside of the right foot (6 goals; 66.7%), and the shots were placed to the goalkeeper's left, on the ground (4 goals; 44.4%).

Finally, when examining VAR decisions, VAR was used a total of 25 times during the tournament. It was most frequently used for offside (12 instances; 48%) and penalty (8 instances; 32%) situations, with referees overturning their decisions in all 25 cases (Table 4). The frequent use of VAR in offside situations indicates the critical and often contentious nature of these calls. The newly implemented semi-automated offside system helped referees make accurate decisions and reduce potential errors. Additionally, VAR's significant involvement in penalty decisions, which can greatly impact match outcomes, emphasizes its role in ensuring accuracy in critical situations. In conclusion, the 25 instances of VAR intervention during the UEFA 2024 European Championship, where referees changed their decisions each time they consulted the monitor, clearly highlight the critical role of VAR in match management and its effectiveness in ensuring decision accuracy. This demonstrates how VAR has significantly contributed to fair and accurate decisions in football, underscoring the impact of technology on decision-making processes.

Match analysis is one of the most effective ways for coaches to objectively evaluate both their team's and their opponents' performances. The analyses from the 2024 UEFA European Championship have revealed the need to reconsider offensive and defensive strategies. In particular, the goals scored from Zone 1 inside the penalty area and the midfielders' passing connections were among the most notable findings of the tournament. These results suggest that coaches should focus on utilizing Zones 1 and 4 inside the penalty area more effectively in their offensive setups, while improving defensive tactics in these areas. Additionally, the finding that most goals were scored with the inside of the right foot highlights the importance of developing players' technical skills. It is especially important for defenders to be better prepared for such shots, emphasizing the need to strengthen defensive positioning against them. Furthermore, this study shows that in modern football, it is not only the forwards but also the midfielders and wingers who play a crucial role in contributing to the scoreline. In conclusion, planning technical and tactical training based on these insights could improve

both offensive and defensive effectiveness. These findings offer significant contributions to understanding the dynamics of modern football and can serve as a guide for future research.

REFERENCES

Ağyol, M. A. A., & Tanyeri, L. (2022). Euro 2020 Avrupa Futbol Şampiyonasında atılan gollerin teknik analizi. *Çanakkale Onsekiz Mart Üniversitesi Spor Bilimleri Dergisi*, *5*(3), 23-42.

Alberti, G., Iaia, F. M., Arcelli, E., Cavaggioni, L., & Rampinini, E. (2013). Goal scoring patterns in major European soccer leagues. *Sport Sciences for Health*, *9*, 151-153.

Armatas, V., Giannakos, A., Skoufas, D., Zangelidis, G., Papadopoulou, S., & Fragkos, N. (2009). *Goal scoring patterns in Greek top leveled soccer matches*.

Barros, R. (2007). Analysis of the distances covered by first divisio.

Başkaya, G. (2023). 2022 Kadınlar Avrupa Futbol Şampiyonası: Gol Analizi: Betimsel Araştırma. *Turkiye Klinikleri Journal of Sports Sciences*, *15*(1).

Clarys, J., Reilly, T., & Stibbe, A. (2003). *Science and football II*. Taylor & Francis.

Çoban, O. (2019). Son dört yılın şampiyonlar ligi final maçlarının duran top ve gol analizi. *The Journal of Academic Social Science*, *4*(36), 719-726.

Çobanoğlu, H. O., & Terekli, M. S. (2018). 2016 Avrupa Futbol Şampiyonası: Gol Analizi. *Turkiye Klinikleri Journal of Sports Sciences*, *10*(3).

Erdal, A., & Apaydın, N. (2022). Türkiye Süper Ligi 2020-2021 Futbol Sezonunda Gol Zamanının Lig Sıralamasına Göre İncelenmesi. *Akdeniz Spor Bilimleri Dergisi*, *5*(2), 226-240.

Ergin, E., Kartal, R., Kartal, A., & Gürkan, O. (2023). Effects of the goal parameters of the football teams coming in the first four and last three places in the Bundesliga 2020-2021 season on the league ranking. *International Journal of Sport Culture and Science*, *11*(1), 25-33.

Ertetik, G., & Müniroğlu, R. S. (2021). Avrupa Kupalarına katılan Türk Futbol takımlarının maçlarının teknik ve taktik açıdan analizi. *Spormetre Beden Eğitimi ve Spor Bilimleri Dergisi*, *19*(1), 156-163

Gürkan, O., Ertetik, G., & Müniroğlu, S. (2017). Analysis of goals scored in UEFA champions league by the time periods. *International Journal of Sport Culture and Science*, *5*(3), 140-147.

Gürkan, O., Ertetik, G., & Müniroğlu, S. (2018). An examination of goals in the Turkish Super League according to time periods and scoring types Türkiye Süper Liginde atılan gollerin zaman dilimlerine ve türlerine göre incelenmesi. *Journal of Human Sciences*, *15*(1), 499-508.

İmamoğlu, O., Çebi, M., & Eliöz, M. (2011). Dünya Kupasındaki gollerin teknik ve taktik kriterlere göre analizi. *Türkiye Kickboks Federasyonu Spor Bilimleri Dergisi*, *4*.

Jones, P., James, N., & Mellalieu, S. D. (2004). Possession as a performance indicator in soccer. *International Journal of Performance Analysis in Sport*, *4*(1), 98-102.

Kubayi, A. (2020). Analysis of goal scoring patterns in the 2018 FIFA World Cup. *Journal of human kinetics*, *71*(1), 205-210.

Leite, W. S. (2013). Euro 2012: analysis and evaluation of goals scored. *International Journal of Sports Science*, *3*(4), 102-106.

Marques Junior, N. (2012). Gols e partidas da Copa do Mundo do Futebol, 1930 a 2010. *Lecturas: Educación Física y Deportes*, *15*(166), 1-12.

Mitrotasios, M. (2014). Analysis of goal scoring patterns in the 2012 Euro.

Rampinini, E., Bishop, D., Marcora, S., Bravo, D. F., Sassi, R., & Impellizzeri, F. (2007). Validity of simple field tests as indicators of match-related physical performance in top-level professional soccer players. *International journal of sports medicine*, *28*(03), 228-235.

Reilly, T. (2003). Science and soccer. Routledge.

Wright, C., Atkins, S., Polman, R., Jones, B., & Sargeson, L. (2011). Factors associated with goals and goal scoring opportunities in professional soccer. *International Journal of Performance Analysis in Sport*, *11*(3), 438-449.

Yavuz, M., & Saygın, Ö. (2021). Farklı Avrupa Liglerinde oynanan futbol müsabakalarında atılan gollerin teknik ve taktik analizi: Bundesliga, La Liga, Premier Lig. *International Journal of Sport Exercise and Training Sciences-IJSETS*, *7*(4), 163-170.

Yiannakos, A., & Armatas, V. (2006). Evaluation of the goal scoring patterns in European Championship in Portugal 2004. *International Journal of Performance Analysis in Sport*, *6*(1), 178-188.

Yolgörmez, A. C., & Kayatekin, B. M. (2023). Futbolda ilk golün maç sonucuna etkisi. *The Online Journal of Recreation and Sports*, *12*(1), 16-24.

International Journal of Sport Culture and Science
December 2024 : 12(4)
ISSN : 2148-1148
Doi : 10.14486/IntJSCS.2024.728

Investigation of Physical Education Teachers' Emotional Intelligence and Narcissistic Personality Traits Levels

Onur AKYÜZ[1], Mert Mazhar ERDURAN[2], Hüseyin Nasip ÖZALTAŞ [3]
[1]Dicle University, Diyarbakır, Türkiye
https://orcid.org/0000-0002-7631-460X
[2]Ankara University, Ankara, Türkiye
https://orcid.org/0000-0002-2504-7978
[3] Dicel University, Diyarbakır, Türkiye
https://orcid.org/0000-0002-9184-115X

Email: onurakyuz1986@gmail.com, mert.erdurann@gmail.com, huseyinozaltas@gmail.com

*Type: **Research** Article (Received: 25.10.2024– Accepted: 06.11.2024)*

Abstract

This study aims to examine the emotional intelligence levels and narcissistic personality traits of physical education teachers working in middle schools and high schools affiliated to the Ministry of National Education in the 2023-2024 academic year in terms of some variables. The universe of the study consists of physical education teachers working in middle and high schools affiliated to the Ministry of National Education in the 2023-2024 academic year. The sample group consists of 286 physical education teachers, 120 of whom are female and 166 of whom are male, within the research universe and who the researcher could reach. Personal Information Form as a data collection tool in the study: This form includes the gender, age and education levels of the physical education teachers participating in the study. Emotional Intelligence Scale: The ''Emotional Intelligence Scale'' developed by Wong and Law was used. The scale was adapted and developed into Turkish by Sudak (2011). Narcissistic Personality Inventory NPE - 16: The Turkish validity and study was conducted by Salim Atay (2009). The obtained data was analyzed using the SPSS 22 package program. In the analysis of two groups, "T-Test" was used for samples, in the comparative analysis of three or more groups, one-way analysis of variance (ANOVA) tests were used, and in order to determine which groups the differences originated from, Post-Hoc tests were used. In addition, Pearson Correlation Test was applied to determine the relationship between the variables. Findings: Physical education teachers' emotional intelligence levels and narcissistic personality traits do not differ in terms of gender and education level variables, but a statistically significant difference was observed in terms of age variable. It was determined that there was a low positive relationship between physical education teachers' emotional intelligence levels and narcissistic personality traits.

Keywords: Physical Education Teachers, Emotional Intelligence Level, Narcissistic Personality Traits

Introduction

Studies show that human emotions and relationships are as valuable as technology. Especially in professional groups such as teaching, since human relationships are of greater importance, personality traits and emotional competencies gain even more value. For this reason, emotional intelligence and personality traits, which explain the strong abilities related to a teacher's ability to correctly understand, interpret and express the emotions of students and themselves, to distinguish between these emotions and to put the information they synthesize into action in the stages of behavior and thought, are important in determining the success of the teacher not only in their private life but also in the rest of their life (Acar, 2002). Emotion is a factor that has both a cognitive and physiological substructure and is observed in human behavior with outputs such as sadness, happiness and hopelessness (Ulaş and Arbak, 2004). Intelligence is defined as the ability to learn, to criticize oneself, to solve concrete, verbal and abstract problems, to adapt to an unknown new situation and creativity (Akboy, 2005). Emotional intelligence; the individual's ability to understand and accept his/her own feelings and skills, to be inclined to new skills and better, to set goals, to understand the problems and feelings of other individuals and to establish relationships, to persuade, to develop consensus (Bridge, 2003). Mayer and Salovey defined emotional intelligence as "the ability to control, express, evaluate and perceive emotions correctly" (Salovey and Saluyter, 1997). Emotional intelligence is a mental ability. This ability is to have emotions on the one hand and to decipher the meaning of emotions on the other. The concept of emotion requires intelligence for the individual. Therefore, it enables the individual to comprehend the systematics of the mind and in this way directs to creative thinking (Epstein, 1999). Emotional intelligence is a phenomenon that can develop over time with the increase in the intellectual level of the person, socialization and maturation. It is known that people with high emotional intelligence levels can manage to be at the forefront due to their effective management, leadership and innovation characteristics (Cadman and Brewer, 2001).

In addition to all these, a teacher's self-perception, negative and positive thoughts about himself, how he sees himself, plays a determining role in his relationship with students. By its nature, each individual's self-admiration, interest in himself, and self-love are generally called "Narcissism". The origin of psychologically based narcissism comes from Narcissus, who fell in love with his own reflection in the river with his unrequited love in Greek mythology (Yörükan, 2000). Narcissism is the person's unconscious or conscious feelings of love, lust, admiration, pleasure and desire for his own body or identity, and the person's disregard for other people, seeing them as tools to serve his own purpose and not being able to develop a sense of empathy with them (Hamedoğlu, 2009). Freud stated that an individual cannot love someone else without loving himself (Timuroğlu, 2005). Although narcissism is generally considered as a person's love and admiration for himself, it actually represents the person's alienation from himself. Therefore, the fact that narcissism offers success, popularity and greatness in the same process is an indispensable way to strengthen the self-worth of individuals whose ego is not complete (Wardetzki, 2018). There are two types of narcissism: pathological and normal. As can be understood from here, narcissism is not only a negative concept. It has benefits for the teaching profession in terms of being committed to the job, being successful in stressful and difficult tasks, and being satisfied in the job (Wallace and Baumeister, 2002; Karataş and Taş, 2017).

As in all branches of the teaching profession, emotional intelligence and narcissistic personality traits are important for physical education teachers. Therefore, the emotional intelligence and narcissistic personality trait levels of physical education teachers are a subject

that needs to be examined. In this study, it was aimed to examine the emotional intelligence and narcissistic personality trait levels of physical education teachers.

Material and Method

Research Model

This research used the screening model, one of the quantitative research designs. This research determined the emotional intelligence levels and narcissistic personality traits of physical education teachers and revealed whether emotional intelligence levels and narcissistic personality traits differ according to some demographic variables.

Research Group

The universe of the research consists of physical education teachers working in middle and high schools affiliated to the Ministry of National Education in the 2023-2024 academic year. The sample group consists of a total of 286 physical education teachers, 120 of whom are female and 166 of whom are male, within the research universe and whom the researcher could reach. The subjects were selected by random sampling method.

Table 1. Demographic Information of the Research Group

Değişkenler	Gruplar	n	%
Gender	Female	120	42,0
	Male	166	58,0
	Total	286	100,0
Age	25 years old and under	134	46,9
	26-35 Years old	46	16,1
	36-45 Years old	58	20,3
	46 Years old and above	48	16,8
	Total	286	100,0
Level of Education	Graduate	228	79,7
	Postgraduate	58	20,3
	Total	286	100,0

Data Collection Tools

Personal Information Form: This form includes items regarding the gender, age and education level of the physical education teachers participating in the study.

Emotional Intelligence Scale: The ‘’Emotional Intelligence Scale’’ developed by Wong and Law was used. The scale was adapted to Turkish and developed by Sudak (2011). The scale is a 16-question, five-point Likert type, and includes four sub-dimensions. The questions are; strongly disagree ‘’1’’, the lowest score, strongly agree ‘’5’’, the highest score, and all are positive. The strongly agree answer (5) indicates the highest level of emotional intelligence sought in the scale, while strongly disagree (1) indicates the lowest level of emotional intelligence. The high scores obtained from the scale are directly proportional to the level of emotional intelligence. In other words, the higher the score obtained from the scale, the higher the level of emotional intelligence. The scale applied by Sudak to measure the emotional intelligence level of academics consists of 16 questions, five-point Likert type, and four sub-dimensions. The Cronbach Alpha value was calculated as 0.91 in the original form of the scale. In our study, the internal consistency coefficient was determined as 0.86.

Narcissistic Personality Inventory NKE - 16: Narcissistic Personality Inventory- NKE-16, which was validated and studied in Turkish by Salim Atay (2009), was used. The Cronbach's Alpha internal consistency coefficient of NKE was found to be .652. In this study, the internal consistency coefficient was determined as 0.68. NKE consists of 16 questions with 2 options.

