International Journal of Sport Culture and Science (IntJSCS)

International Refereed Scientific Journal

www.iscs-a.org

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

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.

TABLE OF CONTENTS

REFEREES OF THIS ISSUE

Dr. Akan BAYRAKDAR

Dr. Ali ÖZKAN

Dr. Erdem AYYILDIZ

Dr. Fatih YAŞARTÜRK

Dr. Mehmet GÜLÜ

Dr. Mine TURGUT

Dr. Oğuz GÜRKAN

Communication Skills of Women Doing Exercise and Their Participation in Exercise Activities

Bayram KAYA[1], Hakan SUNAY[2]

[1] Kırşehir Milli Eğitim Müdürlüğü, Kırşehir, TURKEY
https://orcid.org//0000-0003-0249-5572
[2]Ankara Üniversitesi, Spor Bilimleri Fakültesi, Ankara, TURKEY
https://orcid.org//0000-0001-5139-1492

E mail: bayramkaya400@gmail.com, hsunay@ankara.edu.tr

Abstract

Exercise is a sub-branch of physical activities performed in a planned manner for the purpose of physical fitness, being healthy and maintaining it. Exercise and physical activities have common points. Both require energy and both involve bodily movements created by skeletal muscles. Material and Method: The aim of this study is to examine the communication skills and participation in exercise activities of women exercising in Kırşehir Central District, according to their education level, age, marital status, and monthly income, type of exercise and duration of exercise. The study group of the research consisted of 424 women who exercised in Kırşehir and participated on a voluntary basis. Personal information form, scores obtained from scales and scale sub-dimensions, percentage, frequency, arithmetic mean, independent sample t-test for binary variables and One-Way ANOVA test for multiple variables were applied. Results: Women with longer exercise duration have higher communication skills and exercise behavioral regulation averages.In addition to exercising in order to be healthy, feel happy and spend their spare time, women also exercise under the influence of external factors.

Keywords: Exercise, Communication, Physical Fitness

Introduction

Exercise is a sub-branch of physical activities performed in a planned manner for the purpose of physical fitness, being healthy and maintaining it (Lindwall, 2004). Exercise activities, which are a sub-branch of physical activity, are not the same as physical activities. Exercise is a planned, repetitive activity with a specific purpose (Caspersen,1985).

Exercise and physical activities have common points. Both require energy and both involve bodily movements created by skeletal muscles. However, exercise is not synonymous with physical activity. Physical activity is activity that includes exercise (Lindwall, 2004).

Exercise is an effective activity in the development of individuals such as endurance, strength, speed, mobility and skill, as well as improving individuals physically. Exercise can be considered as a multi-faceted activity, which is considered as a state of well-being in the framework of the integrity of the organism, as well as cardiovascular health (Akgün, 1986). Exercise and physical activities are important in protecting and improving the health of individuals, and in providing resistance to diseases and fatigue that individuals may encounter (Vural, 2010).

Communication can be defined as the process of transferring feelings, thoughts and information from one person to another (Keyton, 2011). Tozoğlu et al. (2014) defined communication as the process of influencing people by using some symbols. According to Bursalıoğlu (1991), communication is derived from the Latin word "Communis" which means "to divide".

When communication is considered as a process, it passes through some organs until it passes from the source to the receiver. These organs are called communication organs (Ergin, 1995).

1-Source: It can be defined as the person or unit that initiates the communication in order to convey the desired information and thought to the determined target. This transfer takes place with symbols such as writing, words and mimics (Ergin, 1995).

2- Message: Any verbal or nonverbal message between the source and the target is called a message (Gökçe, 2002). The clear, clear and understandable message between the sender and the receiver is an important issue in healthy communication (Tutar & Yılmaz, 2008).

3- Channel: In the communication process, the source and receiver transmit their messages in various ways. These ways can be written and spoken, as well as other ways (Kaya, 2010). The path through which the message reaches the receiver is called a channel. Gestures and mimics used in face-to-face communication make communication effective (Yetişkin, 2016).

4- Receiver: It is the person who receives, understands and interprets the message sent from the source. If the receiver understands and interprets the sent message correctly, and if both the source and receiver ascribe a common meaning to the messages, a healthy communication will be established (Tutar and Yılmaz, 2008). Otherwise, communication problems may occur.

5- Feedback: It is the reaction given to the message sent from the source to the receiver (Büyükalan Filiz, 2007). Feedback shows whether the receiver perceives the message correctly (Nevzat and Nedim, 2005).

The concept of communication has started to be used with the existence of human beings in the world. However, the conceptualization and definition of this concept was delayed until the end of the following centuries (Aşkun 1989). The concept of communication is an activity that provides sociality due to its individuality. It ensures the existence of both the individual

and the society (Özkök, 1985). The types of communication that are important in all areas of society are as follows: 1- Mass communication, 2- Organizational communication, 3- Intrapersonal communication, 4- Interpersonal communication (Dökmen 2004).

The aim of this study is to examine the communication skills and participation in exercise activities of women exercising in Kırşehir Central District, according to their education level, age, marital status, and monthly income, type of exercise and duration of exercise.

Method Of The Research

A descriptive survey model was used in this study to determine the thoughts, beliefs, views, and attitudes of a particular group (McMillan & Schumacher, 2006). In the personal information form prepared for the research, 5 variables were arranged as education status, age, marital status, and monthly income, type of exercise and duration of exercise. In order to determine the communication skill levels of the women who exercise, the "Communication Skills Scale" (IAS) developed by Korkut Owen and Bugay (2014), consisting of 25 items and four sub-dimensions, was used. The scale was prepared in a 5-point Likert type. 'The scale was classified as 'Always (5), Often (4), Sometimes (3), Rarely (2), and Never (1). Between 1.00-1.80 on the scale was determined as very low. It was determined as low between 1.81-2.60. Between 2.61-3.40 was determined as medium. Between 3.41-4.20 was determined as high and between 4.21-5.00 was determined as very high. In order to measure the participation of women who exercise in exercise activities, "Behavioral Regulations in Exercise-2" (EDSS-2), which consists of 19 items and four sub-scales, adapted into Turkish by Ersöz, Aşçı, and Altıparmak (2012) was applied. The 5-point Likert-type scale consisted of degrees as "definitely not true (0)", "not true (1)", "sometimes true (2)", "true (3)" and "definitely true". (4) (Ersöz et al., 2012).

The study group of the research consisted of 424 women who exercised in Kırşehir and participated on a voluntary basis. Personal information form, scores obtained from scales and scale sub-dimensions, percentage, frequency, arithmetic mean, independent sample t-test for binary variables and One-Way ANOVA test for multiple variables were applied. LSD test, one of the Tukey tests, was used to determine which variables favored the difference.

Research Findings

Table 1. Normality Assumption

FACTORS	Skewness	Kurtosis	Kolmogorov-Smirnow
COMMUNICATION SKILLS	-1,084	,393	3,866
Basic Skills	,119	,235	3,723
Willingness to Communicate	-,344	-,739	3,796
Complying with Communication Principles	-,374	,119	2,789
Active Listening Non-Verbal Communication	-1,064	,356	4,222
Taking Care of Communication	-1064	,356	3,429
BEHAVIORAL REGULATION IN EXERCISE	,120	-,308	1,715
Internal Regulation	-,115	-,349	2,532
Editing with Import	-,292	-,668	2,622
External Regulation	-1,514	1,712	5,239
lack of motivation	-1,069	,490	5,341

According to Table 1, the dimensions of the scales and all sub-dimensions Skewness-Kurtosis values were found to be between -2<X<+2 (Şencan, 2002). Parametric test was applied according to the results of Kolmogorov-Smirnov Z test.

Table 2: Confidence Coefficients

FACTORS	Confidence Coefficient (Cronbach Alpha)
COMMUNICATION SKILLS	,760
Basic Skills	,816
Willingness to Communicate	,896
Complying with Communication Principles	,782
Active Listening Non-Verbal Communication	,817
Taking Care of Communication	,787
BEHAVIORAL REGULATION IN EXERCISE	,805
Internal Regulation	,765
Editing with Import	,700
External Regulation	,708
lack of motivation	,670

According to Table 2, it is seen that the scales are in the reliable (Cronbach Alpha) range in all sub-dimensions and all dimensions.

Table 3: Personal Information

Personal Information	Footer Information	Frequency(f)	Percent(%)
Eğiti durumu	High School and Down	230	**54,2**
	College	45	10,6
	University	74	17,5
	Graduate	75	17,7
Age	18-21 Age and Down	110	26,0
	22-25 Age	56	13,2
	26-29 Age	42	9,9
	30-33 Age	62	14,6
	34 Age and above	154	**36,3**
Marital status	Married	206	47,2
	Single	218	49,8
Monthly Income	1500 Tl Down	228	**53,8**
	1500-3000 tl	85	20,0
	3001-4000 Tl	56	13,2
	4000 Tl Above	55	13,0
Type of Exercise	Plates	194	**45,8**
	Walking-Running	93	21,9
	Zumba	60	14,2
	Yoga	77	18,2
Exercise Duration	12 Moon And Down	48	11,4
	13-24 Moon	36	8,6
	25-48 Moon	81	19,2
	49 Moon and Above	259	**60,8**

According to the education level variable in Table 3, 230 (54.2) high school students and secondary school students participated most in the research. According to the age variable, a maximum of 154 people (36.3) aged 34 and over participated. In the monthly income variable, it was seen that there were 228 (53.8) people with a maximum income of 1500 TL and below. It was observed that pilates exercises were performed with a maximum of 194

participants (45.8%). According to the variable of duration of exercise, it was determined that 259 participants (60.8%) exercised for 49 months or more.

Table 4: Educational Status

	EDUCATİON STATUS	N	X	SD	F	P	LSD
COMMUNICA TION SKILLS	High School and Down	230	3,4104	,61940	42,773	,000	**4**
	College	44	3,7536	,62998			1,2,3
	University	74	3,9086	,29128			
	Graduate	75	4,1259	,26029			
Basic Skills	High School and Down	230	4,7865	,52736	11,143	,000	**2,3,4**
	College	45	5,1580	1,31244			
	Universiy	74	5,0766	,32637			
	Graduate	75	5,1570	,35706			1
Willingness to Communicate	High School and Down	230	2,7522	1,09869	8,777	,000	**3,4**
	College	44	3,0606	,81736			
	University	74	3,3378	,83583			
	Graduate	75	3,3396	,76345			1
Complying with Communication Principles	High School and Down	230	3,1159	,93976	59,923	,000	**4**
	College	44	3,5000	,80213			1,2,3
	Üniversity	74	3,2477	,31724			
	Graduate	75	4,5156	,61340			
Active Listening Non-Verbal Communication	High School and Down	230	3,3487	,95523	44,693	,000	**2,3**
	College	44	4,0500	,75097			1
	University	74	4,1784	,74655			
	Graduate	75	4,4347	,29477			
Taking Care of Communication	High School and Down	230	3,5650	,82641	22,155	,000	**3,4**
	College	44	3,6318	,49546			1,2
	University	74	4,1432	,65670			
	Graduate	75	4,1573	,21883			
BEHAVIORAL REGULATION IN EXERCISE	High School and Down	230	3,0755	,41311	1,428	**,234**	
	College	44	3,0538	,38884			
	University	74	3,0391	,21552			
	Graduate	75	2,9726	,37560			
Internal Regulation	High School and Down	230	3,0621	,80594	6,491	,000	**2,3,4**
	College	44	3,3896	,53838			1
	University	74	3,4073	,60317			
	Graduate	75	3,1200	,35153			
Editing with Import	High School and Down	230	3,4630	,71459	22,738	,000	**2,3,4**
	College	44	3,7670	,79130			1
	University	74	4,2095	,48262			
	Graduate	75	3,7133	,69103			
External Regulation	High School and Down	230	3,3663	,92857	38,031	,000	**3,4**
	College	44	3,5568	,73703			1,2
	University	74	3,8750	,32910			
	Graduate	75	4,3800	,12574			
lack of motivation	High School and Down	230	3,3663	,92857	22,738	,000	**2,3,4**
	College	44	3,5568	,73703			1
	University	74	3,8750	,32910			
	Graduate	75	4,3800	,12574			

According to Table 4, when we look at the communication skills of the women who exercise and the status of doing exercise activities according to the education level variable, a significant difference was found between the communication skills and the variables of Educational Status and all sub-dimensions in favor of those with higher education levels. There was no significant difference between the Exercise Behavioral Regulation dimension

and the Educational Status variable. There was a significant difference between all sub-dimensions of Exercise Behavioral Regulation and Educational Status variable.