These questions also cover the dimensions of authority, exhibitionism, exploitation, claiming rights, self-sufficiency and superiority. The minimum score that can be obtained from the inventory is 0, and the maximum score is 16.

Data Collection and Analysis

The research was approved by the ethics committee of Dicle University on 09.11.2023 with the approval number 597245. The scales were prepared electronically and sent to physical education teachers via virtual network channels (e-mail, social media). SPSS 22.00 package program was used in the analysis of the research data. T-Test was used for the difference of the means of the paired groups, ANOVA and Tukey Test from Post Hoc tests were used for the comparison of three or more independent groups. Pearson Correlation test was used to reveal the relationship between the emotional intelligence levels of physical education teachers and narcissistic personality traits.

Findings

Table 2. T-Test Results of the Emotional Intelligence Scale and Its Sub-Dimensions According to the Gender Variable of the Research Group

Scale and Sub-Dimensions	Gender	n	$\bar{X}$	ss	t	df	p
Self-Emotion Assessment	Female	120	4,17	0,50	1,84	284	**0,01***
	Male	166	4,03	0,69			
Evaluating the Emotions of Others	Female	120	3,98	0,53	1,65	284	**0,01***
	Male	166	3,86	0,65			
Use of Emotion	Female	120	4,29	0,58	3,78	284	0,09
	Male	166	3,99	0,72			
Emotion Regulation	Female	120	3,59	0,70	-2,10	284	0,93
	Male	166	3,78	0,76			
Emotional Intelligence Scale	Female	120	4,01	0,41	1,60	284	0,15
	Male	166	3,92	0,53			

** p<0.05*

Table 2 shows the T-Test results conducted to determine whether the sub-dimensions of the emotional intelligence scale differ statistically significantly according to the gender variable. When the table is examined, it is determined that the average scores of female physical education teachers differ statistically significantly from male physical education teachers in the sub-dimensions of self-emotion evaluation and others' emotion evaluation in emotional intelligence according to the gender of physical education teachers ($p<0.05$). According to the results of the applied T-Test, it is determined that there is no statistically significant difference between the average scores of physical education teachers' emotional intelligence scale, the average scores obtained from the emotional use and emotion regulation sub-dimensions according to the gender variable ($p>0.05$).

Table 3. T-Test Results of Narcissistic Personality Inventory (NPI) and Its Sub-dimensions According to the Gender Variable of the Research Group

Scale and Sub-Dimensions	Gender	n	$\bar{X}$	ss	t	df	p
Superiority	Female	120	0,46	0,35	2,48	284	**0,01***
	Male	166	0,36	0,31			
Exhibitionism	Female	120	0,41	0,34	2,70	284	0,28

	Male	166	0,30	0,34			
Authority	Female	120	0,48	0,38	1,60	284	0,08
	Male	166	0,41	0,39			
Exploitation	Female	120	0,23	0,34	1,79	284	**0,00***
	Male	166	0,17	0,27			
Claiming Rights	Female	120	0,38	0,26	1,35	284	**0,04***
	Male	166	0,33	0,29			
Self-Sufficiency	Female	120	0,39	0,29	0,32	284	0,72
	Male	166	0,38	0,30			
Narcissistic Personality Inventory (Total)	Female	120	0,40	0,19	2,96	284	0,49
	Male	166	0,33	0,19			

** p<0.05*

When Table 3 is examined, the T-Test results are given to determine whether physical education teachers differ statistically in terms of gender variable. As a result of the T-Test, the average scores of female physical education teachers in the "superiority, exploitativeness and entitlement" sub-dimensions of the narcissistic personality inventory of physical education teachers are statistically higher than male physical education teachers ($p<0.05$). No statistically significant difference was observed between the "exhibitionism, authority and self-sufficiency sub-dimensions and the narcissistic personality inventory total" scores of physical education teachers in terms of gender variable ($p>0.05$).

Table 4. ANOVA Results Regarding the Emotional Intelligence Scale and Its Sub-Dimensions According to the Age Variable of the Research Group

Scale and Sub-Dimensions	Age	n	$\bar{X}$	ss	f	p	Scheffe
Self-Emotion Assessment	25 and under (1)	134	3,89	0,66	10,24	**0,00***	**3-1** **4-1**
	26-35 (2)	46	4,16	0,48			
	36-45 (3)	58	4,34	0,48			
	46 and above (4)	48	4,26	0,61			
Evaluating the Emotions of Others	25 and under (1)	134	3,84	0,66	**1,66**	**0,18**	
	26-35 (2)	46	3,93	0,61			
	36-45 (3)	58	4,05	0,50			
	46 and above (4)	48	3,93	0,51			
Use of Emotion	25 and under (1)	134	4,08	0,76	**2,45**	**0,06**	
	26-35 (2)	46	4,07	0,61			
	36-45 (3)	58	4,33	0,53			
	46 and above (4)	48	4,02	0,62			
Emotion Regulation	25 and under (1)	134	3,53	0,75	**4,93**	**0,00***	**3-1**
	26-35 (2)	46	3,78	0,72			
	36-45 (3)	58	3,92	0,56			
	46 and above (4)	48	3,82	0,84			
Emotional Intelligence Scale	25 and under (1)	134	3,83	0,52	**6,91**	**0,00***	**3-1**
	26-35 (2)	46	3,99	0,49			

	36-45 (3)	58	4,16	0,35
	46 and above (4)	48	4,01	0,43

** p<0.05*

According to the One-Way ANOVA results of the Emotional Intelligence Scale and its sub-dimensions regarding the age variable of the participating physical education teachers in Table 4; a difference was observed between the sub-dimensions of the Emotional Intelligence Scale, which are self-emotion appraisal, emotion regulation and the overall average scores of the emotional intelligence scale ($p<0.05$). The mean scores of physical education teachers aged 36-45 and 46 years and above in the self-emotion appraisal sub-dimension were statistically higher than those of physical education teachers aged 25 and under. The mean scores of physical education teachers aged 36-45 in the emotion regulation sub-dimension of the emotional intelligence scale were statistically higher than those of physical education teachers aged 25 and under ($p<0.05$). According to the results of the emotional intelligence scale of physical education teachers, the mean scores of physical education teachers aged 36-45 were statistically higher than those of physical education teachers aged 25 and under ($p<0.05$). No statistical difference was observed in the sub-dimensions of the scale, which were evaluation of others' emotions and use of emotions ($p>0.05$).

Table 5. ANOVA Test Results Regarding Narcissistic Personality Inventory (NPI) and Its Sub-dimensions According to the Age Variable of the Research Group

Scale and Sub-Dimensions	Age	n	$\bar{X}$	ss	f	p	Scheffe
Superiority	25 and under (1)	134	0,53	0,34	16,12	**0,00***	**1-2** **1-3** **1-4**
	26-35 (2)	46	0,25	0,27			
	36-45 (3)	58	0,28	0,32			
	46 and above (4)	48	0,32	0,25			
Exhibitionism	25 and under (1)	134	0,43	0,35	7,02	**0,00***	**1-2** **1-4**
	26-35 (2)	46	0,23	0,27			
	36-45 (3)	58	0,34	0,37			
	46 and above (4)	48	0,22	0,29			
Authority	25 and under (1)	134	0,54	0,39	8,83	**0,00***	**1-2** **1-3**
	26-35 (2)	46	0,33	0,35			
	36-45 (3)	58	0,28	0,34			
	46 and above (4)	48	0,46	0,35			
Claim Rights	25 and under (1)	134	0,24	0,32	2,28	0,08	
	26-35 (2)	46	0,20	0,32			
	36-45 (3)	58	0,12	0,32			
	46 and above (4)	48	0,17	0,32			
Exploitation	25 and under (1)	134	0,41	0,28	7,58	**0,00***	**1-4** **2-4**
	26-35 (2)	46	0,38	0,21			
	36-45 (3)	58	0,31	0,26			
	46 and above (4)	48	0,21	0,27			

Self-Sufficiency	25 and under (1)	134	0,48	0,33	6,08	**0,00***	**1-3** **4-3**
	26-35 (2)	46	0,39	0,26			
	36-45 (3)	58	0,24	0,23			
	46 and above (4)	48	0,44	0,25			
Narcissistic Personality Inventory (Total)	25 and under (1)	134	0,43	0,18	16,60	**0,00***	**1-2** **1-3** **1-4**
	26-35 (2)	46	0,30	0,19			
	36-45 (3)	58	0,27	0,18			
	46 and above (4)	48	0,30	0,15			

** p<0.05*

According to the One-Way ANOVA results of the narcissistic personality inventory and its sub-dimensions regarding the age variable of the participating physical education teachers in Table 5; a difference was observed between the sub-dimensions of Narcissistic Personality Inventory, which are superiority, exhibitionism, authority, exploitation, self-sufficiency, and the general average scores of the narcissistic personality inventory ($p<0.05$). The average scores of physical education teachers aged 25 and under on the superiority sub-dimension of physical education teachers aged 26-35, 36-45, and 46 and over are statistically higher ($p<0.05$). The average scores of physical education teachers aged 25 and under on the exhibitionism sub-dimension are statistically higher than those of physical education teachers aged 26-35 and 46 and over ($p<0.05$). The average scores of physical education teachers aged 25 and under on the authority subdimension are statistically higher than the average scores of physical education teachers aged 26-35 and 36-45 ($p<0.05$). The average scores of physical education teachers aged 25 and under and 26-35 on the exploitativeness subdimension are higher than the average scores of physical education teachers aged 46 and over ($p<0.05$). The average scores of physical education teachers aged 25 and under and 46 and over on the self-sufficiency subdimension are statistically higher than the average scores of physical education teachers aged 36-45 ($p<0.05$). According to the results of the narcissistic personality inventory of physical education teachers, the average scores of physical education teachers aged 25 and under are statistically higher than the average scores of physical education teachers aged 26-35, 36-45 and 46 and over ($p<0.05$). No statistical difference was observed in the sub-dimension of the scale regarding the claims of others' rights ($p>0.05$).

Table 6. T-Test Results of the Emotional Intelligence Scale and Its Sub-Dimensions According to the Education Level Variable of the Research Group

Scale and Sub-Dimensions	Level of Education	n	$\bar{X}$	ss	t	df	p
Self-Emotion Assessment	Graduate	228	4,05	0,63	-2,13	284	0,31
	Postgraduate	58	4,24	0,56			
Evaluating the Emotions of Others	Graduate	228	3,89	0,60	-1,34	284	0,69
	Postgraduate	58	4,01	0,61			
Use of Emotion	Graduate	228	4,13	0,68	0,82	284	0,62
	Postgraduate	58	4,05	0,69			
Emotion Regulation	Graduate	228	3,72	0,75	1,21	284	0,42
	Postgraduate	58	3,59	0,69			
Emotional Intelligence Scale	Graduate	228	3,95	0,50	-0,34	284	0,32
	Postgraduate	58	3,97	0,42			

** p<0.05*

When Table 6 is examined, the T-Test results are given to determine whether physical education teachers differ statistically in terms of education level variable. As a result of the T-Test, no statistical difference was observed in the general and all sub-dimensions of the emotional intelligence scale of physical education teachers (p>0.05).

Table 7. T-Test Results of Narcissistic Personality Inventory (NPI) and Its Sub-Dimensions According to the Education Level Variable of the Research Group

Scale and Sub-Dimensions	Level of Education	n	$\bar{X}$	ss	t	df	p
Superiority	Graduate	116	0,30	0,28	2,58	284	0,16
	Postgraduate	170	0,47	0,35			
Exhibitionism	Graduate	116	0,31	0,32	2,66	284	0,18
	Postgraduate	170	0,37	0,36			
Authority	Graduate	116	0,34	0,40	2,52	284	0,05
	Postgraduate	170	0,51	0,36			
Claim Rights	Graduate	116	0,18	0,31	0,66	284	0,47
	Postgraduate	170	0,21	0,30			
Exploitation	Graduate	116	0,27	0,23	0,93	284	0,07
	Postgraduate	170	0,41	0,29			
Self-Sufficiency	Graduate	116	0,28	0,28	-0,25	284	0,41
	Postgraduate	170	0,45	0,28			
Narcissistic Personality Inventory (Total)	Graduate	116	0,28	0,18	2,70	284	0,17
	Postgraduate	170	0,41	0,18			

** p<0.05*

When Table 7 is examined, the T-Test results are given to determine whether physical education teachers differ statistically in terms of education level variable. As a result of the T-Test, it was observed that the total and all sub-dimensions of the narcissistic personality inventory of physical education teachers did not differ statistically (p>0.05).

Table 8. Results of Simple Correlation Analysis Between Physical Education Teachers' Emotional Intelligence and Narcissistic Personality Traits

		Narcissistic Personality Inventory
Emotional Intelligence Scale	r	**0,06***
	p	0,32

Table 8 shows the relationship between the emotional intelligence levels and narcissistic personality traits of the physical education teachers who participated in the study. The current finding shows that there is a weak positive significant relationship between the emotional intelligence and narcissistic personality traits of physical education teachers.

Discussion and Conclusion

The findings obtained from the study show that there is no significant difference in the emotional intelligence levels of physical education teachers according to the gender variable. Contrary to our study, Titrek (2004) found that there is a difference in terms of the gender variable in his study on the emotional intelligence competencies of faculty members. Contrary to this, Karamehmetoğlu's study on the emotional intelligence levels of physical education teachers, which supports our study, found that there is no difference in terms of the gender variable between the emotional intelligence levels of teachers.

It was determined that there was no difference in narcissistic personality traits of physical education teachers participating in the study in terms of gender variable. Koşan (2015) found in his study on narcissism levels of university students that narcissistic personality traits of students did not differ in terms of gender variable. Again supporting our study, Kocakula (2012) found in his study titled “Effect of Narcissistic and Obsessive Compulsive Personality Disorders on Decision Making Processes” that narcissistic personality traits did not differ in terms of gender variable.

Statistically, there was a difference in the average scores of physical education teachers in the "Emotional Intelligence Scale" according to the age variable. In contrast to our study, Fabio and Palazzeeschi (2008) stated that the average emotional intelligence scores of young teachers were higher than those of older teachers in their study on high school teachers. Harrod and Scheer (2005) found that the level of emotional intelligence increased with age. Karakaş and Küçükoğlu (2011) also found that the level of emotional intelligence increased with age in their study on nurses, which supports our study.

According to the average scores obtained from the narcissistic personality inventory in terms of the age variable of the participating physical education teachers, it was determined that the narcissistic personality traits of physical education teachers aged 25 and under were higher. In contrast to our study, Filiz (2022) found that the level of narcissistic personality traits of healthcare workers did not differ in terms of the age variable in his study on Healthcare Workers in Turkey. In Akıncı's (2015) study examining psychological well-being and types of narcissism, he concluded that the level of narcissism was higher at an early age and that the level of narcissism decreased as age progressed. This result also supports our study.