Table 5: Age Status

	AGE	N	X	SD	F	P	LSD
COMMUNICATION SKILLS	18 and Down	110	3,3750	,69661			**2,3,4**
	19-23 Age	56	3,8536	,36047	9,536	,000	
	24-28 Age	42	3,7781	,37181			1
	29-33 Age	62	3,7581	,28436			
	34 + Age	154	3,7200	,67084			
Basic Skills	18 and Down	110	4,7990	1,03561			**2,4,5**
	19-23 Age	56	5,1409	,35168			1
	24-28 Age	42	4,7513	,25833	5,287	,000	
	29-33 Age	62	5,1272	,43517			**2**
	34 + Age	154	4,9495	,38805			3,5
Willingness to Communicate	18 and Down	110	2,1193	,91571			**2,3,4,5**
	19-23 Age	56	2,8631	,80095			
	24-28 Age	42	3,6429	,79084	47,041	,000	1
	29-33 Age	62	3,6505	,79942			
	34 + Age	154	3,1407	,81719			
Complying with Communication Principles	18 and Down	110	3,2324	,71937			**2,3**
	19-23 Age	56	3,6190	,64956			1
	24-28 Age	42	3,8571	,60773	4,438	,002	
	29-33 Age	62	3,2742	,62295			**3**
	34 + Age	154	3,4394	1,26669			2,4,5
Active Listening Non-Verbal Communication	18 and Down	110	3,5908	,65793			
	19-23 Age	56	4,1536	,67040			**2**
	24-28 Age	42	3,7619	,52867	3,694	,006	
	29-33 Age	62	3,8355	,50509			1,3,5
	34 + Age	154	3,7039	1,30082			
Taking Care of Communication	18 and Down	110	3,5908	,65793			**2**
	19-23 Age	56	4,1536	,67040			1,3,4,5
	24-28 Age	42	3,7619	,52867	3,694	,006	
	29-33 Age	62	3,8355	,50509			**3,5**
	34 + Age	154	3,7039	1,30082			1
BEHAVIORAL REGULATION IN EXERCISE	18 and Down	110	3,1840	,22520			
	19-23 Age	56	2,8195	,24372			**1,3**
	24-28 Age	42	3,3997	,32736	26,488	,000	
	29-33 Age	62	3,0637	,20598			2,4,5
	34 + Age	154	2,9344	,45845			
Internal Regulation	18 and Down	110	2,9554	,84486			
	19-23 Age	56	3,3597	,79188			**2,3,4**
	24-28 Age	42	3,6054	,50955	11,301	,000	
	29-33 Age	62	3,3756	,74083			1
	34 + Age	154	3,0427	,44465			
Editing with Import	18 and Down	110	2,8417	,91897			
	19-23 Age	56	3,5402	,93027			**2,3,4,5**
	24-28 Age	42	4,1607	,98281	21,587	,000	
	29-33 Age	62	3,3024	,44615			1
	34 + Age	154	3,3680	,76166			
External Regulation	18 and Down	110	3,5344	,63961			
	19-23 Age	56	3,8259	,32305	4,292	,002	**2,3**
	24-28 Age	42	4,0417	,44829			
	29-33 Age	62	3,7177	,46272			1,5
	34 + Age	154	3,5471	1,17078			

lack of motivation	18 and Down	110	3,5000	,77355			2,3,4
	19-23 Age	56	3,9330	,47071			
	24-28 Age	42	3,7857	,43677	10.124	,000	
	29-33 Age	62	4,0444	,55906			1
	34 + Age	154	3,5114	,82562			

According to Table 5, a significant difference was found between the Communication Skills Dimension and all sub-dimensions of the women who exercised according to the communication skills and performing exercise activities and age status variable. A significant difference was found between the Exercise Behavioral regulation dimension and all its sub-dimensions and the Age Status variable.

Table 6: Marital Status

	Marital Status	N	X	SD	T	P
COMMUNICATION SKILLS	Married	200	3,8124	,45254		
	Single	210	3,4941	,68830	5,558	,000
Basic Skills	Married	200	4,9722	,41060	1,572	**,117**
	Single	211	4,8757	,78560		
Willingness to Communicate	Married	200	3,2633	,87689	7,663	,000
	Single	210	2,5762	,93872		
Complying with Communication Principles	Married	200	3,7583	,92965	6,900	,000
	Single	210	3,1381	,88851		
Active Listening Non-Verbal Communication	Married	200	3,8930	,75578	2,458	,014
	Single	211	3,6667	1,08691		
Taking Care of Communication	Married	200	3,9098	,44906	3,558	,000
	Single	210	3,6514	,94602		
BEHAVIORAL REGULATION IN EXERCISE	Married	200	3,1289	,40975	4,037	,000
	Single	210	2,9784	,33994		
Internal Regulation	Married	200	3,3079	,58750	2,090	,037
	Single	210	3,0673	,76583		
Editing with Import	Married	200	3,6121	,75061	7,242	,000
	Single	210	3,0083	,93169		
External Regulation	Married	200	3,8913	,65527	5,865	,000
	Single	210	3,4238	,93964		
lack of motivation	Married	200	3,6500	,70399	,181	**,856**
	Single	210	3,6369	,75853		

According to Table 6, the communication skills of the women who exercise and the status of doing exercise activities and the "Marital Status" variable, there was a significant difference between the Communication Skills and Marital Status variables and all sub-dimensions in favor of the married participants. except for the Basic Skills sub-dimension. There was no significant difference between the Basic Skills sub-dimension and the Marital Status variable. Except for the amotivation sub-dimension, there was a significant difference between the Exercise Behavioral regulation sub-dimension and all sub-dimensions and the Marital Status variable in favor of the married participants. No significant difference was found between the amotivation sub-dimension and the Marital Status variable.

Table 7: Income Status

	Monthly Income	N	X	SD	F	P	LSD
COMMUNICATION SKILLS	1500 Tl Down	228	3,4249	,64680			2,3,4
	1500-3000 tl	85	3,9191	,33817	44,526	,000	

		N	X	SD	F	P	LSD
	3001-4000 Tl	56	3,6575	,34724			1
	4000 Tl Above	55	4,2378	,27014			
Basic Skills	1500 Tl Down	228	4,8475	,56325			**4**
	1500-3000 tl	85	4,9059	,24697	12,534	,000	
	3001-4000 Tl	56	4,9286	1,16870			1,2,3
	4000 Tl Above	55	5,4040	,23557			
Willingness to Communicate	1500 Tl Down	228	2,6550	1,04423			4
	1500-3000 tl	85	3,3765	,61676	35,500	,000	
	3001-4000 Tl	56	2,7030	,72768			1,2,3
	4000 Tl Above	55	3,8788	,74911			
Complying with Communication Principles	1500 Tl Down	228	3,0994	,93805			**2,3,4**
	1500-3000 tl	85	3,5333	,54238	42,649	,000	
	3001-4000 Tl	56	3,5576	,66683			1
	4000 Tl Above	55	4,4909	,87924			
Active Listening Non-Verbal Communication	1500 Tl Down	228	3,4193	1,00025			**2,3,4**
	1500-3000 tl	85	4,2918	,63812	27,015	,000	
	3001-4000 Tl	55	4,0327	,71364			1
	4000 Tl Above	56	4,0727	,62700			
Taking Care of Communication	1500 Tl Down	228	3,5393	,83248			**2,3,4**
	1500-3000 tl	85	4,1318	,60360	21,279	,000	
	3001-4000 Tl	56	3,8691	,47643			1
	4000 Tl Above	55	4,1319	,23164			
BEHAVIORAL REGULATION IN EXERCISE	1500 Tl Down	228	3,0536	,40765			**4**
	1500-3000 tl	85	3,1944	,23454	14,549	,000	1,2,3
	3001-4000 Tl	56	2,7847	,28690			
	4000 Tl Above	55	3,2670	,37442			
Internal Regulation	1500 Tl Down	228	3,0746	,81150			**4**
	1500-3000 tl	85	3,4235	,41442	18,917	,000	1,2,3
	3001-4000 Tl	56	2,7662	,39970			
	4000 Tl Above	55	3,5532	,40692			
Editing with Import	1500 Tl Down	228	3,0095	,93622			**4**
	1500-3000 tl	85	3,7912	,78286	34,466	,000	
	3001-4000 Tl	56	3,2318	,46362			1,2,3
	4000 Tl Above	55	4,0000	,39087			
External Regulation	1500 Tl Down	228	3,3114	,91522			**4**
	1500-3000 tl	85	4,0500	,33585	37,350	,000	
	3001-4000 Tl	56	3,8864	,65231			1,2,3
	4000 Tl Above	55	4,2364	,38914			
lack of motivation	1500 Tl Down	228	3,5055	,70181			**4**
	1500-3000 tl	85	4,1176	,59210	47,781	,000	
	3001-4000 Tl	56	3,1000	,66944			1,2,3
	4000 Tl Above	55	4,2273	,28977			

In Table 7, a significant difference was found between the communication skills and exercise activities of the women who exercise, and the Communication Skills dimension according to the Income Status variable and all sub-dimensions and the Income Status variable in favor of the high-income participants. A significant difference was found between the Exercise Behavioral Regulation dimension and all its sub-dimensions and the Income Status variable.

Table 8: Type of Exercise

	Type of Exercise	N	X	SD	F	P	LSD
COMMUNICATION SKILLS	Plates	194	3,5392	,50807			**2,3,4**
	Walking-Running	93	3,2568	,74566	61,046	,000	
	Zumba	60	4,0197	,23762			1

		N					
	Yoga	77	4,1766	,13129			
Basic Skills	Plates	194	4,9359	,43288	26,155	,000	**2,3,4**
	Walking-Running	93	4,5890	,64097			
	Zumba	60	4,4,9426	1,07366			1
	Yoga	77	5,3838	,08558			
Willingness to Communicate	Plates	194	2,8540	1,04800	32,063	,000	**1,3,4**
	Walking-Running	93	2,3692	1,01850			
	Zumba	60	3,4972	,56519			2
	Yoga	77	3,5584	,50275			
Complying with Communication Principles	Plates	194	3,1151	,96031	48,008	,000	**4**
	Walking-Running	93	3,1004	,81766			
	Zumba	60	3,8305	,19936			1,2,3
	Yoga	77	4,2987	,72665			
Active Listening Non-Verbal Communication	Plates	194	3,5041	1,04534	33,318	,000	**3,4**
	Walking-Running	93	3,4237	,71860			
	Zumba	60	4,4000	,58132			1,2
	Yoga	77	4,3169	,52249			
Taking Care of Communication	Plates	194	3,7523	,62759	28,895	,000	**3**
	Walking-Running	93	3,3355	,99833			1,2,4
	Zumba	60	4,3593	,62121			
	Yoga	77	3,9325	,22387			
BEHAVIORAL REGULATION IN EXERCISE	Plates	194	3,0391	,49441	8,130	,000	**1,2,3**
	Walking-Running	93	3,0583	,23556			
	Zumba	60	3,2328	,24457			4
	Yoga	77	2,9200	,11282			
Internal Regulation	Plates	194	3,0133	,70814	11,058	,000	**3,4**
	Walking-Running	93	3,0906	,89482			
	Zumba	60	3,4358	,32536			1,2
	Yoga	77	3,4397	,43465			
Editing with Import	Plates	194	3,4549	,66332	62,430	,000	**4**
	Walking-Running	93	3,2661	,85641			
	Zumba	60	4,1992	,28154			
	Yoga	77	4,2922	,09426			1,2
External Regulation	Plates	194	3,4304	,90747	36,652	,000	**3,4**
	Walking-Running	93	3,3226	,81476			
	Zumba	60	4,1907	,27985			1,2
	Yoga	77	4,2110	,30636			
Lack of Motivation	Plates	194	3,4549	,66332	62,430	,000	**3,4**
	Walking-Running	93	3,2661	,85641			
	Zumba	60	4,1992	,28154			1,2
	Yoga	77	4,2922	,09426			

In Table 8, a significant difference was found between the communication skills and exercise activities of the women who exercised, and the Communication Skills dimension and all sub-dimensions according to the Exercise Type variable and the Exercise Type variable. A significant difference was found between Exercise Behavioral regulation dimension and all sub-dimensions and Exercise Type variable.

Table 9: Exercise Duration

	Exercise Duration	N	X	SD	F	P	LSD
COMMUNICATION SKILLS	12 Moon And Down	48	2,5642	,54216	117,315	,000	**2,3,4**
	13-24 Moon	36	3,5178	,50632			
	25-48 Moon	81	3,7319	,40460			
	49 Moon and Above	259	3,8614	,42564			1
Basic Skills	12 Moon And Down	48	4,3519	,66798			

	13-24 Moon	36	4,9136	,46924	34,020	,000	**2,3,4**
	25-48 Moon	81	4,8532	,54343			
	49 Moon and Above	259	5,025	,34947			1
Willingness to Communicate	12 Moon And Down	48	2,7083	1,17826			
	13-24 Moon	36	2,9167	,76997	3,509	,015	**3**
	25-48 Moon	81	3,2551	1,20908			
	49 Moon and Above	259	2,9289	,90616			1,4
Complying with Communication Principles	12 Moon And Down	48	2,0000	,76260			
	13-24 Moon	36	2,8889	,52251	77,247	,000	**2,3,4**
	25-48 Moon	81	3,4938	,78016			
	49 Moon and Above	259	3,7468	,78494			1
Active Listening Non-Verbal Communication	12 Moon And Down	48	2,1167	,85833			
	13-24 Moon	36	3,7889	,79274	94,653	,000	**2,3,4**
	25-48 Moon	81	3,8494	,43535			
	49 Moon and Above	259	4,0326	,76083			1
Taking Care of Communication	12 Moon And Down	48	2,3500	,60985			
	13-24 Moon	36	3,5056	,17557	152,194	,000	**2,3,4**
	25-48 Moon	81	3,8321	,36532			
	49 Moon and Above	259	4,0649	,56744			1
BEHAVIORAL REGULATION IN EXERCISE	12 Moon And Down	48	2,7303	,39080			
	13-24 Moon	36	3,2310	,31284	16,342	,000	**2,3,4**
	25-48 Moon	81	3,0754	,31644			
	49 Moon and Above	259	3,0741	,36967			1
Internal Regulation	12 Moon And Down	48	2,4435	,51486			
	13-24 Moon	36	3,4167	,55944	25,584	,000	**2,3,4**
	25-48 Moon	81	3,3986	,82614			
	49 Moon and Above	259	3,1938	,61165			1
Editing with Import	12 Moon And Down	48	2,0729	,47813			
	13-24 Moon	36	3,0417	,44921	54,120	,000	**2,3,4**
	25-48 Moon	81	3,6512	1,10445			
	49 Moon and Above	259	3,4939	,70434			1
External Regulation	12 Moon And Down	48	2,0104	,80879			
	13-24 Moon	36	3,4931	,49094	151,049	,000	**2,3,4**
	25-48 Ay	81	3,9228	,48193			
	49 Moon and Above	259	3,8992	,56745			1
Lack of Motivation	12 Moon And Down	48	2,6354	,69946			
	13-24 Moon	36	3,8194	,92700	48,806	,000	**2,3,4**
	25-48 Moon	81	3,9043	,49776			
	49 Moon and Above	259	3,7674	,61173			1

In Table 9, a significant difference was found between the Communication Skills dimension and all sub-dimensions of the women who exercised, and the Time to Exercise variable according to communication skills, performing exercise activities and Exercise Time variable. A significant difference was found between the Exercise Behavioral regulation dimension and all its sub-dimensions, and the Exercising Time variable. It can be said that the participants, whose duration of exercise increased, had a positive contribution to their communication skills and behavioral adjustments in exercise.

Table 10: Mean Of Scale İtems

	N	X	Sd
I exercise because other people say I should exercise.	423	**3,11**	1,543
I feel guilty when I don't exercise.	423	2,70	1,253
I value the benefits of exercise.	423	**3,63**	,969
I exercise because it's fun.	423	1,69	1,022
I don't understand why I have to exercise.	423	**3,16**	1,467

My friends/family/wife exercise. I'm exercising because he says it's necessary.	423	**3,59**	1,451
I feel embarrassed when I miss a training session.	423	2,36	1,147
Regular exercise is important to me.	423	**3,11**	1,253
I don't understand why I should go to the trouble of exercising.	423	2,75	1,686
I enjoy exercising.	423	**3,30**	1,398
I exercise because if I don't, people around me won't like me.	423	2,49	1,503
I don't understand the necessity of exercising.	423	2,86	1,643
When I don't exercise for a while, I feel like a failure.	423	**3,34**	1,087
I think it's important to make an effort to exercise regularly.	423	**3,98**	1,037
I think exercise is an enjoyable activity.	423	**3,22**	1,455
I feel pressure from friends/family to exercise	423	**3,39**	1,528
If I don't exercise regularly, I feel restless.	423	**3,47**	1,509
I get pleasure and satisfaction from exercising.	423	**3,25**	1,330
Thinks exercising is a waste of time.	423	**2,53**	1,593
Behavioral Adjustments in Exercise Scale Mean	423	**3,05**	,3771

When Table 10 was examined, it was determined that women do exercise due to external factors such as what others say about their exercise, worry that people around them will not like them, pressure from family and friends to exercise, and exercise for reasons such as health, happiness, and leisure time.

Discussion And Conclusion

A significant difference was found between the communication skills of the women who exercised and the variables of Educational Status and all sub-dimensions in favor of those with higher education levels. In the studies of Navickiene et al. (2019), Abakaya and Kuru (2013), Özdemir and Abakaya (2017), it was consistent with this study that the communication skill scores of the athletes increased as the education level of the athletes increased. On the other hand, in the master's thesis of Erdoğan (2019) and Yıldız (2019), it was seen that the education level of the participants was not a variable that increased their communication skills. When we examine the literature, there are studies that show parallelism with this study as well as studies that do not overlap with this study. There was no significant difference between the Exercise Behavioral Regulation dimension and the Educational Status variable. There was a significant difference between all sub-dimensions of Exercise Behavioral Regulation and Educational Status variable. It has been determined that Educational Status is the variable that positively affects Internal Regulation, Introjected Regulation, and External Regulation. It is seen that educational status is a variable that positively affects women's perspectives on physical activities. There are studies in the literature showing that the education variable is important in regulating Exercise Behaviors. Karagöz and Karagün (2015) and Polat (2014) stated in their studies that as the level of education increased, the physical awareness of women also increased. It can be stated that the increase in the level of education positively affects the perspectives of women participating in exercise activities.

A significant difference was found between the Communication Skills Dimension and all sub-dimensions of the women who exercised, and the Age variable. The average communication skills of 18-year-old and lower-group women were found to be lower than other age groups. The communication skills of women who exercise increase as they get older. This may be related to the increase in life experience gained due to age. Özdayı and Uğurlu (2015) stated in their study on referees that the average of communication skills of the referees in the lower age group was lower than the average of the referees in the high age group. Mutlu et al. (2014) and Hacıoğlu (2017) found a significant difference between the age variable and

communication skills in their studies. There are also studies that do not overlap with this study. Tepeköylü et al. (2009), Akpınar (2015), Yıldız (2019) did not find a significant difference between the age variable and communication skills in their studies. A significant difference was found between the Exercise Behavioral regulation dimension and all its sub-dimensions and the Age Status variable. The average point of view of women aged 24-28 on exercise activities was found to be higher than women in the other age group. It can be stated that older women have a higher perspective on exercise activities. This situation can be explained by the experience and awareness of age.

There was a significant difference between the Communication Skills and Marital Status variables and all sub-dimensions in favor of the married participants. There was no significant difference between the Basic Skills sub-dimension and the Marital Status variable. A significant difference was found between the exercise behavioral regulation dimension and all its sub-dimensions and the Marital Status variable in favor of the married participants. No significant difference was found between the unmotivated sub-dimension and the Marital Status variable. Studies in parallel with this study are available in the literature. Kumcagiz et al. (2014) stated in their study that there was a significant difference between the marital status variable and communication skills. There are also studies in the literature that do not overlap with our study. In the study of Yıldız (2019), no significant difference was found between communication skills and marital status variable. It can be thought that the high average of communication skills of married women and the high prestige of the motherhood role given by marriage in the society may have positively reflected on their communication skills. The fact that the average of exercise behavioral regulation is higher in married women can be thought to be due to the fact that married women may have less variety of social activities than single women.

A significant difference was found between the Communication Skills dimension and all its sub-dimensions and the Income Status variable in favor of high-income participants. It is seen that the participants with an income of 4000 TL and above have the highest communication skills averages. Saygıdeğer (2004), Kargün et al. (2016) stated that with the increase in the income level of individuals, their self-confidence and purchasing status also increase, and thus they can communicate more easily. There are also studies that are not in parallel with this study. Tepeköylü et al. (2009), Bingöl and Demir (2011) and Akpınar et al. (2015) found no significant difference between the income status variable and communication skills. It can be thought that the participants with a high income level can have high self-confidence and, accordingly, they can communicate more easily with the individuals around them. A significant difference was found between the Exercise Behavioral Regulation dimension and all its sub-dimensions and the Income Status variable. It is seen that the participants with a higher income level have higher Exercise Behaviors regulation averages. Kaplan and Akkaya (2013), Kargün et al. (2016) found a significant difference between the economic status and participation in physical activities in favor of the participants with a high income level. This finding supports our research. There are also studies that are not parallel to this study. Yılmaz (2019) stated in his study that economic income is not a factor affecting participation in physical activities. As a result, the increase in the income level can be interpreted as the opportunity for people to participate in exercise activities more.