When the emotional intelligence levels of the physical education teachers participating in the study were examined in terms of the education level variable, no statistically significant difference was observed. Contrary to our study, Özmen (2009) found that the emotional intelligence levels of primary school teachers were higher in the emotional intelligence levels of teachers with an associate degree than those with a bachelor's degree. In support of our study, Kızıl, in his study titled "The relationship between teachers' emotional intelligence and organizational commitment" in 2014, did not observe a significant difference in the emotional intelligence levels of teachers according to their education levels.

When the mean scores of physical education teachers on the "Narcissistic Personality Inventory" were examined according to the variable of education level, no significant difference was observed. Contrary to our study, Cankurtaran and Barisha (2021) observed that the narcissistic personality averages decreased as the level of education decreased in their study on the narcissistic personality traits and education levels of coaches. In the study by Karataş and Taş (2017) examining the narcissistic personality traits of teachers in primary and secondary schools, they stated that the mean scores of the narcissistic personality inventory did not differ in terms of the variable of education level. This supports our study.

Table 8 shows the relationship between the Emotional Intelligence Scale and Narcissistic Personality Inventory of physical education teachers. The current finding shows that there is a weak positive significant relationship between both emotional intelligence and narcissistic personality traits.

As a result, since physical education teachers receive sports training during their education life and also come from sports, their emotional intelligence levels and narcissistic personality traits reach a certain level. When we look at the emotional effects of sports on people, it can be said that the emotional intelligence levels of individuals with sportsmanship are generally high. Again, although the narcissistic personality trait revealed by the sportsmanship identity is generally higher due to both the development of leadership skills and the competitive structure of sports, the narcissistic traits within individuals with sportsmanship identity are similar.

REFERENCES

Acar, F. (2002). Duygusal zekâ ve liderlik. Sosyal Bilimler Enstitüsü Dergisi. 12. 53– 68.

Akboy, R. (2005). Eğitim psikolojisi ve çoklu zekâ. İzmir: Dinazor Kitabevi.

Akıncı, İ. (2015). The relationship between the types of narcissism and psychological well-being: the roles of emotions and difficulties in emotion regulation, Middle East Technical University. The Department of Psychology. (Master's Thesis). Ankara

Atay, S. (2009). Narsistik kişilik envanteri'nin Türkçe'ye standardizasyonu. Gazi Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 11(1), 181-196.

Bridge, B. (2003). Duyguların eğitimi. Çev: Fatma Namak. Beyaz Yayınevi. İstanbul

Cadman, C., & Brewer, J. (2001). Emotional intelligence: A vital prerequisite for recruitment in nursing. Journal of Nursing Management, 9,321-324

Cankurtaran, Z., & Berısha, M. (2021). Antrenörlerin narsistik kişilik özellikleri ile eğitim düzeyleri arasındaki ilişkinin incelenmesi. Gazi Beden Eğitimi ve Spor Bilimleri Dergisi, 26(1), 71-84.

Epstein, R. (1999). The key to our emotions. Psychology Today, 32(4).

Fabio, A. D., & Palazzeschi, L. (2008). Emotional intelligence and self-efficacy in a sample of Italian high school teachers. Social Behavior and Personality: an international journal, 36(3), 315-326.

Filiz, M. (2022). Türkiye'de sağlık çalışanlarının karanlık üçlü kişilik özelliklerinin demografik değişkenler açısından incelenmesi. Eurasian journal of health technology assessment, 6(1), 1-11.

Hamedoğlu, M. A. (2009). Örgütsel narsisizm düzeyine ilişkin yönetici ve öğretmen algıları. Doktora Tezi, Ankara.

Harrod, N. R., & Scheer, S. D. (2005). An exploration of adolescent emotional intelligence in relation to demographic characteristics. Adolescence, 40(159).

Karakaş A.S, & Küçükoğlu S. (2011). Bir eğitim hastanesinde çalışan hemşirelerin duygusal zekâ düzeyleri. Anadolu Hemşirelik ve Sağlık Bilimleri Dergisi, 14: 3

Karamehmetoğlu, M. (2017). Beden eğitimi öğretmenlerinin duygusal zekâ düzeylerinin mesleki öz yeterlik ve problem çözme becerilerini belirlemedeki rolünün incelenmesi (Master's thesis, Marmara Universitesi (Turkey)).

Karataş, S., & Taş, A. (2017). İlk ve ortaokullardaki öğretmenlerin narsistik kişilik eğilimleri ile örgütsel özdeşleşme düzeyi arasındaki ilişkinin incelenmesi, Uşak Üniversitesi Eğitim Araştırmaları Dergisi, 3/1, 92- 121.

Kızıl, Ş. (2014). Öğretmenlerin duygusal zekâları ile örgütsel adanmışlıkları arasındaki ilişki (Balıkesir İli Örneği) (Yayınlanmamış Yüksek Lisans Tezi). Okan Üniversitesi, Sosyal Bilimler Enstitüsü, İstanbul.

Kocakula, Ö. (2012). Narsistik ve obsesif kompulsif kişilik bozukluklarının karar verme süreçlerine etkisi, Adnan Menderes Üniversitesi Yüksek Lisans Tezi.

Koşan, Y. (2015). Üniversite öğrencilerinin facebook kullanımının narsisizm ve saldırganlık düzeyleri ile ilişkisinin incelenmesi, Yüksek lisans tezi, Yüzüncü Yıl Üniversitesi, Van.

Salovey, P. E., & Sluyter, D. J. (1997). Emotional development and emotional intelligence: Educational implications. Basic Books.

Sudak, M. K. (2011), Kişilik tipleri, duygusal Zekâ, örgütsel vatandaşlık davranışı ilişkisi üzerine bir araştırma, Yayımlanmış Doktora Tezi, Gebze Yükek Teknoloji Enstitüsü, Gebze.

Özmen, Z. (2009). İlköğretim öğretmenlerinin duygusal zekâ düzeyleriyle öğrencilerin istenmeyen davranışlarını algılamaları ve başa çıkma yöntemleri arasındaki ilişki (Yayınlanmamış Doktora Tezi). Marmara Üniversitesi, Eğitim Bilimleri Enstitüsü, İstanbul.

Timuroğlu, M. K. (2005). İşyerinde narsisizm ve iş tatmini ilişkisi: Bir uygulama. Yüksek Lisans Tezi, Erzurum.

Titrek, O. (2004). Eğitim fakültesi öğretim üyelerinin duygusal zekâ yeterliklerini iş yaşamında kullanma ve akademik başarı düzeylerine ilişkin karşılaştırma. Ankara: A.Ü. Eğitim Bilimleri Enstitüsü, Yayınlanmamış Doktora Tezi.

Ulaş, Ç. ve Arbak, Y. (2004). Modern yaklaşımlar ışığında değişen duygu-zeka ilişkisi ve duygusal zeka. Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü Dergisi. 3(2):209-219.

Wallace, H. M., & Baumeister, R. F. (2002). "The performance of narcissists rises and falls with perceived opportunity for glory", Journal of Personality and Social Psychology, 82/5, 819–834.

Wardetzki, B. (2018). Siyasette ve toplumda narsisizm, ayartma ve iktidar. İstanbul: İletişim Yayınları.

Yörükan, D. (2000). Yunan mitolojisinde aşk. Ankara: Türkiye İş Bankası Kültür Yayınları.

International Journal of Sport Culture and Science
December 2024 : 12(4)
ISSN : 2148-1148
Doi : 10.14486/IntJSCS.2024.729

Predictives of Digital Game Addiction in Turkish High School Students

Ferhat ÇİFÇİ[1], Seniye ÇABUK KALKIŞIM [2]
[1]Dicle University, School of Physical Education and Sports, Diyarbakır, Turkey
https://orcid.org/0000-0002-5568-7837
[2]Turkish Ministry of National Education, Trabzon, Turkey
https://orcid.org/0000-0002-7528-9991

Email: ferhatcifci@gmail.com, cabukseniye99@gmail.com

*Type: **Research** Article (Received: 30.09.2024– Accepted: 23.12.2024)*

Abstract

Online gaming addiction, which is widely seen in children and young people all over the world, is a serious public health problem. It is important to determine the antecedents of this problem in preventing it. In this context, the aim of the research is to determine the possible effects of gender, age, school type, household monthly income, parental marital status and parental attitude in determining digital game addiction of Turkish high school students. The research used a relational screening model. A total of 295 high school students, 175 female and 120 male, participated in the study. Participants were included in the research using the convenient sampling method. Data were collected using the 'Digital Game Addiction Scale', 'Parenting Attitude Scale' and 'Personal Information Form'. Research findings showed that there was a relationship between high school students' digital game addiction and gender (r=.274), household income (r=.166) and parental marital status (r=143). Additionally, gender, household income and parental marital status were found to predict digital game addiction (R^2=.127; F=6.954; p=000). As a result, it can be said that high school students' digital game addiction levels are low, and gender, household income and parental marital status are predictors of digital game addiction.

Keywords: Digital game, addiction, Parental attitude, High school students

Introduction

One of the most important changes in the 21st century is undoubtedly the rapid development in technology (Güney, 2017). With this development, the internet has managed to take place in the lives of almost every individual with technological devices such as phones, computers, and tablets and has become an inseparable part of our lives (Savcı & Aysan, 2017). In the last twenty years, these technologies have become a popular leisure activity, especially among children and young people (Irmak & Erdoğan, 2019). In fact, children and young people have moved away from the traditional game world and turned to the digital game world (Horzum, 2011).

When the relevant literature is examined, digital games played in a controlled manner are seen to have many positive aspects such as providing hand-eye coordination, increasing

imagination, and developing spatial skills (Irmak & Erdoğan, 2016). Vlachopoulos and Makri (2017) stated that children playing digital games in a controlled manner contributes to learning new information and improving themselves. On the other hand, excessive use of digital games by children and adolescents can have negative effects on psychological, physiological development, and social relationships (Von der Heiden, Braun, Müller, & Egloff, 2019). In particular, along with the negative effects of violent games, a number of negative outcomes such as aggression, social isolation, and addiction are frequently discussed in the literature regarding digital games (Ferguson, 2007; Greitemeyer, 2019). Von der Heiden et al. (2019) stated that violent games played at an early age may have negative consequences on children's personality development and may increase the frequency of violent behavior in them. More importantly, it has been reported that digital games can turn into addiction when played excessively and compulsively, even for entertainment purposes (Mehroof & Griffiths, 2010).

Digital game addiction (American Psychiatric Association, 2013), for which different terms such as video game addiction (Griffiths & Hunt, 1995), pathological gaming (Johansson & Götestam, 2004) are used in the literature, is a condition with a high probability of causing physical, social and psychological problems (Lemmens, Valkenburg, & Peter, 2009), manifested by symptoms such as losing the ability to control oneself while playing games and continuing gaming behavior (Henderson, 2001), feeling deprived when prevented from playing games and/or becoming overly addicted to games. Digital game addiction can be defined as an addiction to listening, watching or playing games for entertainment purposes in online or offline environments using an electronic device such as a computer or console (Aziz, Nordin, Abdulkadir, & Salih, 2021). Addictive behavior refers to behavior that is maintained at an excessive, compulsive, uncontrollable level despite causing destructive problems physically, psychologically or socially (Weinstein, 2010).

While there is debate in the literature about whether playing digital games is beneficial or harmful, research has revealed that excessive gaming at the addictive level triggers anxiety, depression, neurotic disorders, attention deficit, aggression, eating disorders, sleep disorders, and physical inactivity (e.g., Gülü et al., 2023; Djannah, Tentama, & Sinanto, 2021; Mehroof, & Griffiths, 2010). Moreover, it has been found that excessive and compulsive video game playing has a relationship with poor psychosocial well-being (Lemmens, Valkenburg, & Peter, 2011), less satisfaction with daily life (Wang, Øfsdahl, & Mørch-Storstein, 2008), lower academic achievement (Skoric, Ching Teo, & Neo, 2009), and aggression and narcissism (Kim, Namkoong, Ku, & Kim, 2008). Liu and Peng (2009) revealed that there is a relationship between physical problems, deterioration of academic and professional performance and daily life problems experienced with playing digital games. Wang, Sheng, and Wang (2019) reported that mobile game addiction is positively associated with social anxiety, depression and loneliness. The World Health Organization (WHO) has also defined online game addiction, which is common all over the world, as a serious public health problem (WHO, 2018). Identifying the antecedents of this problem will help reduce or eliminate digital game addiction in children and adolescents.

When studies conducted to determine the factors associated with digital game addiction are examined, it is revealed that parenting attitude is an important determinant. Tuncay, Bozdoğan, and Bozdoğan (2023) reported that the interests, attitudes, and behaviors of families are related to children and adolescents' use of technology and digital game addiction. Şen (2022) revealed that there is a positive relationship between authoritarian parenting attitudes and digital game addiction. Çakır (2021) found that parental style affects game addiction in high school students and that children of negligent parents have a higher rate of

game addiction. Eni (2017), who conducted a study with high school students, reported that there is a relationship between parenting attitude and digital game addiction. Ayas and Horzum (2013) stated that family attitude affects children's internet addiction and that children of parents with negligent attitudes have higher levels of internet addiction. Young (1997) emphasized that children and adolescents who do not receive sufficient attention and affection from their families and who cannot establish healthy communication with their families resort to internet technologies as an escape, which will cause them to be exposed to the negative effects of technology. Studies show that children and adolescents who do not receive appropriate attitude from their parents are addicted to the internet (Chen, Li, & Long, 2007; Esen & Siyaz, 2011), and therefore addicted to digital games. Turkish Ministry of Health (2018) conducted a "Digital Game Addiction Workshop" to create an action plan to prevent digital game addiction, which is considered a public health problem, and the final report stated that parental indifference, inadequate supervision, and inconsistent and unhealthy parenting attitudes are important factors in digital game addiction. Therefore, it can be stated that the parent-child relationship and parenting attitude are important elements in preventing digital game addiction (Gladkaya, Gundlach, Bergert, Baumann, & Krasnova, 2018; Kwon, Chun, & Lee, 2011). However, research on the mediation of parenting attitude as a predictor of digital game addiction in children and adolescents is still insufficient.

Other antecedents of digital game addiction, which is a problematic game playing behavior, are gender and age variables (Kneer, Rieger, Ivory, & Ferguson, 2014). According to the results of the studies, the frequency of this problematic behavior is higher in boys (Hussain, Williams, & Griffiths, 2015) and at a younger age (Škařupová & Blinka, 2016). Hussain et al. (2015) reported that children and adolescents are in the highest risk group for game addiction. Polat and Topal (2022), Deniz (2021), and Yayman (2019) revealed that male students have higher levels of digital game addiction than female students in in different samples in their studies. Greenberg, Sherry, Lachlan, Lucas, and Holmstrom (2010) stated that boys are more prone to playing digital games. It was seen as a result of the literature review that the results of studies on digital game addiction differ. For example, in a recent study conducted by Kızılkaya and Erol (2024), it was reported that gender was not a determinant of digital game addiction. Similarly, Başdaş and Özbey (2020) stated that the age variable did not affect digital game addiction.