There was a significant difference between the Communication Skills dimension and all its sub-dimensions and the Exercise Type variable. The studies of Yılmaz and Çimen (2008) and Özdemir and Abakay (2017) are in parallel with this study. Bayrak and Nacar (2015), Karademir and Türkçapar (2016), and Öztürk and Soytürk (2015) found that there was no significant difference between branch change and communication skills. A significant

difference was found between Exercise Behavioral regulation dimension and all sub-dimensions and Exercise Type variable. The fact that Öztürk (2020) stated in his study that there is a significant difference between the branches of the students in different sports branches and their physical appearance shows parallelism with this study.

A significant difference was found between the Communication Skills dimension and all its sub-dimensions and the Time to Exercise variable. There are studies in the literature that show parallelism with this study. Yılmaz (2008), Abakaya and Kuru (2013), and Karademir and Türkçapar (2016) found a significant difference between transmission skills and the duration of doing sports. A significant difference was found between the Exercise Behavioral regulation dimension and all its sub-dimensions, and the Exercising Time variable. It can be said that the duration of exercise is the variable that affects the Conduction Skills and Exercise Behavioral Regulation dimension.

It can be stated that the participants, whose duration of exercise increased, had a positive contribution to their communication skills and behavioral adjustments in exercise.

It has been concluded that women exercise for reasons such as health, happiness, and leisure time, as well as external factors such as the demands of others, the concern that the people around them will not like them, and the pressures from family and friends.

1- Increasing the level of education positively affects the communication skills and perspectives of women who exercise.

2- The communication skills of women who exercise and their perspectives on exercise activities increase positively as their age progresses.

3- Married women have higher Communication Skills and Exercise Behavioral averages.

4- The average of communication skills and Exercise Behaviors of the participants with high income level is higher.

5- The communication skills and exercise behavior levels of the participants vary according to the type of exercise performed.

6- Women with longer exercise duration have higher communication skills and exercise behavioral regulation averages.

7- In addition to exercising in order to be healthy, feel happy and spend their spare time, women also exercise under the influence of external factors.

Suggestions

1- The same research can be applied to men as well.

2-The same research can be conducted in different cities.

3-The same research can be conducted in the mixed form.

4-Universities or local governments can organize seminars for women on communication skills and the benefits of exercise.

Presented as an Oral Presentation (7-9 October 2021) at the 5th International Academic Sports Research Congress.

REFERENCES

Abakaya U, Kuru E (2013). The relationship between the level of communication with coaches and success motivation in female football players. *Gaziantep Unıversıty Journal of Social Sciences*.

Abakaya Y (2019). The effect of zumba and fitness exercise programs carried out by Kocaeli Metropolitan Municipality on women's body image and communication skills, (Master's Thesis), Kocaeli University Institute of Health Sciences, Physical Education and Sports Program.

Akgün N (1986). Exercise physiology. *Ege University Press*. 2nd Edition

Akpınar S, Akpınar Ö, Nas K (2015). Investigation of social skill levels of students studying at Besyo school in terms of some variables. *Journal of Social and Economic Research:* 17-28.

Aşkun Cİ (1989). "Reflections on the theoretical meaning of communication". *Anadolu University Open Education Faculty Journal of Fiction.*

Bayrak E, Nacar E (2015). Investigation of communication skill levels of coaches working in professional team sports. *Journal of Academic Social Research*, 3(14): 391-405.

Bingöl G, Demir A (2011). Communication skills of Amasya Health School students. *Göztepe Medical Journal*, 26(4):152-159.

Bursalıoğlu Z (1991). *Structure and Application in Educational Management*, Ankara.

Büyükalan Filiz S (2007). Communication classroom management. *Ankara: Ekinoks Publishing, s. 154.*

Caspersen CJ, Powell, KE, Christenson GM (1985). Physical activity, exercise, and physical fitness: definitions and distinctions for health-related research, *Public Health Rep,*100(2): 126–131.

Dökmen Ü (2004). Communication conflicts and empathy. 28th Edition, *Istanbul: Sistem Publishing.*

Erduğan F (2019). The effect of the emotional intelligence levels of university students who exercise and do not exercise on their communication skills and the mediating role of personality traits, (Doctoral Thesis), Düzce University Institute of Health Sciences, Department of Physical Education and Sports.

Ergin A (1995). Instructional technology communication. *Ankara: Memoir Publishing,*p. *67.*

Ersöz G, Aşçı FH, Altıparmak E (2011). Behavioral regulation in exercise scale-2: Validity and reliability study, *Turkiye Klinikleri Journal of Sport Sciences*, 4(1):22-31.

Gökçe O (2002). Introduction to communication science. *Ankara: Turhan Bookstore*, p.*47.*

Hacıoğlu M (2018). Examination of university students' body image satisfaction and communication skills. *Journal of Sport Sciences.*2:2.

Kaplan Y, Akkaya C (2013). The results of social stratification differences reflected in sports (Example of Antalya). *Mediterranean Journal of Humanities*, 3(2): 143-158.

Karademir T, Türkçapar Ü (2016). Examination of communication skills in individual and team athletes. Atatürk University Faculty of Sport Sciences, *Journal of Physical Education and Sport Sciences,*p.18-4.

Karagöz N, Karagün E (2015). A scientific study on the body image of professional athletes. Sport Sciences.

Kargün M, Togo OT, Biner M, Pala A (2016). Examining the physical activity levels of university students. *Marmara University Journal of Sport Sciences,*1(1): 61-72.

Kaya A (2010). Introduction to communication: Basic concepts and processes. *Ankara: Pegem Publishing,* p. *84.*

Keyton J (2011). Communication and organizational culture: A key to understanding work experience. *Thousand Oaks, CA: Sage*.

Korkut F (1996). Development of communication skills assessment scale: Reliability and validity studies. *Journal of Psychological Counseling and Guidance*, 2(7): 18–23.

Kumcağız H (2012). Examination of body image and self-esteem in pregnant women according to some variables. *İnternational Journal of Human Sciences*, 9:2.

Lindwall M (2004). Exercising the self: On the role of exercise, gender and culture in physical self-perceptions. Stockholm University, Departement of Psychology, 1-136.

McMillan HJ, Schumacher S (2006). Research in education evidence-based ınquiry. *6th Edition. Boston: Allynand Bacon Inc.*

Mutlu TO, Şentürk E, Zorba E (2014). Empathic disposition and communication skills in university student tennis players. *İnternationl Journal of Science Culture and Sport*, 1:1.

Navickiene V, Sedereviciute Z, Valantinaite I, Zilinskaite V (2019). The relationship between communication and education through the creative personality of the teacher, *Creative Studies*,12(1): 49–60.

Nevzat Y ve Nedim A (2005). Instructional technologies and material design. *Trabzon: Derya Bookstore,* p.74.

Özdayı N, Uğurlu FM (2015). Examination of the relationship between the emotional intelligence and communication skill levels of referees in football. *International Journal of Sports Exercise and Training Sciences,*1(1):31-39.

Özdemir N, Abakaya U (2017). Communication Skills and Aggression in Female Volleyball and Football Players. *Gaziantep University Journal Of Sport Science,* 2(1):41-52.

Özkök E (1985). The dissolution of the masses in terms of communication rules. *Ankara: 1st* Edition. *Tan Publications.*

Öztürk O (2020). Examination of the relationship between physical anxiety and exercise of students studying at the faculty of sports sciences, Süleyman Demirel University, Institute of Health Sciences, Department of Sports Sciences.

Öztürk ÖT, Soytürk M (2015). Examination of communication skills of physical education, music and painting/visual arts teachers. *Journal of Ahi Evran University Kirsehir Education Faculty,* 16(3):39-50.

Polat G (2014). The effect of exercise on self-esteem and body satisfaction in women who exercise regularly. Kahramanmaras Sutcu Imam University.

Tepeköylü Ö, Soytürk M, Çamlıyer H (2009). Investigation of Communication Skills Perceptions of Physical Education and Sports School (Besyo) Students in Terms of Some Variables. *Spormetre Journal of Physical Education and Sport Sciences,* 7(3): 115-124.

Tepeköylü Ö, Soytürk M, Ada ND (2011). Comparison of the communication skill levels of students who are athletes in university teams and students who do not do sports. *Journal of Sport Sciences,* 22: 2.

Tozoğlu E, Bayraktar G (2014). Effects of sports on communication skills: A Research on teacher candidates. *Research on Humanities and Social Sciences.* 2014; 4(2): 68-74.

Tutar H, Yılmaz M (2008). General communication concepts and models. *Ankara: Seçkin Publishing,* p. *98-102.*

Vural Ö (2010). The relationship between physical activity level and quality of life in desk workers, (Master Thesis), Gazi University, Institute of Health Sciences.

Yıldız A (2019). The effect of zumba and fitness exercise programs carried out by Kocaeli Metropolitan Municipality on women's body image and communication skills. Kocaeli University Institute of Health Sciences, Physical Education and Sports Program.

Yılmaz İ (2008). Leadership behavior analysis and communication skill levels of coaches in different sports branches around athlete perceptions, (Doctoral Thesis), Gazi University Institute of Health Sciences.

Yılmaz I, Çimen Z (2008). Communication skills levels of physical education teacher candidates. *Ataturk University Journal of Physical Education and Sport Sciences.*

Yetişkin G (2016). Examining the relationship between communication skills and shyness in adolescents, (Master's Thesis), Faculty of Social Sciences, Beykent University.

Yılmaz A (2019). Evaluation of the relationship between physical activity, sedentary time and quality of life in university students. *OPUS International Journal of Society Studies*, 10(17): 1433-1453.

Sociometry in Team Sports – Volleyball Example

Ayşe Görmez[1], Emsal ÖZTÜRK[2], Caner CENGİZ[3], Semiyha TUNCEL[4]

[1]Ankara Üniversitesi Sağlık Bilimleri Enstitüsü, Ankara, Türkiye
https://orcid.org/0000-0002-8192-6483
[2]Jandarma ve Sahil Güvenlik Akademisi, Ankara, Türkiye
https://orcid.org/00000002-3461-5527
[3]Ankara Üniversitesi, Ankara, Türkiye
https://orcid.org/0000-0002-0446-537X
[4]Ankara Üniversitesi, Ankara, Türkiye
https://orcid.org/0000-0003-0075-821X

Email:aydinayse12@gmail.com, emsal_ozturk@hotmail.com, caner.cengizz@gmail.com,
sdolasir@ankara.edu.tr

Abstract

Sociometry is a measurement method used to determine the social structure of a particular group, its harmony within itself, the social development of group members, and their place in the group. In team sports, it is necessary to solve the problems between individuals to ensure harmony within the group during the competition preparation process. For this reason, it is significant to use sociometry studies in sports environments. The aim of this study is to learn the characteristics of the selected group and the relationships between team players. The methodology of the study is based on the sociometric method of structural analysis of small groups. Thestudygroupconsists of Ziraat Bank's star men'svolleyball team, which became the champion of Turkey in the 2018-2019 season in the men's star category. The data collection tool consists of 3 questions prepared by scanning similar studies and taking expert opinions. While preparing the questions, the questions were ensured to serve the purpose of sociometry. Considering the results of the study, we can say that on the basis of the players' positions, each player prefers players in a position other than their own. Therefore, they are aware of the need for each other for success. In addition, according to the results of the analysis of the data, the fact that the first choice of thepeoplewesee at thecenter of oursociogram in difficult tasks is those who are not preferred by the social person, which shows us the result that success is not a coincidence, but a professional point of view.

Anahtar Sözcükler: Sociometry, Team Sports, Volleyball.

Introduction

Sports teams are small groups where members stay together for relatively long periods of time and where functional and social cohesion is crucial to the performance and success of the club. The importance of the social element and friendship stated in amateur clubs is emphasized more. (Vojvodić & Jovanović, 2014) Harmony in interpersonal relationships leads to successful cooperation in the playground. Thus, as Sabin and Martin stated in their studies, the interaction process between team members should aim for greater harmony (Sabin 2018, Martin, 2017).

The best performance of the team depends on the ability of the players in the team to show their skills during the competition. The team's ability to show its true potential depends on the harmony between talented athletes. Being in harmony in collaborative sports such as volleyball is very important for team success (Akyüz, 2003).

Sociometry has emerged as a technique that measures human relations, the social cohesion and development of the group, and the distance of the group to itself and to society. Sociometry is a technique used to determine the status of the community within the group and to determine and measure their social status (Moreno, 1960). Sociometry, developed by Moreno, which shapes, supervises, and directs the society that has passed from French to Turkish, means "the effects of social life and friendship on the individual". Sociometry is a science that uses two techniques like psychodrama technique and the test revealing the relationship of a selected group with each other, their attitude, and the social organization within the group (Moreno 1960; Şirin, 1993; Şatıroğlu, 1999).

When the sociometry test, which can be applied to a group of people who know each other, is used effectively, positive results can be achieved. For example, a sociometry test can be applied to the members of any group who have to live or work together, and in-group problems arising from interpersonal interactions can be determined. Afterward, the group can be restructured and the interaction pattern between individuals can be rearranged to eliminate these problems (Dökmen, 2003).

From this point of view, we can state that the aim of our study is to learn the characteristics of the selected group (Ziraat Bank Star Men'sVolleyball Team) and the relationships between the group members (team players).

MaterialandMethod

The study group of our research, which is in the scanning model, consists of Ziraat Bank volleyball team, which ranked 1st in Turkey in the 2018-2019 season in the star men category. 14 team members voluntarily participated in the study and the tests were conducted with the permission of the team responsible. It was stated to the team members that the results of the study would be presented anonymously. The sociometry test was applied in the study. In sociometry tests, each individual in the group is asked which members he or she would like to be with while performing a particular activity. Thus, the sociometric preferences of the group members are determined (Dökmen, 2003). Our sociometry test, which was developed using similar studies (Viktorovna et al. 2019, Vojvodić and Jovanović 2014, Sabin 2018, Lupu 2013), consists of 3 questions. Sociometry test questions are shown in Table 1.

Table 1. Sociometry Test Questions in Volleyball

1-	If you were to attend an event other than sports, which three of your friends would you prefer to attend, respectively?
2-	Which three of your friends would you like to participate in the training in pairs (2 pairs), respectively?
3-	Which three of your friends do you prefer to do the challenging tasks in training and competitions, respectively?

The answers given to the survey questions were marked as +3, +2, and +1 according to the answer order on the previously prepared matrix table. Then, the preference points entered for each player were summed and the preference points of each of the team members were reached. The results obtained were recorded in the sociometric figure table. While the encrypted letters of the individuals were placed in the figure table, a series of decreasing preference scores outward was observed, with the most preferred being in the center. Then, taking into account the 1st preferences of the team members, the arrows indicating the direction of preference were demonstrated in the figure table. In line with the written preferences, it was tried to determine the duals, the excluded, and the leaders within the group.

Findings

Based on the data obtained during the survey, table 2, table 3, and table 4 (encrypted with letters) were created, containing the main answers of the participants. In Figures 1,2 and 3; Sociograms were made based on those selected in the first place based on the preference matrices.

Table 2. If you were to attend an even to the than sports, which three of your friends would

ITEM NO	SELECTED SELECTING	A	B	C	D	E	F	G	H	I	İ	J	K	L	M
	NAME-SURNAME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	A (S)		+2			+1									+3
2	B (P)										+2		+1		+3
3	C (S)					+3	+2							+1	
4	D (L)			+3		+2	+1								
5	E (PÇ)			+3	+1		+2								
6	F (L)			+1	+3	+2									
7	G (S)								+3						
8	H (O)				+2			+3						+1	
9	I (S)				+1							+2			+3
10	İ (O)		+1										+3		+2
11	J (P)		+1							+2	+3				
12	K (PÇ)		+1								+2				+3
13	L (O)			+3	+1					+2					
14	M (O)		+3								+2		+1		
	1st preference	0	1	3	1	1	0	1	1	0	1	0	1	0	4

you prefer to attend, respectively?

number														
2nd preference number	0	1	0	1	2	2	0	0	2	3	1	0	0	1
3rd preference number	0	3	1	3	1	1	0	0	0	0	0	2	2	0
TOTAL SCORE	0	8	10	8	8	5	3	3	4	9	2	5	2	13

Figure 1. Communicative situation analysis; "If you were to attend an event other than sports, which three of your friends would you prefer to attend, respectively?"
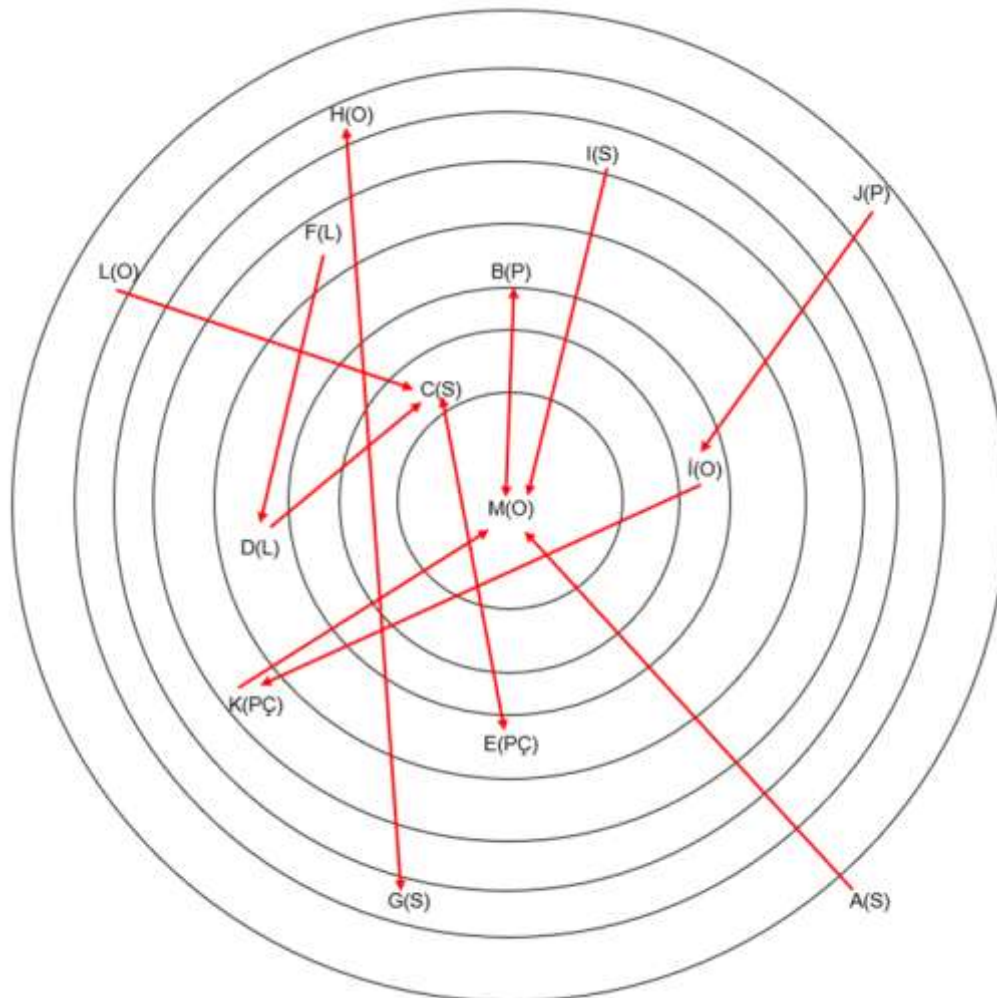
According to the result from Figure 1 and Table 2, we think the most popular name of the team is M, the most preferred name in terms of points. It is seen that A draws attention as "alone" since it is not preferred by anyone. Although there are mutual choices between C - E and B - M, the "clicking" that occurs when H and G are not chosen by anyone, but only choose each other, draws attention.

Table3.Which three of your friends would you like to participate in the training in pairs (2 pairs), respectively?

ITEM NO	SELECTED	A	B	C	D	E	F	G	H	I	İ	J	K	L	M
	SELECTING														
	NAME-SURNAME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	A (S)		+3			+1							+2		
2	B (P)			+1		+2									+3
3	C (S)					+2	+1							+3	
4	D (L)					+2	+3								
5	E (PÇ)			+3	+1		+2								
6	F (L)	+3			+1	+2									
7	G (S)		+2						+3					+1	
8	H (O)			+3		+2		+1							
9	I (S)				+3								+2	+1	
10	İ (O)	+2											+1		+3
11	J (P)		+2		+1					+3					
12	K (PÇ)	+3	+2								+2				
13	L (O)			+3	+1					+2					
14	M (O)		+1							+2	+3				
	1st preference number	3	1	3	1	0	1	0	1	1	1	0	0	1	2
	2nd preference number	1	3	0	0	5	1	0	0	2	1	1	1	0	0
	3rd preference number	0	1	1	4	1	1	1	0	0	0	0	1	2	0
	TOTAL SCORE	8	10	10	7	11	6	1	3	7	5	2	3	5	6