When the literature on digital addiction is examined, it is seen that household income level and whether the parents are separated or together are among the antecedents of digital game addiction. In their current study, Sosyal and Kartal (2024) revealed that high school students whose parents live together have higher digital game addictions than those whose parents are separated. In contrast to this study, Deniz (2021) concluded that addiction level is higher in children and adolescents whose parents are separated. Similarly, Deniz, Aydın, and Odabaş (2022) reported that those living in broken families, in other words, those whose parents are divorced or living separately, have a higher risk of digital game addiction. Studies have reported that household income level, in addition to family relationships, affects digital addiction (e.g., Çelik & Çelik, 2023). Başdaş and Özbey (2020) reported that the level of digital game addiction increases as the income level increases. Ciris et al. (2022), who conducted a study with a similar sample, reported that children with high household income levels also have higher game addiction levels. Contrary to these studies, the results of the study conducted by Eni (2017) with high school students show that there is a negative relationship between household income level and digital game addiction. In some studies conducted to determine the variables related to digital game addiction, the type of school studied was examined. Soysal and Kartal (2024) found that the type of school predicted

digital game addiction. Aksoy and Erol (2021) reported that vocational high school students had a higher rate of digital game addiction than those in other high schools. However, there is a lack of studies on school type in the national and international literature.

Studies have shown that playing digital games has serious harms as well as benefits for children and young people. Preventing these harms will only be possible by determining the antecedents of digital game addiction. However, the antecedents of digital game addiction consist of a multidimensional structure and can be explained by many interrelated factors (Çelik & Çelik, 2023). When the national and international literature is examined, it is seen that studies have been conducted that address many different factors related to digital game addiction, but there are differences in the results of the studies. This is a situation that prevents understanding digital game addiction. Therefore, more studies are needed. The purpose of this research is to determine the possible effects of gender, age, school type, household monthly income, parental marital status and parenting attitudes of Turkish high school students in determining digital game addiction.

Material and Method

Research Model

The research model of this study, which was conducted to determine the predictors of digital game addiction among Turkish high school students, is the correlational survey model. Correlational survey models are research models that aim to determine the existence of a change between at least two variables and, if so, the level and direction of this change (Karasar, 2015). In the study, this model was preferred to determine the existence, level and direction of the relationship between the variables.

Research Group

A total of 295 students, 175 girls and 120 boys, studying at three different high schools in the Yenişehir district of Mersin province in the fall semester of the 2023-2024 academic year participated in the study. The ages of the participants ranged from 14 to 19, and the average age was 15.34. The participants were included in the study using the convenience sampling method. Due to the easy access to the participants in the study on the internet, the data collection tools were prepared by the researchers on Google form. The link to the data collection tools created on the Google Form was shared with the parent groups, and the students whose parents approved filled out the data collection tools voluntarily via this link. In this process, firstly the parents of the participants examined the instructions and measurement tools regarding the purpose of the study and accepted the parental consent. Then they informed the students of whom they were the parents and determined whether their students were volunteers. Students who wanted to participate in the study voluntarily filled out the data collection tools in accordance with the explanations and instructions regarding the data collection tools from the relevant link under the supervision of their parents. In addition, ethics committee permission was obtained from the Artvin Coruh University Scientific Research and Publication Ethics Committee before the data collection process in the study (decision numbered 113002 dated 11.11.2023).

Data Collection Tools

Data in the study was collected using the ‘Digital Game Addiction Scale’, ‘Parenting attitude Scale’ and ‘Personal Information Form’.

Personal Information Form:

Personal information of the students participating in the study was obtained using the 'personal information form' developed by the researchers. This form includes 6 questions regarding gender (female, male), age, school type (project high schools accepting students by exam, Anatolian high schools, vocational high schools), grade level (9th, 10th, 11th, 12th grade), household monthly income (low, medium, high) and parental marital status (joint, separated/divorced). Previous research suggests that the student's socioeconomic status will affect gaming addiction. Therefore, the information form asked questions about household monthly income and parental marital status.

Digital Game Addiction Scale:

In the study, the 'Digital Game Addiction Scale' developed by Lemmens et al. (2009) and adapted by Irmak and Erdoğan (2015) for 12-18 year old Turkish adolescents was used to determine the participants' problematic digital game playing attitudes and behaviors. The scale consists of 7 single-dimensional items. The scale is in the form of a 5-point Likert. Scores of 3 and above from the scale indicate that the individual is a problematic digital game addict. The test-retest stability coefficient of the scale was found to be .80, and the cronbach alpha internal consistency coefficient was found to be .73. The reliability of the scale for this study was calculated as .87.

Parenting Attitude Scale:

In the study, the 'Parenting Attitude Scale' form, developed by Lamborn et al. (1991) and adapted for Turkish high school students by Yılmaz (2000), was used to determine the parenting attitudes of the participants. This scale consists of 21 items in three dimensions prepared in a 4-point Likert format. The acceptance-care subscale of the scale consists of 9 items and the minimum score that can be obtained is 9, the maximum score is 36; the control-monitoring subscale consists of 7 items and the minimum score is 7, the maximum score is 28, and the psychological autonomy subscale consists of 5 items and the minimum score is 5, the maximum score is 20. In the evaluation of the scale, getting above average score in three subscales means that the parents have democratic attitude, getting below average score in three subscales means that they have undemocratic attitude, getting above average score in any two dimensions means that they have democratic attitude to some extent and getting above average score in only one dimension means that they have undemocratic attitude to some extent. The test-retest stability coefficient and Cronbach alpha internal consistency coefficient of the scale were found as .82 and .70 for acceptance/care subscale, .88 and .69 for control-monitoring subscale, .76 and .66 for psychological autonomy subscale, respectively. Cronbach alpha reliability coefficient of the scale in this study was calculated as .85 for acceptance-care subscale, .74 for control-monitoring subscale and .65 for psychological autonomy scale.

Data Analysis:

In the study, descriptive statistics such as frequency and mean were first examined in the analysis of the data. The skewness and kurtosis values were evaluated to see whether the data was normally distributed or not. It was observed that the skewness and kurtosis values varied between -1 and +1. In other words, the data was normally distributed. Multiple linear regression analysis was used in the data analysis because the data in the study was normally distributed and met all other assumptions for regression analysis. The analyses were performed using the SPSS program version 23.

Findings

Table 1. Mean and Standard Deviation Values of Participants' Scores on the Digital Game Addiction Scale in Terms of Demographic Characteristics

Variables	Group	Digital Game Addiction		
		N	x̄	SS
Gender	Female	175	1.75	.80
	Male	120	2.21	.80
School Type	Project School	142	2.02	.79
	Anatolian High School	102	1.85	.83
	All Kinds of Vocational High Schools	51	1.90	.92
Grade	9	102	1.89	.77
	10	62	1.83	.69
	11	80	2.03	.92
	12	51	2.02	.94
Parental Marital Status	Together	252	1.89	.79
	Separated/Divorced	43	2.22	.98
Household monthly income	Low	130	1.79	.74
	Middle	135	2.03	.84
	Good and above	30	2.18	1.02
Parenting Attitude	Democratic Attitude	127	1.89	.83
	Somewhat Democratic Attitude	134	1.93	.79
	Somewhat Undemocratic Attitude	33	2.15	.94
	Undemocratic Attitude	1	1.14	-

Table 1 shows the mean and standard deviation values for digital game addiction scores of the high school students participating in the study. When the data were examined, it was seen that the mean scores for digital game addiction varied between 1.14 and 2.21 in terms of all demographic variables. In addition, it was determined that the students' mean scores for digital game addiction were low.

Table 2. Correlation Analysis Results Between Participants' Digital Game Addiction and Gender, Age, School Type, Household monthly income Status, Parental Marital Status and Parenting Attitudes

Variables	Digital Game Addiction	
	r	p
Gender	.274	.000**
Age	.064	.136
School Type	-.067	.127
Household monthly income	.166	.002**
Parental Marital Status	.143	.007**
Parenting Attitude	-.066	.129

** p<.01

Table 2 shows the results of the correlation analysis between digital game addiction and gender, age, school type, household monthly income level, parental marital status, and parenting attitudes. The findings show that there is a low level positive relationship between digital game addiction and gender (r= .274; p= .000), household monthly income level (r=.166; p=.002), and parental marital status (r= .143; p= .007). No significant relationship was found between digital game addiction and the age of the students (r= .064; p= .136), the type of school they attend (r= -.067; p= .127), and the attitudes of their parents (r= -.066; p= .129).

Table 3. Results of Multiple Regression Analysis for Predicting Digital Game Addiction

Variables	B	S.H.	β	t	P
Gender	.435	.004	.259	4.609	.000**

Age	.027	.041	.024	.423	.673
School Type	-.005	.052	-.006	-.104	.918
Household monthly income	.228	.073	.180	3.124	.002**
Parental Marital Status	.363	.132	.155	2.755	.006**
Parenting Attitude	-.031	.068	-.025	-.452	.651
R=.356; R^2 =.127; Durbin Watson; =1.960; $F_{(6,288)}$ =6.954; p=.000					

** p<.01

Table 3 presents the results of multiple regression analysis to reveal the role of the gender, age, school type, household monthly income, parental marital status and parenting attitude of the high school students participating in the study in determining digital game addiction. In the regression analysis, the autocorrelation between the variables was examined with the Durbin-Watson coefficient and was calculated as 1.960. The fact that this coefficient is close to 2 indicates that the variables are not autocorrelated. The research findings reveal that gender (β= .259; t= 4.609; p= .000), household monthly income (β= .180; t= 3.124; p= .002) and parental marital status (β= .155; t= 2.755; p= .006) predict digital game addiction (R= .356; R^2= .127; $F_{(6, 288)}$= 6.954; p= .000). Furthermore, it was determined that these three variables explained only 12.7% of digital game addiction and the most important variable in this model was gender (β= .259).

Discussion, Conclusion and Recommendations

This study aimed to determine the antecedents of digital game addiction in Turkish high school students and examined the possible effects of gender, age, school type, household monthly income, parental marital status and parenting attitudes in determining digital game addiction. The results show that there is a positive relationship between gender, household income and parental marital status and digital game addiction, and that these three variables positively predict digital game addiction in high school students. However, it was found that the participants' digital game addiction was low. These findings are consistent with the results of similar studies examining the effect of gender on digital game addiction in Turkey (Işık Afacan & Afacan, 2024; Polat & Topal, 2022; Deniz, 2021; Yayman, 2019; Ekinci, Yalçın, Özer, & Kara, 2017). According to the 2021 data of the Turkish Statistical Institute (TurkStat, 2021), it was determined that 94.7% of Turkish children aged 6-15 play digital games at least one day a week, and 96.2% of boys and 91.8% of girls play digital games regularly. This data shows that the rate of children playing digital games is generally high in Turkey, while boys play digital games at a higher rate. In the literature, similar research results on digital game addiction conducted in different cultures show that there is a relationship between gender and digital game addiction and that gender significantly predicts digital game addiction. Chiu, Lee, and Huang (2004), who examined digital game addiction in Taiwanese adolescents, found that there was a relationship between gender and digital game addiction in favor of males. Li and Wang (2013) reported that male adolescents in China were at higher risk of developing digital game addiction than females. Wittek et al. (2016) found that gender was positively associated with digital game addiction in a study conducted with Norwegian adolescents and adults. The results of a study conducted with adolescents in Hong Kong also reported that gender affected digital game addiction (Wang, Chan, Mak, Ho, Wong, & Ho, 2014). Similarly, Hussain et al., who conducted a study with a sample of many countries from Europe, America, and Asia such as Germany, Canada, and Japan, (2015) reported that males are in the risk group in terms of online game addiction. Lin and Yu (2008) reported that males prefer to play video and internet games, while females prefer to use the internet more for social media. In other words, the difference in digital game addiction in terms of gender may be due to males and females preferring different online activities.

There are also research results in the literature showing that digital game addiction does not differ between boys and girls. For example, Basha (2021) revealed that gender did not affect digital game addiction in his study with Kosovar adolescents. The results of a recent study conducted by Kızılkaya and Erol (2024) also showed that gender was not a determinant of digital game addiction. These research results contradict the results of the current study. Nowadays, both girls and boys have to spend more time at home and with technological devices such as phones due to different concerns of their families such as security (Basha, 2021). This may cause both genders to spend time playing games on digital platforms in a similar way. In addition, the similarity of digital addiction in terms of gender can be explained by the fact that in most societies, parental control is higher in girls than in boys, which causes girls to spend less time on the internet than boys (Tsai et al., 2009).

The research results show that the household monthly income level predicts digital game addiction and that digital game addiction scores increase as the income level increases. It is seen that different results are obtained in the studies in the literature examining the relationship between household monthly income and digital game addiction. For example, Ciris, Baskonus, Kartal and Tasdemir (2023), who studied high school students in Turkey, stated that household income is an important determinant for digital game addiction and that having a high household income increases the frequency of playing games and the time spent playing games. Başdaş and Özbey (2020) found that Turkish adolescents with high digital game addiction also have high income levels. Wu et al. (2016), who studied a Chinese sample, reported that adolescents with high socioeconomic status or family annual income were more likely to be addicted. Walther, Morgenstern, and Hanewinkel (2012) reported in their review that high socioeconomic status was associated with problematic computer game playing behavior. Göldal (2018) stated that children and adolescents with high-income families have easy access to technological tools such as computers, phones, and mobile internet used to play digital games. Aksoy and Erol (2021) reported that children from higher-income families spend more time on the internet for leisure or social interaction. They reported that this could increase game addiction in children and adolescents. Contrary to these studies, Aksoy and Erol (2021) reported a negative relationship between household income level and digital game addiction. Similarly, Eni (2017), who conducted a study with high school students in a Turkish sample, found that those with low household income had higher addiction. The high addiction level of adolescents from both low- and high-income families suggests that game addiction is not only affected by household income. Therefore, the effects of different socioeconomic parameters other than household income on game addiction should be examined.

Another result of the study is that whether the parents are together or separated or divorced does not predict digital game addiction. Wang et al. (2014) conducted a study on a Hong Kong sample and found that game addiction in adolescents is not associated with the marital status of the parents. This result supports our current research result. Behavioral addictions or behaviors such as technology or game addiction are seen as a simple habit or a means of emotional calming, especially by parents (Gökel, 2020), and these problematic behaviors can be ignored regardless of the marital status of the parents. This means that children experience these problematic behaviors in a similar way, whether their parents are together, divorced, or separated. However, there are also research results in the literature that show that parental marital status affects gaming addiction. Müller et al. (2015) conducted a study with 12,938 adolescents aged 14-17 in seven European countries and stated that children with separated or divorced parents have higher levels of addiction to the internet or online games. Frangos, Frangos, and Sotiropoulos (2011), who conducted a study on a Greek sample, reported that

university students with a divorced family were more problematic internet users. These research results (Müller et al., 2015; Frangos et al., 2011) contradict the results of the current study. This situation can be explained by the fact that the researchers worked with a larger sample group in the given studies and that in divorced, separated families, children living with a single parent have less control than those living with a single parent (Juthamanee & Gunawan, 2021). In addition, a single parent has less time and resources to support the interests and needs of their child compared to two parents (Schneider, King, & Delfabbro, 2017). This may result in the child playing games at an addictive level instead of alternative activities.