Figure 2. Communicative situation analysis;**"**Which three of your friends would you like to participate in the training in pairs (2 pairs), respectively?"
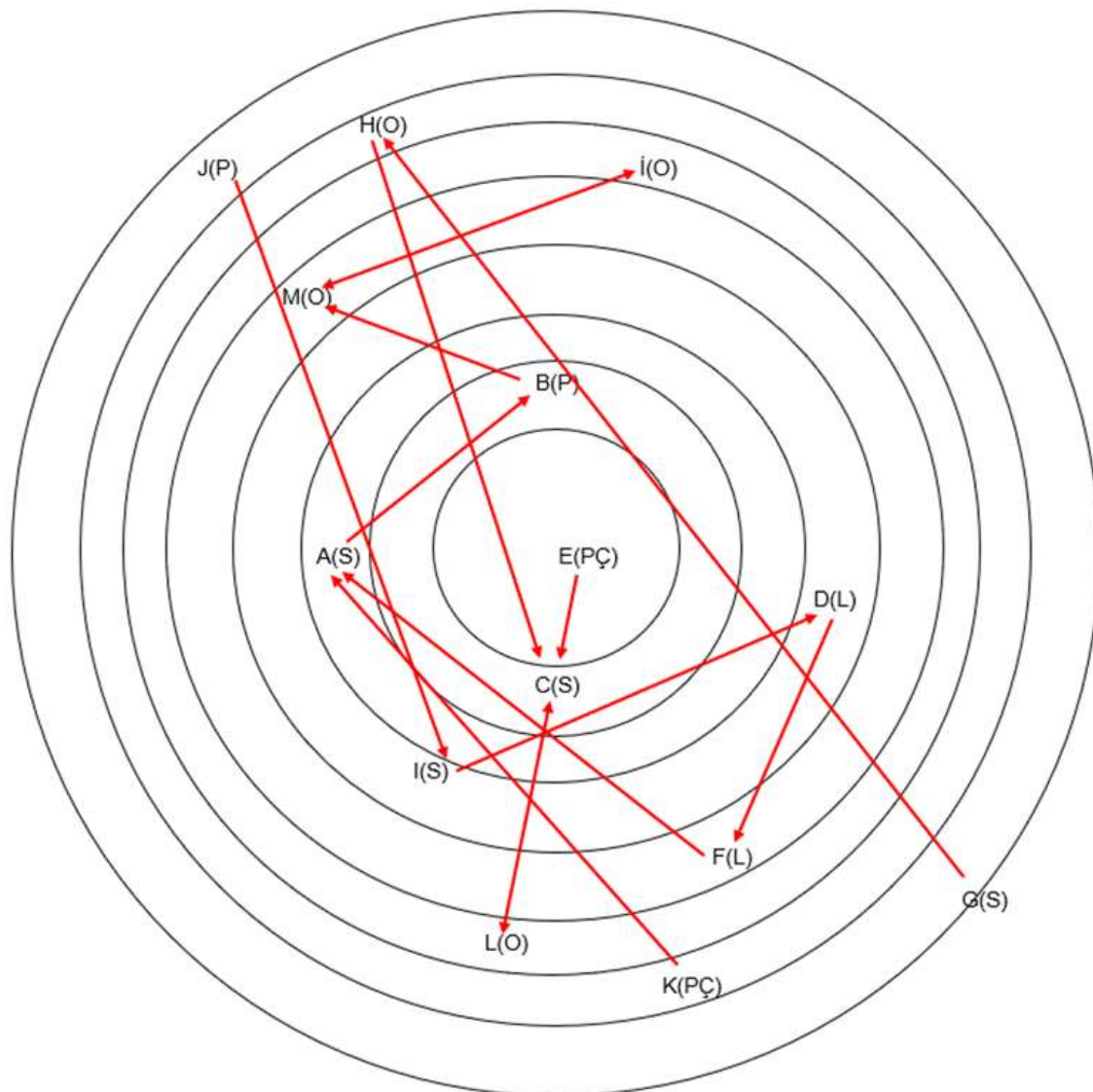
As can be seen from Figure 2 and Table 3, although E is the most preferred name in terms of points, C is the most preferred name in the 1st rank. There is no name that is not preferred by anyone. There are mutual choices, that is, "clicks" between C – L, and M – I.

Table 4.Which three of your friends do you prefer to do the challenging tasks in training and competitions, respectively?

ITEM NO	SELECTED	A	B	C	D	E	F	G	H	I	İ	J	K	L	M
	SELECTING														
	NAME-SURNAME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	A (S)		+3			+2									+1
2	B (P)										+1		+2		+3
3	C (S)					+2	+1							+3	
4	D (L)	+2	+3												+1
5	E (PÇ)			+3	+1		+2								
6	F (L)								+1	+2					+3
7	G (S)		+3						+2	+1					
8	H (O)	+3						+2				+1			
9	I (S)		+2		+1										+3
10	İ (O)	+3				+1							+2		
11	J (P)									+2	+3				+1
12	K (PÇ)		+1								+3				+2
13	L (O)		+1	+3						+2					
14	M (O)	+3	+1							+2					
	1st preference number	3	3	2	0	0	0	0	0	0	2	0	0	1	3
	2nd preference number	1	1	0	0	2	1	1	1	4	0	0	2	0	1
	3rd preference number	0	3	0	2	1	1	0	1	1	1	1	0	0	3
	TOTAL SCORE	10	13	6	2	5	3	2	3	9	7	1	4	3	14

Figure 3: Communicative situation analysis;"Which three of your friends do you prefer to do the challenging tasks in training and competitions, respectively?"
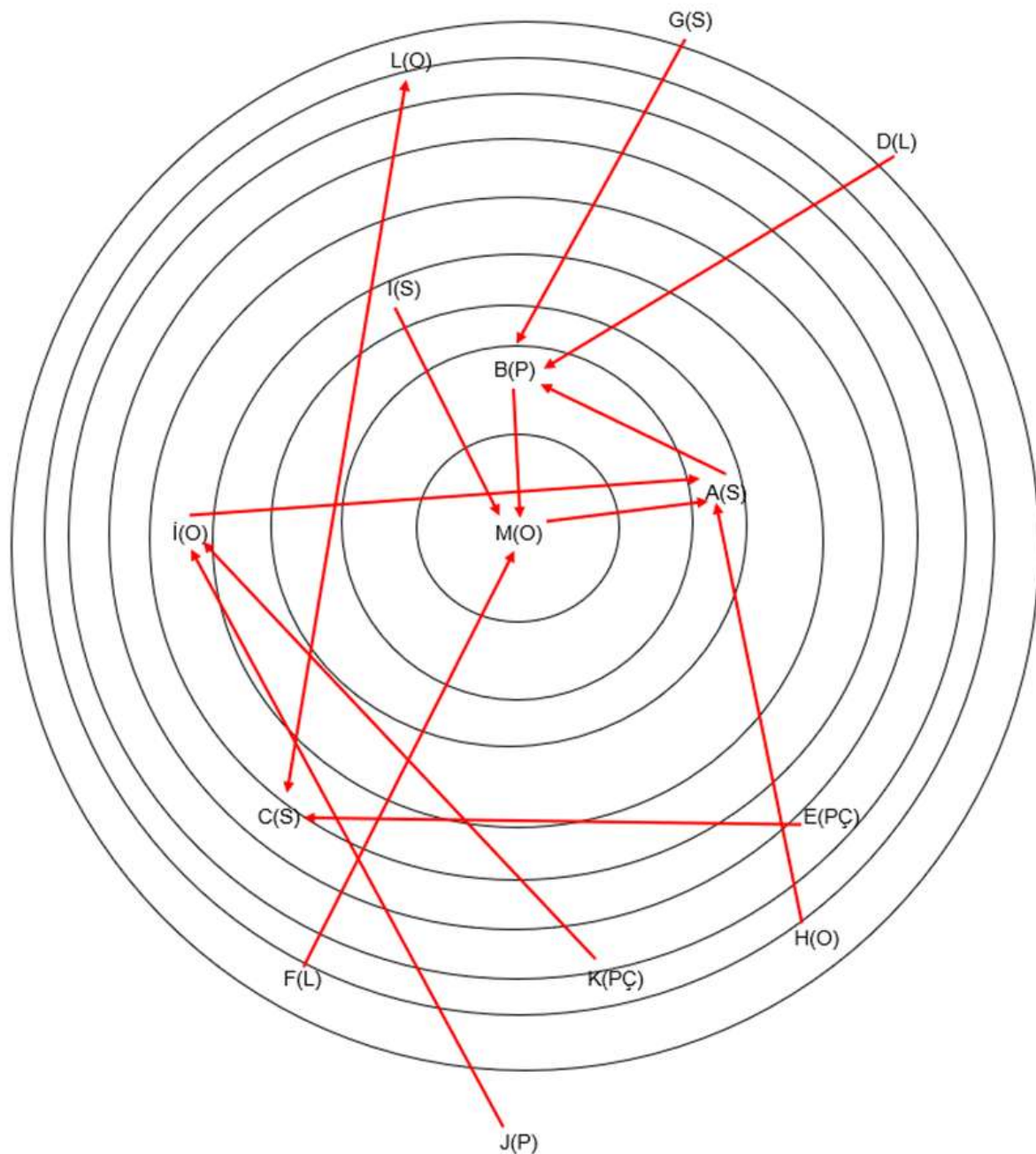
According to the results of Figure 3 and Table 4, M and B, which has the closest values to M, are seen as the most preferred names for difficult tasks. Although there are mutual preferences between C and L, it is seen that there are not many mutual choices. Although we see that J is the least preferred, there is no name that is not preferred by anyone.

Discussion and Conclusion

Considering the findings of the research; first of all, we can say that the answers given to the first question and the answers to the 2nd and 3rd questions differ. In fact, this difference is of great importance. In the first question, which is mostly about leisure time, that is, the preferences in social life, we can identify the popular and unpreferred (excluded) members of the team. However, we see that there are very different preferences when it comes to the 2nd and 3rd questions and the preferences in matches and training. We can clearly observe that the "A" person, who is not preferred by anyone in social life, is highly preferred in paired work and challenging tasks. In particular, the fact that the first preference of the person "M", whom we see in the center of our sociogram in the 1st question, in the 3rd question (difficult tasks), is the person "A", which is not preferred by anyone in the first question that shows the social life, shows us that the success is not a coincidence, but a professional point of view. In addition, when we look at the team in general, it can be thought that the lack of serious groupings is among the factors affecting the success.

Looking at the answers given to the last question on the basis of the players' positions; we can say that each player prefers players in a position other than their own, and therefore they are aware of the need they feel for each other for success. We see that person "B", who is probably the 1st setter, is preferred more than person "J (setter)". This suggests that "B", which is highly preferred by hitters, has an impact on success. The fact that the middle blocker "M", who was preferred with the highest rate, was preferred by the Libero in the first place shows us the importance of the organized work of the top of the net and the ground defense in success.

Looking at similar studies, the study of Vıktorovna et al. (2019), who concluded that the socio-psychological climate in the volleyball team is quite positive, shows similar results to our study. In addition, in the aforementioned study, it is emphasized that creating a harmonious social and psychological environment in team sports is an important task in terms of success. Likewise, Vojvodić and Jovanović stated as well in their study with a volleyball team in 2014, that they reached the image of a team that got along well emotionally and sociologically, and that young players were aware of their functions on the field and behaved in a way that would not disrupt the group atmosphere. Sopa and Pomohacı (2018), in their study on 12 volleyball players, concluded that cohesion in the group increases success and they are aware that they need each other for success.

In Sabin's (2015) study with 12 male basketball players aged 10-12, he stated that the cohesion of the group was very high, but the results of the study could still help in improving group relations, communication, and socialization, and in forming a strong group by reintegrating isolated members into the group. In another study conducted with male handball players between the ages of 19 and 34 and with sports performance between 6 and 10 years, it was emphasized that the preferences of the team players did not coincide with the team composition in the team during the game (Lupu, 2013). Romadhoni et al. (2020), in their study on 15 female handball players, concluded that the handball players' being compatible in their social environments is important for the performance and success of the athletes.

SUGGESTIONS

Looking at the results of our study and similar studies, mostly harmonious and professional thinking team environments were encountered. Similar studies can be applied especially in teams with poor team cohesion and low success rate. In line with the results, it can be recommended to carry out studies to improve the social environment of the teams.

''**17th Internatıonal Sport Scıences Congress''** Presented as an Oral Presentation.

REFERENCES

Dökmen, Ü. (2003). *Sociometry and Psychodrama.* Sistem Publishing Fourth Edition.
Lupu,S. G. (2013). TheSociometricTechnıquesandTheirImplementation in the Athletic Performance Activity. *SpSocInt J Ph Ed Sp*, 13:137-140.

Martin L. J., Balderson D., Hawkins M., Wilson K.,& Bruner M. W. (2017). GroupnessAndLeadershipPerceptions İn RelationToSocialİdentity İn YouthSport.*Journal of AppliedSport Psychology*, 29(3), 367-374.

Milenko, V. M.,&Jovanović, M. (2014). Sociometric Structure of Premier League Volleyball Club. *SportLogia.* 10(2), 96–105.doi: 10.5550/sgia.141002.en.006V.

Moreno, J. L. (Ed.), (1961), *Thesociometry*Reader (Translator: Kösemihal N). New York, NY, US: Free Press.

Romadhoni, WN., Nasuka, N.,&Priambodo, E.N. (2020). Sociometry of a Women Handball Team. *İSPHE*, 596-602.DOI 10.41082300324.