The current research results have shown that age is not a predictor of digital game addiction. There are research results supporting this result in both national and international literature. Basha (2021), who conducted a study with high school students in a Kosovo sample, revealed that age did not differentiate the level of digital game addiction. Wang et al. (2014) found that age and grade level did not affect digital addiction in a study with Hong Kong adolescents studying from 8th to 11th grades. Taylan, Topal, and Ayas (2018), who examined digital game addiction in a Turkish sample, concluded that age was not a precursor to digital game addiction in Turkish high school students. Başdaş & Özbey (2020) reported that there was no relationship between age and digital game addiction in university students. A recent study conducted with university students in a Nigerian sample showed that there is no relationship between age and game addiction (Badejo & Gandonu, 2024). In fact, this is an expected situation considering that children today are introduced to digital technologies at an early age (Kaya & Pazarcıkcı, 2023). There are also research results in the literature that show a relationship between age and game addiction. For example, Sayeed, Rasel, Habibullah, & Hossain. (2021) reported a relationship between increasing age and mobile game addiction in their study examining mobile game addiction among Bangladeshi university students. The results of this study contradict the current research result. This may be due to the fact that Sayeed et al. (2021) conducted their study with university students, that is, adults with higher awareness. Karabulut Coşkun & Akçay (2023) revealed that awareness of digital game addiction negatively affects gaming behavior. They also stated that awareness is a determinant of perceived usefulness. Sánchez-Mena, Martí-Parreño, & Aldás-Manzano (2017) reported that perceived usefulness directly and positively affects the intention to play the game. As a matter of fact, it is known that there is a relationship between awareness and behavior and attitude and that it can reinforce and strengthen the display of behavior (Hutton & Baumeister, 1992).

As a result of the research, it was determined that the type of school does not play a role in determining digital game addiction and that the digital game addiction scores of students studying in different high schools are similar. There are very few studies in the literature examining the relationship between school type and digital game addiction. Soysal and Kartal (2024) revealed that students studying in science high schools have higher levels of digital game addiction in their study with high school students playing e-sports. This result is surprising since science high schools are the high schools in Turkey where students are accepted by exam and have the highest academic success levels. Contrary to the results of this study, Aksoy and Erol (2021) found that students studying in vocational and technical high schools have higher digital game addiction than those studying in Anatolian high schools and health vocational high schools. These results are not consistent with our research results. This situation can be explained by the fact that researchers group schools in different ways in the studies conducted. However, it is clear that the number of studies examining digital game addiction in terms of school type is insufficient in the national and international literature.

There are many studies in the literature examining digital game addiction and parenting attitudes in different cultures. Eni (2017), who conducted a study with Turkish high school students, reported that parenting attitudes affect digital game addiction and that parents' democratic attitudes reduce game addiction. Similarly, Çakır (2021), who conducted a study with a high school group, found that students with a neglectful parenting style had higher digital game addictions than others. In a South Korean sample, Jang & Ryu (2016) reported that parenting attitudes and behaviors were significant predictors of problematic gaming in children and adolescents, and that parental monitoring of high school students reduced problematic mobile game use. In a Singapore sample, a study with 2974 children and adolescents found that restrictive parenting attitudes, such as stopping gaming, were not effective in reducing excessive gaming, but the attitudes and behaviors of parents towards their children affected their gaming levels (Choo, Sim, Liau, Gentile, Khoo, 2015). Schneider et al. (2017), who conducted a systematic review by examining studies conducted in many countries on different continents of the world such as Germany, China, South Korea, Singapore, Turkey, and Australia, stated that problematic gaming in adolescents is directly related to poor parent-child relationships and parental supervision. Contrary to these studies, the results of the current study surprisingly revealed that parenting attitudes are not a predictor of gaming addiction in high school students. This result contradicts the findings of the literature. This situation can be explained by the fact that the current study was conducted in a different sample group and with a small number of participants.

As a result, with the increase in digitalization, digital games have inevitably become a part of the lives of individuals in all age groups. In recent years, the positive and negative effects of digital games, especially on children and adolescents, have been discussed. However, it is clear that excessive playing of these games at an addictive level has negative effects on children and adolescents. Therefore, it is important to reveal possible risk factors with research results in order to prevent the negative consequences of digital game addiction in different cultures and samples or to prevent its progression. In this study, the role of gender, age, school type, parental marital status, household monthly income status and parenting attitude in determining digital game addiction of Turkish high school students was examined and it was revealed that gender, household monthly income status and parenting attitude explained only 12.7% of digital game addiction.

Although the current study contributes to the literature, it is clear that it has many limitations. First, this study was conducted with a limited number of high school students in only two cities in Turkey. Second, the study is a quantitative study in which the sampling method was used in participant selection. Therefore, studies involving a larger number of participants and using quantitative and qualitative research designs together can be conducted. Third, the study addressed gender, age, school type, parental marital status, household monthly income, and parenting attitudes as determinants of digital game addiction. In the future, more comprehensive studies can be conducted by examining digital game addiction in terms of physical game playing in open and closed areas, game motivation, game type, academic school success, player personality traits, psychosocial structures such as loneliness and depression; relationships with family and peers, household income status and other socioeconomic indicators other than parental marital status. Indeed, digital game addiction is affected by many interrelated factors and can be explained by the interaction of these factors (Çelik & Çelik, 2023). These studies will contribute to the determination of policies for children and young people to play digital games in a safer and healthier way.

REFERENCES

Aksoy, Z., Erol, S. (2021). Digital game addiction and lifestyle behaviors in Turkish adolescents. *Clinical and Experimental Health Sciences*, *11*(3), 589-597.

American Psychiatric Association. (2013). Diagnostic and Statistical Manual of Mental Disorders (DSM-V). 5th Edition, Washington: American Psychiatric Publishing. https://doi.org/10.1176/appi.books.9780890425596

Ayas, T., Horzum. M. B. (2013). İlköğretim öğrencilerinin internet bağımlılığı ve aile internet tutumu. *Turkish Psychological Counseling & Guidance Journal, 4*(39), 46-57.

Aziz, N., Md, J. N., Said, J. A., Muhammad Muhaimin, M. S. (2021). Digital addiction: Systematic review of computer game addiction impact on adolescent physical health. *Electronics, 10*(9), 996. https://doi.org/10.3390/electronics10090996

Badejo, A. O., Gandonu, M. B. (2024). Poverty and demographic variables as predictors of online games addiction among students in Lagos State University, Ojo-counselling for skill acquisition. *Educational Perspectives, 12*(2), 210-221.

Basha, E. (2021). The Relationship between game addiction and personality traits. *Erciyes Journal of Education, 5*(2), 149-160. https://doi.org/10.32433/eje.871051

Başdaş, Ö., Özbey, H. (2020). Digital game addiction, obesity, and social anxiety among adolescents. *Archives of Psychiatric Nursing, 34*(2), 17-20. https://doi.org/10.1016/j.apnu.2019.12.010

Chen, X., Li, F., Long, L. (2007). Prospective study on the relationship between social support and internet addiction. *Chinese Mental Health Journal, 21*(4), 240-243.

Chiu, S. I., Lee, J. Z., Huang, D. H. (2004). Video game addiction in children and teenagers in Taiwan. *CyberPsych,ology & Behavior, 7*(5), 571-581. https://doi.org/10.1089/cpb.2004.7.571

Choo, H., Sim, T., Liau, A. K., Gentile, D. A., Khoo, A. (2015). Parental influences on pathological symptoms of video-gaming among children and adolescents: A prospective study. *Journal of Child and Family Studies*, *24*, 1429-1441.

Ciris, V., Baskonus, T., Kartal, T., Tasdemir, A. (2022). A study on digital game addictions of adolescents in the Covid-19 pandemic. *Journal of Education in Science, Environment and Health (JESEH), 8*(2), 168-186. https://doi.org/10.55549/jeseh.01113707

Çakır, V. D. (2021). Analysis of the digital game addiction of high school students ın terms of the relationship between loneliness and ınternet parenting styles, and ınvestigation of digital game addiction ın terms of various demographics (Unpublished doctoral dissertation, Graduate Education Institute, Istanbul, Turkey). Retrieved from https://tez.yok.gov.tr/UlusalTezMerkezi

Çelik, E., Çelik, O. T. (2023). Çocuklarda dijital bağımlılığın öncülleri ve ardılları: Bir metasentez çalışması. *Milli Eğitim Dergisi, 52*(239), 1913-1944. https://doi.org/10.37669/milliegitim.1156463

Deniz, G. (2021). Ankara il merkezinde bulunan ortaokul ve lise öğrencilerinin dijital oyun bağımlılığı ve anne baba tutumlarının incelenmesi (Yayımlanmamış yüksek lisans tezi. Ankara Üniversitesi Sağlık Bilimleri Enstitüsü, Ankara, Türkiye). Retrieved from https://tez.yok.gov.tr/UlusalTezMerkezi

Deniz, G., Aydın, S., Odabaşı, D. (2022). Ankara il merkezindeki ortaokul ve lise öğrencilerinin dijital oyun bağımlılığı ve anne baba tutumlarının incelenmesi. *Halk Sağlığı Hemşireliği Dergisi, 4*(1), 43-55.

Djannah, S. N., Tentama, F., Sinanto, R. A. (2021). Game addiction among adolescents and its' health impacts. *International Journal of Public Health Science (IJPHS)*, *10*(3), 480-492. https://doi.org/10.11591/ijphs.v10i3.20920

Ekinci, N. E., Yalçin, I., Özer, Ö., Kara, T. (2017). An investigation of the digital game addiction between high school students. *Online Submission, 14*(4), 4989-4994. https://doi.org/10.14687/jhs.v14i4.4936

Eni, B. (2017). Lise öğrencilerinin dijital oyun bağımlılığı ve algıladıkları ebeveyn tutumlarının değerlendirilmesi (Yayımlanmamış yüksek lisans tezi. Haliç Üniversitesi Sosyal Bilimler Enstitüsü, İstanbul, Türkiye). Retrieved from https://tez.yok.gov.tr/UlusalTezMerkezi

Esen, E., Siyez, D. M. (2011). An investigation of psycho-social variables in predicting ınternet addiction among adolescents. *Turkish Psychological Counseling and Guidance Journal, 4*(36), 127-136. https://doi.org/10.17066/pdrd.38243

Ferguson, C. J. (2007). The good, the bad and the ugly: A meta-analytic review of positive and negative effects of violent video games. *Psychiatric Quarterly, 78,* 309-316. https://doi.org/10.1007/s11126-007-9056-9

Frangos, C. C., Frangos, C. C., Sotiropoulos, I. (2011). Problematic internet use among Greek university students: an ordinal logistic regression with risk factors of negative psychological beliefs, pornographic sites, and online games. *Cyberpsychology, Behavior, and Social Networking, 14*(1-2), 51-58. https://doi.org/10.1089/cyber.2009.0306

Gladkaya, M., Gundlach, J., Bergert, C., Baumann, A., Krasnova, H. (2018, August). We need to talk! Antecedents and consequences of children's smartphone use-A literature review. Adoption and Diffusion of Information Technology (SIGADIT). *Twenty-fourth Americas Conference on Information Systems*, New Orleans, USA. Retrieved from https://aisel.aisnet.org/amcis2018/AdoptionDiff/Presentations/16

Gökel, Ö. (2020). Teknoloji Bağımlılığının Çeşitli Yaş Gruplarındaki Çocuklara Etkileri Hakkındaki Ebeveyn Görüşleri. *Kıbrıs Türk Psikiyatri ve Psikoloji Dergisi, 2*(1), 41-47. https://doi.org/10.35365/ctjpp.20.2.6

Göldağ, B. (2018). Lise öğrencilerinin dijital oyun bağımlılık düzeylerinin demografik özelliklerine göre incelenmesi. *Van Yüzüncü Yıl Üniversitesi Eğitim Fakültesi Dergisi, 15*(1), 1287-1315.

Greenberg, B. S., Sherry, J., Lachlan, K., Lucas, K., Holmstrom, A. (2010). Orientations to video games among gender and age groups. *Simulation & Gaming, 41*(2), 238-259. https://doi.org/10.1177/1046878108319930

Greitemeyer, T. (2019). The contagious impact of playing violent video games on aggression: Longitudinal evidence. Aggressive Behavior, 45(6), 635-642. https://doi.org/10.1002/ab.21857

Griffiths, M. D., Hunt, N. (1995). Computer game playing in adolescence: Prevalence and demographic indicators. *Journal of Community & Applied Social Psychology, 5*(3), 189-193. https://doi.org/10.1002/casp.2450050307

Gülü, M., Yagin, F. H., Gocer, I., Yapici, H., Ayyildiz, E., Clemente, F. M., Ardigò, L. P., Zadeh, A. K., Prieto-González, P. Nobari, H. (2023). Exploring obesity, physical activity, and digital game addiction levels among adolescents: A study on machine learning-based

prediction of digital game addiction. *Frontiers in Psychology, 14*(1097145), 1-10. https://doi.org/10.3389/fpsyg.2023.1097145

Güney, B. (2017). Dijital bağımlılığın dijital kültüre dönüşmesi: Netlessfobi. *Yeni Medya Elektronik Dergisi, 1*(2), 207-213.

Henderson, E. C. (2001). *Understanding addiction*. Mississippi: University Press of Mississippi.

Horzum, M. B. (2011). İlköğretim öğrencilerinin bilgisayar oyunu bağımlılık düzeylerinin çeşitli değişkenlere göre incelenmesi. *Eğitim ve Bilim, 36*(159), 56-68.

Hussain, Z., Williams, G. A., Griffiths, M. D. (2015). An exploratory study of the association between online gaming addiction and enjoyment motivations for playing massively multiplayer online role-playing games. *Computers in Human Behavior, 50*, 221-230. https://doi.org/10.1016/j.chb.2015.03.075

Hutton, D. G., Baumeister, R. F. (1992). Self-awareness and attitude change: seeing oneself on the central route to persuasion. Personality and Social Psychology Bulletin, 18, 68-75. https://doi.org/10.1177/0146167292181010

Irmak, A. Y., Erdogan, S. (2016). Digital game addiction among adolescents and young adults: A current overview. *Turkish Journal of Psychiatry*, *27*(2), 1-10.

Irmak, A. Y., Erdogan, S. (2019). Predictors for digital game addiction among Turkish adolescents: a Cox's interaction model-based study. *Journal of Addictions Nursing, 30*(1), 49-56. https://doi.org/10.1097/JAN.0000000000000265

Irmak, A. Y., Erdoğan, S. (2015). Dijital oyun bağımlılığı ölçeği Türkçe formunun geçerliliği ve güvenilirliği. *Anadolu Psikiyatri Dergisi, 16*(1), 10-18. http://doi.org/10.5455/apd.170337

Işık Afacan, M., Afacan, E. (2024). Investigation of Volleyball Players' Metaphorical Perceptions Regarding the 2023 Kahramanmaraş Centered Earthquakes in Turkey: The Sultan's League Example. International Journal of Sport Culture and Science, 12(3), 277-289.