Sabin, S. I., & Marcel, P. (2015), Improving Performance of a Basketball Team (10-12 years) Through Developing Cohesion of the Sport Group. Ovidius University Annals, Series Physical Education and Sport/Science, Movement and Health, 15(2 S1), 534-541.

Sopa, I. S., &Pomohaci, M. (2018), Discovering the leader of a volleyball team using the sociometric survey method. *Timisoara Physical Education & Rehabilitation Journal,* 10(3).

Şatıroğlu, A. (1999). On Moreno and Sociometry. *Istanbul University Journal of Sociology*, 3;5: 111 – 126.

Şirin, M. (1993). The Role of Sociometry in the Analysis of Natural Groups. Master Thesis, Institute of Social Sciences, Uludağ University, Bursa.

Vıktorovna, V.I., Vladımırovna, V.T.,&Nıkolaevna S.N. (2019). Sociometry of a Volleyball Team. *Journal of Physical Education and Sport*. Vol.19 (issue 2), Art 160, pp. 1104 - 1111, 2019 DOI:10.7752/jpes.2019.02160.

The Effect of Four Weeks Preparatory Period Trainings on Aerobic And Anaerobic Power Values of Wrestlers

Harun VURAL[1], Emirhan DEMİRHAN[2]
[1]Bartın Üniversitesi, Bartın, Türkiye
https://orcid.org/0000-0001-8234-4410
[2]BartınÜniversitesi, Bartın, Türkiye
https://orcid.org/0000-0002-5464-1183
Email: vuralharun65@gmail.com , demirhan.emirhan55@gmail.com

Abstract

The aim of this study is to examine the effects of 4-week preparation period training on aerobic, anaerobic power and body weight values of wrestling athletes. Seven male wrestlers with an average age of 24.14, who are competitors in national and international competitions, were included in the study voluntarily. Aerobic, anaerobic power and body weight measurements were measured twice, at the beginning and end of the first phase of the preparation period. In order to determine whether there is a significant difference between the pre-test and post-test averages of the athletes, the Wilcoxon signed-rank test was used to analyze the data that were not normally distributed. The significance level was taken as $p<0.05$. Wrestler's Body weights of A significant difference was found between the pretest and posttest mean scores in favor of the posttest ($Z=-2.207$; $p<0.05$). MaxVO2 and Anaerobic power average values were not significantly affected by the four-week training at the beginning of the season ($p>0.05$).

**Keywords*:* Wrestling, MaxVO2, Anaerobic power

Introduction

Physical and physiological characteristics of athletes differ according to sports branches. Sports branches have different training types as well as some disciplines and rules (Yolcu, 2012).

Wrestling sport; is a close combat sport performed in the weight concept, where motoric features such as strength, endurance, speed, strength, technique, tactics, and mobility should be combined (Demirhan, 2020). Energy is defined as the ability to do work. In other words; energy production is related to both time and intensity (Bayrakdar & Zorba, 2020). Adequate anaerobic power in athletes is directly proportional to the excess ability to use ATP - CP energy source (Salt et al., 2021). Anaerobic power development will occur if the amount of ATP-CP in energy stores is increased during the training process and the speed of their use is improved. Whether the level of anaerobic power is sufficient with the training and matches of the athletes is one of the important factors that directly affect the products specific to the branch (İmamoğlu et al, 2004). It is supported by the literature that anaerobic power is also associated with age, body weight, and lean body mass (Young, 2020).

Better preparation of the training programs to increase the performance of the athlete depends on determining the athlete profile in advance or at any stage of the program in the best way and creating it based on a scientific method. Because evaluating individuals or groups within the parameters of physical fitness provides basic information about the group or person being examined (Carlson et al., 1994; Coleman and Hale, 1998; Davis and Kimmet, 1986; Fox et al., 1988). Although anaerobic performance is important for all kinds of sportive activities (Salt et al., 2020), its importance increases even more in sports branches where anaerobic performance is predominantly used. Wrestling matches are held in two three-minute halves according to United World Wrestling (UWW) rules, and a developed anaerobic power is one of the most important characteristics required for victory in wrestling athletes. In addition, it has been stated that there is a high correlation between aerobic capacity and success in wrestling (Ziyagil, 1991). Citing information from another source, Saygın et al. (2017) reported that the contribution of energy systems in wrestling: 30% alactic anaerobic, 30% lactic, anaerobic, and 40% aerobic (Bompa and Carrera, 2005 cited by Yamaner et al., 2010).Nikooie et al., 2015, Saygın et al. (2017).

In the light of this information, the study is to examine the effect of the four week preparation period training of wrestling athletes on aerobic power values.

Material and Method

The effect of 4-week training in the first phase of the preparation period on the aerobic and anaerobic power values of wrestling athletes was investigated. Seven male wrestlers with an average age were included in the study voluntarily.

Measurements were taken twice, at the beginning and end of the first phase of the preparation period. Body weights of the wrestlers were recorded on a precision scale up to 20 grams with bare feet and only shorts. Height tall Height measurements were made with a 1 mm precision Holtain brand height meter (Demirhan et al., 2018; Kilincarslan et al. 2022). Aerobic capacity (maximum oxygen consumption): Measured with the 20m shuttle run test. The test area was determined for a distance of 20 meters and a colored funnel in the gym. Subjects rushed to both the arrival and return lines with the signal from the tape. The pre-prepared level follow-up form marked the levels at which the subjects left the test and was estimated as Max.VO2 ml/kg/min according to the evaluation table (Demirhan, et al., 2019). Monark 894 branded Wingate Anaerobic Power Test (WAnT) was used to determine anaerobic performances. Participants were subjected to a 30-second test period by applying 75gr of external resistance per body weight (Aydın et al., 2021).

Statistical Method:

In order to determine whether there is a significant difference between the pre-test and post-test scores of the athletes, the Wilcoxon Signed Ranks test was applied to analyze the data that did not show normal distribution.

Findings

In order to determine whether there is a significant difference between the pre-test and post-test scores of the athletes, the Wilcoxon Signed Ranks test was used to analyze the data that did not show normal distribution, and the results are given below. The mean age of the subjects is 24.14 (years), the mean age of sports is 13.14 (years). Height averages were determined as 163.85 (cm).

Table 1. Analysis of the pre-test and post-test values of the athletes according to the body weight variable (kg)

Body Weight Pre-Post Test	n	Row Mean	Sum of Row	Z	p
Negative Ranks	0	0.00	0.00	-2.207	0.027
Positive Ranks	6	3.50	21 ,00		
Equal Rows	1				

A significant difference was found between the pre-test and post-test (after 4 weeks) mean values in the body weight measurements of the wrestlers, in favor of the post-test averages (Z= -2.207; p<0.05). According to these results, it can be said that the body weights of the wrestlers increased according to the training method.

Table 2. Analysis of the pre-test and post-test values of the athletes according to the MaxVO2 variable (ml/kg/min)

MaxVO2 Pre-Post Test	n	Row Mean	Sum of Row	Z	p
Negative Ranks	7	3.00	3.00	-1.859	0.063
Positive Ranks	1	4, 17	25.00		
Equal Rows	6				

In Table 1, no significant difference was found between the pre-test and post-test averages of the aerobic capacities of the wrestlers (p>0.05). According to these findings, it was seen that the duration and content of the training performed in the development of the MaxVO2 values of the wrestlers were not sufficient.

Table 3. Analysis of the pre-test and post-test values of the athletes according to the Leg Peak Power variable (W)

Leg Peak Power Pre-Post Test	n	Row Mean	Sum of Row	Z	p
Negative Ranks	1	3.00	0.00	-1.859	0.063
Positive Ranks	6	4, 17	25.00		

Equal Ranks	0

No significant difference was found between the pre-test and post-test scores of the subjects (p>0.05). According to these results, it has been seen that the Leg Peak Power values are at a level that will not be effective in the duration and content of the trainings.

Table 4. Analysis of the pre-test and post-test values of the athletes according to the Leg Minimum Power variable (W)

Leg Min.Power Pre-Post Test	n	Row Mean	Sum of Row	Z	p
Negative Ranks	2	2.50	5.00	-1.521	0.128
Positive Ranks	5	4 ,60	23,00		
Equal Ranks	0				

As seen in Table 4, no significant difference was found between the pre-test and post-test scores of the wrestlers (p>0.05). Accordingly, it has been observed that the effect of training duration and content is not sufficient according to Leg Minimum Powers.

Table 5. Pre-test and post-test values of the athletes according to the Leg Avarage Power variable analysis (W)

Leg Avarage Power Pre-Post Test	n	Row Mean	Sum of Row	Z	p
Negative Ranks	2	2.50	5.00	-1.521	0.128
Positive Ranks	5	3.60	23.00		
Equal Ranks	0				

No significant difference was found between the pre-test and post-test scores of the wrestlers (p>0.05). It was seen that the effect of training time and content was not sufficient according to the average values of the Leg Avarage Power of the wrestlers.

Discussion and Conclusion

In the study, the changes in body weight, aerobic capacity and anaerobic power of 7 wrestlers, who have international competition experience and continue active wrestling life, with an average age of 24,14 (years), were determined at the beginning and end of the 4-week training sessions at the beginning of the season.

According to the body weight values obtained in the study, a significant difference was found between the pre-test and post-test (after 4 weeks) measured body weight averages of the wrestlers in favor of the post-test scores (Z= -2.207; p<0.05). This difference was thought to be due to the effect of the applied training. In many studies examined, it has been seen that there are results that support our findings. It has been stated that there is an improvement in muscle fibers according to the working feature as a result of sports exercises (Akgün, 1989). In addition to these, studies that concluded that body weight increases following muscle development in wrestlers as a result of regular training are in line with our findings (Kürkçü, 2009; Cicioğlu, 2007). Especially fighting like wrestling Considering the assumption that exercises performed at the beginning of the season in athletes are generally aimed at maximal strength development. The increase in body weight averages detected in our study was evaluated as the enlargement of a muscle's diameter by giving high-tension stimuli (Demir & Filiz, 2004). Aydın et al., (2021), in their study, show that lower extremity muscle circumference measurements, leg mass and volume are effective on many factors in converting skill into scores (Aydın et al., 2021).

There was no significant difference between the pre-test and post-test (after 4 weeks) measured averages of MaxVO2 and Anaerobic power values of wrestlers' aerobic capacity (p>0.05). It is thought that these results may be due to the fact that the applied training program is at the beginning of the season and the loadings that can provide sufficient development have not been made yet. It is thought that a longer training period is required for the development of aerobic capacity and anaerobic power. Cicioglu et al. (2007) reported that anaerobic power did not increase statistically at the end of twelve weeks in his study. In another study, it was concluded that the anaerobic capacity of wrestlers did not change during the six-month preparation period (Sever et al. 2017). However, in a different study, it was found that training methods applied for nine months improved anaerobic power adequately (Kurt & Eroğlu, 2019). In another study, it was stated that anaerobic power increased as a result of a 12-week training program (Kürkçü et al. 2009). In a different study examining the anaerobic capacity of wrestlers, Song and Cipriano (1984) stated that the anaerobic capacity of elite American wrestlers aged 18-24, measured before and after the competition season, increased significantly at the end of the season compared to the pre-season. In another study, Ziyagil et al. (1996) stated that the anaerobic power of star wrestlers increased significantly at the end of the season compared to the pre-season. Our research findings are inconsistent with the researchers' results. It was thought that the most important reason for this was that the

measurements we made took place during the 4-week adaptation training period at the beginning of the season and that there was not enough time and training content for the development of anaerobic capacity.