Jang, Y., Ryu, S. (2016). The role of parenting behavior in adolescents' problematic mobile game use. *Social Behavior and Personality: An International Journal, 44*(2), 269-282. https://doi.org/10.2224/sbp.2016.44.2.269

Johansson, A., Götestam, K. G. (2004). Problems with computer games without monetary reward: Similarity to pathological gambling. *Psychological Reports, 95*(2), 641-650. https://doi.org/10.2466/pr0.95.2.641-650

Juthamanee, S., Gunawan, J. (2021). Factors related to internet and game addiction among adolescents: A scoping review. *Belitung Nursing Journal*, *7*(2), 62-71.

Karabulut Coşkun, B., Akçay, A. (2023). Examining the prediction of digital game addiction awareness on digital educational game usage. Journal of Learning and Teaching in Digital Age, 8(1), 71-81. https://doi.org/10.53850/joltida.1098602

Karasar, N. (2015). *Bilimsel araştırma yöntemleri*. *Ankara: Nobel Akademik Yayıncılık.*

Kaya, A., Pazarcıkcı, F. (2023). Structural equation modeling analysis of risk factors for digital game addiction in adolescents: A web-based study. *Archives of Psychiatric Nursing, 43*, 22-28. https://doi.org/10.1016/j.apnu.2022.12.031

Kızılkaya, M. F., Erol, F. Z. (2024). Üniversite öğrencilerinin dijital oyun bağımlılığı düzeylerinin incelenmesi. *Batı Anadolu Eğitim Bilimleri Dergisi, 15*(2), 987-1012. https://doi.org/10.51460/baebd.1454087

Kim, E. J., Namkoong, K., Ku, T., Kim, S. J. (2008). The relationship between online game addiction and aggression, self-control and narcissistic personality traits. *European Psychiatry, 23*(3), 212-218. https://doi.org/10.1016/j.eurpsy.2007.10.010

Kneer, J., Rieger, D., Ivory, J. D., Ferguson, C. (2014). Awareness of risk factors for digital game addiction: interviewing players and counselors. *International Journal of Mental Health and Addiction, 12*, 585-599. https://doi.org/10.1007/s11469-014-9489-y

Kwon J.H., Chung C.S., Lee J. (2011). The effects of escape from self and interpersonal relationship on the pathological use of internet games. *Community Mental Health Journal, 47*, 113–121. https://doi.org/10.1007/s10597-009-9236-1

Lemmens, J. S., Valkenburg, P. M., Peter, J. (2009). Development and validation of a game addiction scale for adolescents. *Media Psychology, 12*(1), 77–95. https://doi.org/10.1080/15213260802669458

Lemmens, J. S., Valkenburg, P. M., Peter, J. (2011). Psychosocial causes and consequences of pathological gaming. *Computers in Human Behavior*, *27*(1), 144-152. https://doi.org/10.1016/j.chb.2010.07.015

Li, H., Wang, S. (2013). The role of cognitive distortion in online game addiction among Chinese adolescents. *Children and Youth Services Review, 35*(9), 1468-1475. https://doi.org/10.1016/j.childyouth.2013.05.021

Lin, C., Yu, S. (2008). Adolescent internet usage in Taiwan: Exploring gender differences. *Adolescence*, *43*(170), 317–331.

Liu, M., Peng, W. (2009). Cognitive and psychological predictors of the negative outcomes associated with playing MMOGs (massively multiplayer online games). *Computers in Human Behavior*, *25*(6), 1306-1311. https://doi.org/10.1016/j.chb.2009.06.002

Mehroof, M., Griffiths, M. D. (2010). Online gaming addiction: The role of sensation seeking, self-control, neuroticism, aggression, state anxiety, and trait anxiety. *Cyberpsychology, Behavior, and Social Networking*, *13*(3), 313-316. https://doi.org/10.1089/cyber.2009.0229

Müller, K. W., Janikian, M., Dreier, M., Wölfling, K., Beutel, M. E., Tzavara, C., Richardson, C., Tsitsika, A. (2015). Regular gaming behavior and internet gaming disorder in European adolescents: Results from a cross-national representative survey of prevalence, predictors, and psychopathological correlates. *European Child & Adolescent Psychiatry, 24*, 565-574. https://doi.org/10.1007/s00787-014-0611-2

Polat, A., Topal, M. (2022). Relationship between digital game addiction with body mass index, academic achievement, player types, gaming time: A cross-sectional study. *Journal of Educational Technology & Online Learning, 5*(4), 901-915. https://doi.org/10.31681/jetol.1156594

Sánchez-Mena, A., Martí-Parreño, J., Aldás-Manzano, J. (2017). The Effect of age on teachers' intention to use educational video games: A TAM approach. Electronic Journal of E-Learning, 15(4), 355-366.

Savcı, M., Aysan, F. (2017). Teknolojik bağımlılıklar ve sosyal bağlılık: İnternet bağımlılığı, sosyal medya bağımlılığı, dijital oyun bağımlılığı ve akıllı telefon bağımlılığının sosyal bağlılığı yordayıcı etkisi. *Düşünen Adam, 30*(3), 202-216. https://doi.org/10.5350/DAJPN2017300304

Sayeed, M. A., Rasel, M. S. R., Habibullah, A. A., Hossain, M. M. (2021). Prevalence and underlying factors of mobile game addiction among university students in Bangladesh. *Global Mental Health, 8*(35), 1–10. https://doi.org/10.1017/gmh.2021.34

Schneider, L. A., King, D. L., Delfabbro, P. H. (2017). Family factors in adolescent problematic Internet gaming: A systematic review. *Journal of Behavioral Addictions, 6*(3), 321-333. https://doi.org/10.1556/2006.6.2017.035

Škařupová, K., Blinka, L. (2016). Interpersonal dependency and online gaming addiction. Journal of *Behavioral Addictions, 5*(1), 108-114. https://doi.org/10.1556/2006.5.2016.002

Skoric, M. M., Ching Teo, L. L., Neo, R. L. (2009). Children and video games: Addiction, engagement and scholastic achievement. *CyberPsycology & Behavior, 12*(5), 565-572. https://doi.org/10.1089=cpb.2009.0079.

Soysal, S., Kartal, A. (2024). E spor oynayan ortaöğretim öğrencilerinin algıladıkları ebeveyn tutumlarının dijital oyun bağımlılığına etkisinin incelenmesi. *Uluslararası Bozok Spor Bilimleri Dergisi, 5*(1), 122-144.

Şen, C. (2022). Öğrenme güçlüğü tanılı çocuklarda anne baba tutumlarının dijital oyun bağımlılığına etkisinin incelenmesi (Yayımlanmamış yüksek lisans tezi. Üsküdar Üniversitesi Sağlık Bilimleri Enstitüsü, İstanbul, Türkiye). Retrieved from https://tez.yok.gov.tr/UlusalTezMerkezi

Taylan, H. H., Topal, M., Ayas, T. (2018). Sakarya'daki lise öğrencilerinin dijital oyun oynama eğilimlerinin incelenmesi. *Online Journal of Technology Addiction and Cyberbullying, 5*(1), 53-68.

Tsai, H. F., Cheng, S. H., Yeh, T. L., Shih, C. C., Chen, K. C., Yang, Y. C., Yang, Y. K. (2009). The risk factors of Internet addiction—A survey of university freshmen. *Psychiatry Research, 167*(3), 294-299. https://doi.org/10.1016/j.psychres.2008.01.015

Tuncay, P. Y., Bozdoğan, K. E., Bozdoğan, E. (2023). Ergenlerde dijital oyun bağımlılığı ve aile içi iletişim arasındaki ilişkinin incelenmesi. *Eğitim ve Toplum Araştırmaları Dergisi, 10*(2), 177-195. https://doi.org/10.51725/etad.1334923

Turkish Ministry of Health. (2018). Dijital oyun bağımlılığı çalıştayı sonuç raporu. Retrieved from https://sggm.saglik.gov.tr/Eklenti/30051/0/yenidijitalpdf.pdf

Turkish Statistical Institute. (2021). *The child in statistics*. Ankara: Turkish Statistical Institute.

Vlachopoulos, D., Makri, A. (2017). The effect of games and simulations on higher education: A systematic literature review. *International Journal of Educational Technology in Higher Education, 14*, 1-33. https://doi.org/10.1186/s41239-017-0062-1

Von der Heiden J. M., Braun B., Müller K. W., Egloff B. (2019). The association between video gaming and psychological functioning. *Frontiers in Psychology, 10*(1731), 1-11. https://doi.org/10.3389/fpsyg.2019.01731

Walther, B., Morgenstern, M., Hanewinkel, R. (2012). Co-occurrence of addictive behaviours: Personality factors related to substance use, gambling and computer gaming. *European Addiction Research*, *18*(4), 167-174. https://doi.org/10.1159/000335662

Wang J-L., Sheng J-R., Wang, H-Z. (2019). The association between mobile game addiction and depression, social anxiety, and loneliness. *Frontiers in Public Health, 7*(247), 1-6. https://doi.org/10.3389/fpubh.2019.00247

Wang, A. I., Øfsdahl, T., Mørch-Storstein, O. K. (2008, April). An evaluation of a mobile game concept for lectures. *21st Conference on Software Engineering Education and Training*, Charleston, SC, USA (pp. 197-204). https://doi.org/10.1109/CSEET.2008.15

Wang, C. W., Chan, C. L., Mak, K. K., Ho, S. Y., Wong, P. W., Ho, R. T. (2014). Prevalence and correlates of video and internet gaming addiction among Hong Kong adolescents: A pilot study. *The Scientific World Journal*, *2014*(874648), 1-9. https://doi.org/10.1155/2014/874648

Weinstein, A. M. (2010). Computer and video game addiction—a comparison between game users and non-game users. *The American Journal of Drug and Alcohol Abuse, 36*(5), 268-276. https://doi.org/10.3109/00952990.2010.491879

Wittek, C. T., Finserås, T. R., Pallesen, S., Mentzoni, R. A., Hanss, D., Griffiths, M. D., Molde, H. (2016). Prevalence and predictors of video game addiction: A study based on a national representative sample of gamers. *International Journal of Mental Health and Addiction, 14*, 672-686. https://doi.org/10.1007/s11469-015-9592-8

World Health Organization. (2018). Gaming disorder. Retrieved from: http://www.who.int/features/qa/gaming-disorder/en/.

Wu, X. S., Zhang, Z. H., Zhao, F., Wang, W. J., Li, Y. F., Bi, L., ... Sun, Y. H. (2016). Prevalence of Internet addiction and its association with social support and other related factors among adolescents in China. *Journal of Adolescence, 52*, 103-111. https://doi.org/10.1016/j.adolescence.2016.07.012

Yayman, E. (2019). Ergenlerde sosyal medya bağımlılığı oyun bağımlılığı ve aile işlevleri arasındaki ilişkinin incelenmesi (Yayımlanmamış yüksek lisans tezi. İstanbul Sabahattin Zaim Üniversitesi Sosyal Bilimler Enstitüsü, İstanbul, Türkiye). Retrieved from https://tez.yok.gov.tr/UlusalTezMerkezi

Yılmaz, A. (2000). Anne-baba tutum ölçeği'nin güvenirlik ve geçerlik çalışması. *Çocuk ve Gençlik Ruh Sağlığı Dergisi, 7*(3), 160-172.

Young, K. S. (1997, August). What makes the Internet addictive: Potential explanations for pathological Internet use. *In 105th Annual Conference of the American Psychological Association*, Chicago, IL, USA, 15, 12-30. Retrieved from https://www.healthyplace.com/addictions/center-for-internet-addiction-recovery/what-makes-the-internet-addictive-potencial

International Journal of Sport Culture and Science
December 2024 : 12(4)
ISSN : 2148-1148
Doi : 10.14486/IntJSCS.2024.730

Rumination and Physical Activity Enjoyment in the Long Term After the Kahramanmaraş Earthquake

Melek GÜLER[1], Nuri BAŞKARA[2]
[1]Karamanoğlu Mehmetbey Üniversitesi, Spor Bilimleri Fakültesi
https://orcid.org/0000-0001-9707-7271
[2]Karamanoğlu Mehmetbey Üniversitesi, Sosyal Bilimler Enstitüsü
https://orcid.org/0009-0005-0434-5481

E-mail: melekglr@kmu.edu.tr , baskara31@gmail.com

Type: *Original Article (**Received:**19.07.2024 – **Accepted:**18.11.2024)*

Abstract

Apart from the fact that Türkiye is an earthquake country, the earthquake, the epicenter of which was Kahramanmaraş province on 6 February and which covered 11 provinces and was known as the disaster of the century, caused devastating results. In addition to threatening human life, natural disasters such as earthquakes can also affect people's mental states and daily life habits in both the short and long term. In this context, this study aimed to examine the levels of rumination (recurring negative thoughts) and enjoyment of physical activity of the students of the Faculty of Sports Sciences in the long term after the Kahramanmaraş earthquake. The research was cross-sectional in the relational screening model. The sample of the study consisted of (n:253) students studying at Karamanoğlu Mehmetbey University Faculty of Sport Sciences. Demographic information form, Self-Critical Rumination and Physical Activity Enjoyment Scale (PAES) were used as data collection tools in the study. Descriptive analyses, Man Whitney-U test, Kruskal Wallis test and Spearman's correlation test were used to analyze the data. According to the research results, the PAE levels of the participants were significantly higher in males than females and in those who do sports than those who do not do sports ($p<0.5$). A significant negative relationship was found between the participants' enjoyment of physical activity and rumination levels ($p<0.5$). As a result, physical activity can be recommended to protect mental health after natural disasters such as earthquakes.

Keywords: Physical activity, Negative thinking, Natural disaster

Introduction

On 6 February 2023, many of our citizens lost their lives and many of our citizens were injured in the disaster of the century, the epicentre of which was Kahramanmaraş province, and 10 other provinces were affected by this earthquake. This natural disaster deeply grieved the whole of Türkiye and the whole country started an aid mobilisation. More than 1 year has passed since the disaster of the century and the wounds are still being healed. After natural disasters such as earthquakes, the economic status, physiological health and psycho-social status of individuals are affected (Bulut, 2023). It is said to cause negative thinking (rumination) and post-traumatic stress disorder after a traumatising event such as an earthquake (D'Andrea et al., 2011). In one of the first studies on rumination, it was concluded that the probability of acute ruminative reactions in individuals immediately after a natural disaster was high, and the probability of individuals showing ruminative reactions to show long-term depression symptoms was significantly higher (Nolen-Hoeksema & Morrow, 1991).

Rumination is generally associated with mental problems such as depression or anxiety and is explained as the tendency of individuals to think about the negative events they have experienced over and over again in their minds (Shors et al., 2017). After the Maraş earthquake, the transition of universities to distance education, earthquake victims and students changing cities may have increased the likelihood of mental problems and rumination in university students. This situation may have caused differences not only in the daily life habits of individuals after natural disasters but also in their participation in physical activity (Gümüş & Çakır, 2023). Previous studies have reported that university students who regularly engage in physical activity can overcome mental problems better (Zhang et al., 2022). In a large-sample study conducted in the USA, it was concluded that the mental state of university students in the past 1 month was related to the level of physical activity (Chekroud et al., 2011). Studies have shown that not only mental practices but also both mental and physical training practices are beneficial in dealing with rumination (Alderman et al., 2016; Lavadera et al., 2020; Shors et al., 2014).

In recent years, it can be said that research on the effect of physical activity on rumination has increased (Liu et al., 2023). In an experimental study, it was concluded that rumination group counselling and Qigong exercises can reduce anxiety levels of young individuals and increase optimism, hope, resilience and self-efficacy levels (Min & Yao, 2022). In another study, it was found that university students who did not engage in physical activity had higher levels of ruminative thinking, which may increase the amount of negative emotions (Ye et al., 2022). In parallel with this study, in a study conducted in Chinese university students, it was reported that physical activity can reduce students' rumination, anxiety and depression levels (Liu et al., 2023). These research results show the importance of physical activity continuity.

Subjective evaluations at the point of continuity of physical activity may be due to positive reinforcements (liking the activity, enjoyment, etc.), and discontinuation of the activity or avoidance behaviour may be due to negative reinforcements (bad activity experience, boring or uninteresting, etc.) (Teixeria et al., 2021). It is known that sports science students, especially those who have continuous practice courses, keep their physical activity levels high during the distance education process in the Covid-19 pandemic (Al-Mhanna et al., 2024). In a study conducted in young earthquake survivors after the earthquake, it was determined that the motivation of individuals to participate in physical activity was at an average level (Gümüş & Çakır, 2023). At this point, being aware of physical activity and participating in the most enjoyable physical activity may be important in terms of protecting both physical

and mental health (Rodrigues & Teixeira, 2023). On the other hand, the conclusion that there is no difference between the life satisfaction of individuals who do and do not do sports in the literature also creates a contradiction (Kaya et al., 2018). Considering the studies under review, it may be useful to investigate the relationship of physical activity with negative thoughts in university students affected by the earthquake. It is also known that there are differences in regulating the emotions of students of the Faculty of Sports Sciences according to gender, age and athlete background (Güler, 2022). In this context, this research aimed to examine the physical activity enjoyment and rumination levels of Sport Sciences students and to reveal the relationship between these levels.

Material and Method

Research Model: The research design was descriptive and relational survey model. In the descriptive relational survey model, an event or situation is described as it is and the relationship, effect and degree of the variables that cause this situation are tried to be determined (Kaya et al., 2012).

Participants

The sample of the study was determined by random sampling method. A total of 253 (female: 120, male: 133) students studying at Karamanoğlu Mehmetbey University Faculty of Sport Sciences participated in the study voluntarily. The table containing the demographic characteristics of the participants was given below (Table 1).

Table 1. Demographic characteristics of the participants

	Group	f	%
Department	*Coaching*	138	54,5
	Physical Education and Sport	77	30,4
	Sport Management	38	15,1
BMI Classification	*Weak*	27	10,7
	Normal	185	73,1
	Overweight	33	13,0
	Obese	8	3,2
Doing Sport (3 days a week/60 minutes a day)?	*Yes*	173	68,4
	No	80	31,6
Have Chronic Disease?	*Yes*	13	5,1
	No	240	94,9
Have Psychological Disease?	*Yes*	24	9,5
	No	229	90,5
Have Psychological Treatment?	*Yes*	9	3,6
	No	244	96,4
Live Eartquake Province?	*Yes*	130	51,4
	No	123	48,6
Death of Family Member?	*Yes*	14	5,5
	No	239	94,5
Death of Closely Friend/Neighbor?	*Yes*	104	41,1
	No	149	58,9

Data Collection Tools

In the study, demographic information form prepared by the researchers, Self-Critical Rumination and Physical Activity Enjoyment Scale were used. The data in the study were collected face-to-face using a questionnaire form.

1. Demographic Information Form: In the form created by the researchers, there were questions about the participants' gender, age, height, weight, department, residence status in

the provinces affected by the earthquake, whether there was a first-degree family member, relative and neighbor loss in the earthquake, psychological illness, chronic disease and treatment status, and regular exercise status.

2. Self-Critical Rumination Scale: The original version of the scale was developed by Smart et al. in 2016 with a total of 10 items and a single dimension. The scale was scored on a 4-point Likert scale (Never=1, Somewhat=2, Mostly=3, Completely=4) and as the scores obtained from the scale increase, the level of self-critical rumination increases. There were no reverse items in the scale and the Cronbach α internal consistency coefficient of the scale was recorded α=0,92. The validity and reliability study of the scale in Turkish culture was conducted by Eraslan-İngeç et al. in 2020. In this study, the Cronbach α internal consistency coefficient of the scale was determined α=0,87.

3. Physical Activity Enjoyment Scale: The scale was developed by Mullen et al. in 2011. The scale was a 7-point Likert (Strongly disagree=1, ... Strongly agree=7) type scale consisting of 8 items and one dimension. The validity and reliability study of the scale was conducted by Özkurt et al. in 2022. Cronbach's α internal consistency coefficient of the scale α=0,96. In this study, the Cronbach α internal consistency coefficient of the scale was determined α=0,97.

Data Analysis

The 'Shapiro Wilk' test was used to determine whether the data in the study had a normal distribution and it was determined that the data did not show a normal distribution (p<0,05). In the descriptive analyses of the data in the study, frequency (N), percentage (%), mean (x̄) and standard deviation values (Sd) were determined. Man Whitney-U test was used in paired group comparisons and Kruskal Wallis test was used in more than two group comparisons. Spearman's correlation analysis was used for correlational comparisons. All analyses of the data were performed in Jamovi 2.3.21.0 statistical programmed with 95% confidence interval and 0,05 significance level.

Results

The mean BMI, rumination and PAE scale scores of the participants in the study were presented below (Table 2).

Table 2. Mean BMI, Rumination and PAE scale scores of the participants

	N	X̄	Sd
Body Mass Index	253	22,03	3,39
Rumination	253	18,31	5,42
Physical Activity Enjoyment	253	49,39	8,52

The mean BMI of the participants was (22,03±3,39), the mean rumination score was (18,31±5,42), and the mean enjoyment of physical activity score was (49,39±8,52). Pairwise comparisons of the participants were presented below (Table 3).

Table 3. Mann Whitney U test results of the participants

	Variables	Group	X̄	U	p	E.S.
Gender	**BMI**	Female (n:120)	20,52±2,5	3790,0	<**0,000*****	0,3
		Male (n:133)	23,40±3,5			
	PAE	Female (n:120)	48,58±8,89	6714,5	**0,03***	0,16
		Male (n:133)	50,13±8,13			
Doing Sport	**PAE**	Yes (n:173)	49,69±8,92	5759,0	**0,03***	0,17

		No (n:80)	48,74±7,58			
Psychological Disease	**Rumination**	Yes (n:24)	20,79±5,98	1947,0	**0,02***	0,9
		No (n:229)	18,05±5,30			
Psychological Treatment	**Rumination**	Evet (n:9)	24,00±6,00	487,5	**0,004****	0,56
		No (n:244)	18,10±5,29			

E.S: Effect Size

When the BMI scores of the participants were analyzed, the mean of males (23,40±3,5) was significantly higher than the mean of females (20,52±2,5) (p<0,05). When the PAE scores of the participants were analyzed, the mean scores of males (50,13±8,13) were significantly higher than the mean scores of females (48,58±8,89), and the mean scores of those who did sports (49,69±8,92) were significantly higher than the mean scores of those who did not do sports (48,74±7,58) (p<0,05). When the Rumination scores of the participants were examined, the mean scores of those with psychological illness (20,79±5,98) was significantly higher than the mean of those without psychological illness (18,05±5,30). Moreover, the mean of those who received psychological treatment (24,00±6,00) was significantly higher than the mean of those who did not receive treatment (18,10±5,29) (p<0,05). Comparisons of participants in more than two groups were presented below (Table 4).

Table 4. Kruskal Wallis test results of the participants

Variables	**Group**	**$\bar{X}$**	**W**	**χ^2**	**p**	**Post Hoc**
BMI	1.Coaching (n:138)	21,510±3,31	4,2491	9,17497	**0,007****	1<2
	2.Physical Education (n:77)	22,799±3,33				
Rumination	1.Coaching (n:138)	17,370±5,28	4,5893	10,771768	**0,004****	1<2
	2.Physical Education (n:77)	19,844±5,59				

**p<0,01

When Table 4 was analyzed, in the BMI scores of the participants, the mean scores of the Physical Education students (22,799±3,33) was significantly higher than the mean of the Coaching students (21,510±3,31) (p<0,05). Besides, the mean of the participants' Physical Education department students (19,844±5,59) was significantly higher than the mean of the Coaching department students (17,370±5,28) (p<0,05). The Correlation results of the participants were presented below (Table 5).

Table 5. Spearman's correlation test results of the participants

	1.Body Mass Index	**2.Rumination**	**3.Physical Activity Enjoyment**
1.Body Mass Index	1		
2.Rumination	-0,01	1	
3. Physical Activity Enjoyment	**0,13***	**-0,14***	1

*p<0,05

When Table 5 was analyzed, a statistically significant positive and very weak relationship was found between BMI scores and PAE scores (r=0,13, p<0,05). A statistically significant negative and very weak correlation was found between the participants' Rumination scores

and PAE scores (r=-0,14, p<0,05). The figure related to the correlation results was presented below (Figure 1).

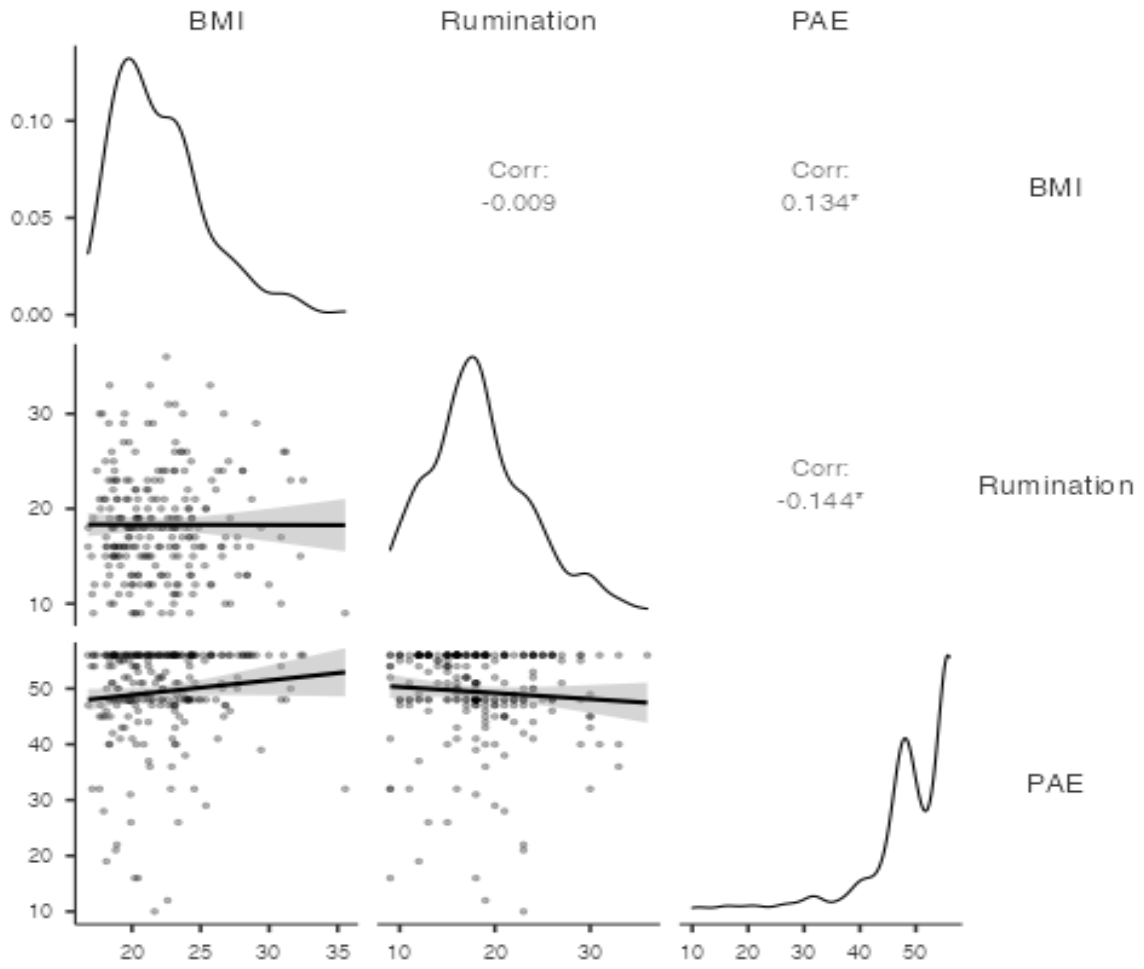


Figure 1. Correlation test results

Discussion and Conclusion

The following results were obtained in this study in which the long-term rumination and physical activity enjoyment levels of sports sciences faculty students were examined after the Kahramanmaraş earthquake.

As the first result of the study, when the participants' levels of enjoyment of physical activity were analyzed, it was found that males were significantly higher than females and those who did sports were significantly higher than those who did not. It was known that exercise intensity affects the amount of enjoyment of physical activity (Teixeira et al., 2021). Enjoyment of physical activity showed different results according to gender. In a study conducted on university students in Qatar, it was found that male students enjoyed exercise more than female students. In addition, green areas and sports facilities within the university were considered to help increase the physical activity levels of students (Chaabna et al., 2022). Again, in a study conducted among university students, it was found that males performed more moderate activity than females and enjoyed physical activity more (Yan et al., 2023). In another study, it was found that 44.3% of middle-aged individuals enjoyed physical activities and there was no difference in terms of gender (Buonsenso et al., 2021). A

study conducted on secondary and higher education students in Türkiye concluded that male students had higher levels of enjoyment of physical activity compared to female students (Özkurt et al., 2022). Sports sciences students were constantly taking applied courses intertwined with sports due to the department in which they receive education; in this context, it was expected that students' physical activity enjoyment would be high. In a review study, when young people in Türkiye were examined, it was seen that female students have a lower level of physical activity than male students (Cengiz & Delen, 2019). It can be said that the reason why male students enjoy physical activity more than female students was that females had higher depressive symptoms than males (Shors et al., 2017).

Another result of the study was that when the rumination levels of the participants were examined, it was determined that those with psychological disorders were significantly higher than those without psychological disorders, those who received psychological treatment were significantly higher than those who did not, and the students of the Physical Education and Sports Teaching Department were significantly higher than the Coaching students. It was known that after natural disasters such as earthquakes, individuals' mental states may change, and negative thoughts may be observed. It is known that there is a negative relationship between the level of physical activity and the level of hopelessness (Cengiz et al., 2019). An experimental study found a relationship between depressive symptoms and ruminative thoughts (Shors et al., 2017). This result supports the fact that participants with psychological disorders and those receiving treatment have higher ruminative levels. Structured physical activity practices were recommended in the treatment of posttraumatic stress disorder and rumination after natural disasters (Koçak et al., 2023). In a previous study conducted in Türkiye, it was concluded that while the problem solving levels of normal university students were moderate (Akpınar & Akpınar, 2017), the mental endurance levels of athletes were high (Akpınar & Akpınar, 2018). It can be said that the fact that the students of physical education and sports teaching department had higher ruminative thoughts may be due to the fact that they have less applied courses compared to coaching students.

The last and most valuable result of the study was determined that as the participants' level of enjoyment of physical activity increased, their rumination levels decreased. It was reported earlier that increased enjoyment of physical activity has positive effects on behaviours such as depressive mood disorders, ruminative thoughts and avoidance (Lewinson et al., 1976). It was found that university students who avoided physical activity experienced more psychological distress, and after doing sports, individuals enjoyed more and experienced less psychological distress (Bevan et al., 2023). In Türkiye, universities have previously switched to distance education during the Covid-19 pandemic, and it has been found that the physical activity levels of students studying at the faculty of sports sciences have decreased and stress levels have increased (Güler et al., 2021). Again, it has been reported that taking 10,000 steps daily for sports science students during the pandemic increased their mental well-being scores (Yanar and Güler, 2021). The fact that universities have switched to distance education after the earthquake disaster in Türkiye may have led to negative psychological problems, especially for students of the faculty of sports sciences. It was also reported that there was a negative relationship between physical activity and rumination in university students (Ye et al., 2022), and exercise increased positive emotions, but a single exercise was not sufficient (Schmitter et al., 2023). Although it was known that individuals with depression enjoyed physical activity less (Kagawa et al., 2022), it was found that physical activity also predicted negative depression as a common mediator of rumination and anxiety in university students (Liu et al., 2023). In a study conducted in Türkiye, it was concluded that university students'

physical activity enjoyment may directly affect their activity satisfaction and happiness levels (Peker et al., 2023).

As a result, sport sciences students' levels of physical activity enjoyment varies according to their gender and sporting status; rumination levels vary according to their psychological status and the department they study. As the students' level of enjoyment of physical activity increases, their rumination levels decrease.

Recommendations

As a result, physical activity activities that university students can enjoy after natural disasters such as earthquakes can be recommended. Activities with physical activity content can be carried out for the earthquake victims living in the provinces affected by the earthquake. In the new studies to be conducted, activities with physical activity activities can be planned, especially for individuals with permanent disabilities after the earthquake. Multidisciplinary studies together with psychologists, sports scientists and public health experts can be designed for individuals in earthquake victims in the new research that will be conducted.

Limitations

There are some limitations in the research; first of all, the data obtained are based on the statements of the participants. Whether the participants received psychological treatment or not was determined according to the statement they gave. the participants' rumination levels were determined by means of a scale based on their own answers, not determined by any psychologist.

Ethical Permission: Ethical permission was obtained from Karamanoğlu Mehmetbey University Social and Human Sciences Scientific Research and Publication Ethics Committee (Number: E-75732670-050.04-181462, Date: 28.02.2024).

****The summary of this article was presented as an oral presentation at the 10th International Science Culture and Sports Congress.***

REFERENCES

Akpınar, S., Akpınar, Ö. (2017). Yüksekokullarda öğrenim gören öğrencilerin bazı değişkenler açısından problem çözme becerileri ve karar verme stillerinin incelenmesi. *Uluslararası Anadolu Spor Bilimleri Dergisi*, *3*, 180-194.

Akpınar, S., Akpınar, Ö. (2018). The Relationship with the Personality and Mental Toughness at Athletes. *Journal of International Social Research*, *11*(61), 1252-1255. http://dx.doi.org/10.17719/jisr.2018.3013

Alderman, B.L., Olson, R.L., Brush, C.J., Shors, T.J. (2016). MAP training: combining meditation and aerobic exercise reduces depression and rumination while enhancing synchronized brain activity. *Translational Psychiatry*, *6*(2):e726. https://doi.org/10.1038/tp.2015.225

Al-Mhanna, S. B., Batrakoulis, A., Sheikh, A. M., Aldayel, A. A., Sabo, A., Mohamed, M., ... Ghazali, W. S. W. (2024). Impact of COVID-19 lockdown on physical activity behavior among students in Somalia. *AIMS Public Health*, *11*(2), 459-476. https://doi.org/10.3934/publichealth.2024023

Bevan, N., O'Brien, C.K.S., Latner, J.D., Vandenberg, B., Jeanes, R., Lin, C.Y. (2023). The Relationship Between Weight Stigmatization, Avoidance, Enjoyment and Participation in Physical Activity and Sport, and Psychological Distress. *American Journal of Health Behaviour*, *47*(2):360-368. https://doi.org/10.5993/AJHB.47.2.15

Bulut, A. (2023). Doğal Afetler ve Ruh Sağlığı İlişkisi. *Kıbrıs Türk Psikiyatri ve Psikoloji Dergisi*, *5*(3), 265-273. https://doi.org/10.35365/ctjpp.23.3.09

Buonsenso, A., Fiorilli, G., Mosca, C., Centorbi, M., Notarstefano, C.C., Di Martino, G., Calcagno, G., Intrieri, M., di Cagno, A. (2021). Exploring the Enjoyment of the Intergenerational Physical Activity. *Journal of Functional Morphology Kinesiology*, *6*(2):51. https://doi.org/10.3390/jfmk6020051

Cengiz, Ş.Ş., Delen, B. (2019). Gençlerde fiziksel aktivite düzeyi. *International Journal of Contemporary Educational Studies (IntJCES)*, *5*(2), 110-122.

Cengiz, Ş.Ş., Çetinkaya, G., Delen, B. (2019). 65 Yaş ve Üzerindeki Bireylerde Fiziksel Aktivite Düzeyi ile Umutsuzluk Düzeyi Arasındaki İlişkinin İncelenmesi (Manisa İli Örneği). *Beden Eğitimi ve Spor Bilimleri Dergisi*, *21*(4), 25-39.

Chaabna, K., Mamtani, R., Abraham, A., Maisonneuve, P., Lowenfels, A.B., Cheema, S. (2022). Physical Activity and Its Barriers and Facilitators among University Students in Qatar: A Cross-Sectional Study. *International Journal of Environmental Research and Public Health*, *19*(12):7369. https://doi.org/10.3390/ijerph19127369

Chekroud, S.R., Gueorguieva, R., Zheutlin, A.B., Paulus, M., Krumholz, H. M., Krystal, J. H., Chekroud, A.M. (2018). Association between physical exercise and mental health in 1·2 million individuals in the USA between 2011 and 2015: A cross-sectional study. *Lancet Psychiatry*, *5*:739–746. https://doi.org/10.1016/S2215-0366(18)30227-X

D'Andrea, W., Sharma, R., Zelechoski, A.D., Spinazzola, J. (2011). Physical health problems after single trauma exposure: When stress takes root in the body. *Journal of American Psychiatric Nurses Association, 17*(6):378–92. https://doi.org/10.1177/107839031142518

Erarslan İngeç, Ö., Akyüz, Z., Yılmaz, A.E. (2021). Öz-eleştirel Ruminasyon Ölçeğinin Türkçeye uyarlanması ve psikometrik özelliklerinin incelenmesi. *Klinik Psikoloji Dergisi, 5*(1), 39-51. https://doi.org/10.5455/kpd.26024438m000035

Güler, B. (2022). Spor Bilimleri Fakültesi Öğrencilerinin Duygu Düzenleme Becerilerinin İncelenmesi. *Sportive*, 5(1), 1-9. https://doi.org/10.53025/sportive.1065415

Güler, M., Kozak, M., Certel, Z., Yanar, N. (2021). Inactivity and stress brought about by the covid-19 pandemic: What is the situation with university students?. *International Journal of Educational Research and Innovation (IJERI), 16*(2), 200-222. https://doi.org/10.46661/ijeri.6018

Gümüş, B., Çakır, E. (2023). Deprem Yaşayan Genç Bireylerin Fiziksel Aktiviteye Katılım Motivasyonu ve Sağlıklı Beslenme Düzeyinin İncelenmesi. *Kafkas Üniversitesi Spor Bilimleri Dergisi, 3*(4), 15-30.

Kagawa, F., Yokoyama, S., Takamura, M., Takagaki, K., Mitsuyama, Y., Shimizu, A., Jinnin, R., Ihara, H., Kurata, A., Okada, G., Okamoto, Y. (2022). Decreased physical activity with subjective pleasure is associated with avoidance behaviors. *Scientific Reports, 12*(1):2832. https://doi.org/10.1038/s41598-022-06563-3

Kaya, A., Balay, R., Göçen, A. (2012). Öğretmenlerin Alternatif Ölçme ve Değerlendirme Tekniklerine İlişkin Bilme, Uygulama ve Eğitim İhtiyacı Düzeyleri. *International Journal of Human Sciences, 9*(2), 1303-5134.

Kaya, E.Ö., Sarıtaş, N., Yıldız, K., Kaya, M. (2018). Sedanter Olan ve Olmayan Bireylerin Fiziksel Aktivite ve Yaşam Tatmin Düzeyleri Üzerine Araştırma. *Celal Bayar Üniversitesi Sağlık Bilimleri Enstitüsü Dergisi, 5*(3), 89-94.

Koçak, U.Z., Öztürk, O., Kurt, M., Özer, Derya, Ö. (2023). Doğal afetler sonrası stres bozukluğuna eşlik eden ruminasyonun fizyolojik etkileri ve mücadelede egzersiz yaklaşımları: Geleneksel derleme. *İzmir Katip Çelebi Üniversitesi Sağlık Bilimleri Fakültesi Dergisi, 8*(2), 699-703.

Lavadera, P., Millon, E.M., Shors, T.J. (2020). MAP Train My Brain: Meditation Combined with Aerobic Exercise Reduces Stress and Rumination While Enhancing Quality of Life in Medical Students. *Journal of Alternative and Complementary Medicine, 26*(5):418-423. https://doi.org/10.1089/acm.2019.0281

Lewinsohn, P.M., Biglan, A., Zeiss, A.M. (1976). Behavioral treatment for depression. *Behavioral Management of Anxiety, Depression and Pain* (ed. Davidson, P.). 91–146.

Liu, Y., Feng, Q., Guo, K. (2023). Physical activity and depression of Chinese college students: chain mediating role of rumination and anxiety. *Frontiers Psychology, 14*:1190836. https://doi.org/10.3389/fpsyg.2023.1190836

Min, C., Yao, J. (2022). Effect of Positive Rumination-Based Sports Prescription on the Mental Health of Teenagers. Psychiatr Danub. *Spring, 34*(1), 64-70. https://doi.org/10.24869/psyd.2022.64

Mullen, S.P., Olson, E.A., Phillips, S.M., Szabo, A.N., Wójcicki, T.R., Mailey, E.L., Neha P.G., et al. (2011). Measuring enjoyment of physical activity in older adults: invariance of the physical activity enjoyment scale (paces) across groups and time. *International Journal of Behavioral Nutrition and Physical Activity, 8*(1), 103. https://doi.org/10.1186/1479-5868-8-103

Nolen-Hoeksema, S., Morrow, J. (1991). A prospective study of depression and posttraumatic stress symptoms after a natural disaster: the 1989 Loma Prieta Earthquake. *Journal of Personality and Social Psychology*, *61*: 115–121. https://doi.org/10.1037/0022-3514.61.1.115

Özkurt, B., Küçükibiş, H.F., Eskiler, E. (2022). Fiziksel aktivitelerden keyif alma ölçeği (FAKÖ): Türk kültürüne uyarlama, geçerlik ve güvenirlik çalışması. *Anemon Muş Alparslan Üniversitesi Sosyal Bilimler Dergisi*, *10*(1), 21-37. https://doi.org/10.18506/anemon.976300

Peker, H., Teke, C., Çakar, B., Kabadayı, Y., Caner, N. (2023). Fiziksel Aktiviteden Keyif Alma, Tekrar Katılma Niyeti ve Mutluluk Arasındaki İlişki: Kampüs Rekreasyonuna Katılan Üniversite Öğrencileri Örneği. *Uluslararası Güncel Eğitim Araştırmaları Dergisi*, *9*(2), 206-220. https://doi.org/10.61087/IntJCES.2023.8D

Rodrigues, F., Teixeira, D. (2023). Testing assumptions of the physical activity adoption and maintenance model: a longitudinal perspective of the relationships between intentions and habits on Exercise Adherence. *Perceptual and Motor Skills*, 130(5), 2123-2138. https://doi.org/10.1177/00315125231188240

Schmitter, M., Vanderhasselt, M.A., Spijker, J., Smits, J.A.J., Vrijsen, J.N. (2023). Working it out: can an acute exercise bout alleviate memory bias, rumination and negative mood? *Cognitive Behaviour Theraphy*, *52*(3):232-245. https://doi.org/10.1080/16506073.2022.2164349

Shors, T.J., Millon, E.M., Chang, H.Y., Olson, R.L., Alderman, B.L. (2017). Do sex differences in rumination explain sex differences in depression? *J Neuroscience Reserach*, *95*(1-2):711-718. https://doi.org/10.1002/jnr.23976

Shors, T.J., Olson, R.L., Bates, M.E., Selby, E.A., Alderman, B.L. (2014). Mental and Physical (MAP) Training: a neurogenesis-inspired intervention that enhances health in humans. *Neurobiology of Learning and Memory*, *115*: 3–9. https://doi.org/10.1016/j.nlm.2014.08.012

Smart, L.M., Peters, J.R., Baer, R.A. (2016). Development and validation of a measure of self-critical rumination. *Assessment*, *23*(3), 321-332. https://doi.org/10.1177/1073191115573300

Teixeira, D.S., Rodrigues, F., Machado, S., Cid, L., Monteiro, D. (2021). Did You Enjoy It? The Role of Intensity-Trait Preference/Tolerance in Basic Psychological Needs and Exercise Enjoyment. *Frontiers Psychology*, *12:*682480. https://doi.org/10.3389/fpsyg.2021.682480

Yan, W., Chen, L., Wang, L., Meng, Y., Zhang, T., Li, H. (2023). Association between enjoyment, physical activity, and physical literacy among college students: a mediation analysis. *Frontiers of Public Health*, *11:*1156160. https://doi.org/10.3389/fpubh.2023.1156160

Yanar, N., Güler, M. (2021). Do Daily Step Counts Durıng The Pandemic Affect the Body Composition And Mental Well-Being of Unıversıty Students?. *European Journal of Physical Education and Sport Science*, *7*(3), 117-136. http://dx.doi.org/10.46827/ejpe.v7i3.3967

Ye, J., Jia, X., Zhang, J., Guo, K. (2022). Effect of physical exercise on sleep quality of college students: Chain intermediary effect of mindfulness and ruminative thinking. *Front Psychol*, *13*:987537. https://doi.org/10.3389/fpsyg.2022.987537

Zhang, Z.H., Wang T., Kuang J., Herold F.B., Ludyga S., Li J. M., Hall, D.L., Taylor, A., Healy, S., Yeung, A.S., Kramer, A.F., Zouu, L. (2022). The roles of exercise tolerance and resilience in the effect of physical activity on emotional states among college

students. *International Journal of Clinical and Health Psychology*, *22*:100312. https://doi.org/10.1016/j.ijchp.2022.100312