As a result: According to the findings obtained from the research findings, it was seen that the training program applied for four weeks at the beginning of the season caused an increase in body weight values, but it was not sufficient for the development of aerobic capacity and anaerobic power values. It has been concluded that the reason for this is that the first trainings at the beginning of the season are generally aimed at adaptation, and the actual development and changes can be gained after this period. It is recommended to follow the trainings throughout the season and make measurements at periodic intervals, and studies in which the changes and developments of the parameters that will affect the performance can be followed closely.

* This study was presented as a online oral presentation at the "6th International Eurasia Sports, Education and Society Congress (2022).

REFERENCES

Aydın R, Ersöz G, Özkan A. The relationship of some factors affecting dynamic-static balance and proprioceptive sense in elite wrestlers. *Physical education of students*. 2021;25(3):178-8. Bayrakdar, A., & Zorba, E. (2020). *Egzersiz ve Beslenme*. Akademisyen Kitabevi.

Carlson, T.O., Naughton, G., Performance Characteristics of Children Using Various Braking Resistances on The Wingate Anaerobic Test. Journal of Sports Mediciene Physical Fitness, 34 (4);p:362-369, 1994.

Cicioğlu, İ., Kürkcü, R., Eroğlu, H., Yüksek, S., 15-17, Yaş Grubu Güreşçilerin Fiziksel ve Fizyolojik Özelliklerinin Sezonsal Değişimi , Spornetre , Beden Eğitimi ve Spor Bilimleri Dergisi, 4, 2007.

Coleman, S.G., Hale, T., The Effect Of Different Calculation Methods of Flywheel Parameters on The Wingate Anaerobic Test. Can. J. Appl. Physiol., 1(3-4), p:12-18, 1998.

Davis, D., Kimmet, T., Physical Education: Theory And Practice, Macmillan, Australia, 1986.

Demir, M., & Filiz, K. (2004). Spor egzersizlerinin insan organizmasi üzerindeki etkileri. Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi, 5(2), 109-114.

Demirhan, B. (2020). The Effect of Two Semester Wrestling Training on University Students' Body Composition and Some Motoric Characteristics. International Education Studies, 13(6), 26-31.

Demirhan, B., Abdırahmanova, D., Canuzakov, K., & Geri, S. (2018). Evaluation of some respiratory functions of Kyrgyz National Team Athletes before 2016 Summer Olympic Games. Journal of Human Sciences, 15(3), 1711-1716.

Demirhan, B., Abdurrahmanova, C., Türkmen, M., & Canuzakov K. (2019). Determination of Some Physical Properties of U-23 Soccer Players'. Ovidius University Annals, Series Physical Education and Sport/Science, Movement and Health, 19(2), 136-141.

Fox, E. L., Bower, R W., Foss, L. M., The Physiological Basis Of Physical Education And Athletics, Sounders College Publishing, 1988.

Genç, A. (2020). The Effect of Wrestling Education on Some Physical and Motoric

Parameters in High School Students. International Education Studies, 13(4),100-105.

İmamoğlu, O., Bostancı, Ö., & Kabadayı, M. (2004). Beden Eğitimi Ve Spor Bölümü Öğrencilerinde 30 Metre Koşu Ve Margaria Kalamen Anaerobik Güç İlişkisinin Araştırılması. Spormetre Beden Eğitimi Ve Spor Bilimleri Dergisi, 2(4), 147-154.

Kilinçarslan, G., Kayantaş, İ., Bayrakdar, A., & Bayraktar, I. (2022) Physiological and Performance Response to Repeat Sprint Tests in Women Athletes, International Journal of Early Childhood Special Education, 14 (5).

Kurt, Y., & Eroğlu, H. Sporcu Eğitim Merkezindeki Güreşçilerin Fiziksel Ve Fizyolojik Özelliklerinin Sezonsal Değişimi. Germenica Beden Eğitimi ve Spor Bilimleri Dergisi, 1(2), 2019; 1-14.

Kürkçü Recep, Adnan Ersoy, Latif Aydos, Güreşçilere Uygulanan 12 Haftalık antrenman Programının Bazı Fiziksel ve Fizyolojik Özellikler Üzerine Etkisi,e-journal of New World Sciences Academy Sports Sciences , 4 , s:4, 2009

Nikooie, R., Cheraghi, M., Mohamadipour, F. (2015). Physiological Determinants of Wrestling Success in Elite Iranian Senior and Junior Greco-Roman Wrestlers. The Journal of Sports Medicine and Physical Fitness. 57(3): 219-226

Satılmış, N., Polat, Y., Çimen, B., Cimen, L., & Çetin, İ. (2020). The Effects of Aerobic Exercise on Thyroid Hormone Levels in Obese Boys. *Mustafa Kemal Üniversitesi Tıp Dergisi*, *11*(40), 48-54.

Satılmış, N., Çimen, L., Çetin, İ., Polat, Y., & Çimen, B. (2021) Effects of Aerobic Exercise on Oxidant/Antioxidant Status in Obese Boys: A Controlled Trial. *Experimental and Applied Medical Science*, *2*(1), 117-127.

Saygın, Ö., Gürsoy, R., Tekin, A., Ceylan, H.İ., İrez. G.B. 14-15 Yaş Grekoromen Stil Güreşçilerin Dikey Sıçrama, Anaerobik Güç, El Kavrama Kuvveti, 30m Sprint, Aerobik Kapasite Değerlerinin Sıkletlere Göre Karşılaştırılması. Atatürk Üniversitesi Beden Eğitimi Ve Spor Bilimleri Dergisi, 19 (3); 36-50, 2017.

Sever, O., Gönülates, S., Bayrakdar, A., Demirhan, B., Geri, S., & Zorba, E. (2017). Anaerobic Capacity Changes of the National Freestyle Wrestlers during the Olympic Qualification Competition Period. Journal of Education and Training Studies, 5(8), 26-29.

Song, Tmk. and Cıprıano, N., (1984). Effects of seasonal training on physical and physiological function on elite varsity wrestlers. Journal of Sports Medicine, 24, 123 – 130

Yolcu, A. (2012). 14-17 Yaş Arasındaki Erkek Basketbolcu, Futbolcu, Güreşçi ve Sedanter Bireylerin Bazı Fiziksel ve Fizyolojik Özelliklerinin Karşılaştırılması. Basılmamış Yüksek Lisans Tezi. Niğde Üniversitesi Sosyal Bilimleri Enstitüsü.

Ziyagil, M. A., Zorba, E., Kutlu, M., Tamer, K., & Torun, K. (1996). Bir Yıllık Antrenmanın Yıldızlar Kategorisindeki Serbest Stil Türk Milli Takım Güreşçilerinin Vücut Kompozisyonu Ve Fizyolojik Özellikleri Üzerine Etkisi. Gazi Beden Eğitimi ve Spor Bilimleri Dergisi, 1(4), 9-16.

Ziyagil, M.A.(1991). Güreşçilerin Antropometrik Özellikleri, Biyomotor Yetenekleri ve Başarıları Arasındaki İlişkinin Araştırılması. *Marmara Üniversitesi Sağlık Bilimleri Enstitüsü Beden Eğitimi ve Spor Anabilim Dalı, Yayımlanmamış Doktora Tezi, İstanbul.*

The Relatıonshıp between Mental Toughness and Mındfulness in Athletes

Güngör DOĞANAY[1*], Mutlu TÜRKMEN[2]

[1] Bayburt University, Graduate School of Education Institute, Bayburt, Turkey
https://orcid.org/0000-0003-1366-305X
[2] Bayburt University, Faculty of Sport Sciences, Bayburt
https://orcid.org/0000-0003-4534-7553
Email: karof@gmail.com, mutluturkmen@bayburt.edu.tr

Abstract

In this study, it is aimed to reveal the relationship between mental toughness and mindfulness in athletes. A total of 414 athletes, 167 female and 247 male, aged between 18 and 32, participated in the research conducted with the relational screening model. In the study, data are collected using "Personal Information Form", "Mental Toughness Scale" and "Mindfulness Scale in Sports". Descriptive statistics, independent groups t-test, Pearson correlation and Regression analyzes are used to evaluate the data. When the findings obtained in terms of mental toughness are evaluated; the mental toughness levels of the athletes do not differ significantly according to the variables of gender, licensed sports and being a national athlete (p>.05); it is determined that there is no significant relationship with age and sports years (p>.05). On the other hand, it is determined that the level of mental toughness shows a significant difference according to the sport branch variable (p<.05). When the findings obtained in terms of mindfulness are evaluated; the mindfulnes level of the athletes do not differ significantly according to the variables of gender, licensed sports, being national athlete and sports branch (p>.05); it is determined that there is no significant relationship with age and sports years (p>.05). In addition, it is determined that there is a significant relationship between the mental toughness levels of the athletes and their mindfulness levels, and their mindfulness predict mental toughness (p<.05). As a result, it has been demonstrated that the role of mindfulness is important in increasing mental toughness in athletes.

Keywords: sports, athlete, mental toughness, mindfulness.

Introduction

In parallel with the development of sports in the historical process, it is seen that the study areas of sports sciences have also expanded. Sport psychology is among the developing branches of sport sciences in recent years. The American Psychological Association defines sport psychology as "the branch of science that aims to scientifically and systematically examine the psychological processes associated with sporting performance or participation in sporting activities". The Association for Applied Sport Psychology defines sport psychology as "the branch of science that examines the mental and psychological consequences that affect the motivation/impulse to participate in physical activities (sport or exercise) and that occur in people as a result of participation in physical activities." The European Federation of Sport Psychologists defines sport psychology as "the branch of science that aims to scientifically and systematically examine the psychological processes associated with sporting performance or participation in sporting activities". The European Federation of Sport Psychologists, on the other hand, defined sport psychology as "the psychological process that occurs as a result of people's individual or group participation in physical activities, as a result of the psychological examination of sports and infrastructure-related activities" (Demir, 2019).

One of the most important factors that make sport psychology important is that there are psychological components that make up sportive performance. As it is known, increasing performance in sportive activities in modern social life is not only possible by developing physical performance parameters at a high level. In addition, there are also psychological elements that affect performance in athletes, and the development of these elements is also important in terms of performance. Although athletes have high physical readiness levels, they may also experience some psychological problems. For this reason, many high-level athletes have high levels of psychological characteristics such as controlling anxiety, goal setting, concentration and motivation as well as physical performance parameters. In addition to these psychological parameters, studies show that mental toughness in athletes is among the components that affect performance (Karabacak, 2021). According to Yazıcı (2019), athletes who are interested in both individual and team sports experience high levels of stress during training and competitions. Every athlete who is interested in performance sports, especially those who play in high-level leagues, needs to learn to cope with stress for high performance. High stress coping skills of athletes are closely related to their psychological structure. Because each of the psychological characteristics and abilities of athletes plays a protective role in the fight against stress. In this context, mental toughness contributes to athletes to be more psychologically tough against internal and external stressors. Studies in the literature (Sezgin, 2012) also support the view that high mental toughness level is an effective factor in coping with stress. In addition to physical and physiological factors, studies show that mental toughness also affects sportive performance (Jones, Hanton & Connaughton 2002).

Another psychological factor that affects performance in athletes is the level of mindfulness and mindfulness studies applied to athletes (Carraça Serpa, Guerrero & Rosado, 2018; Bühlmayer, Birrer, Röthlin, Faude & Donath 2017). In recent years, mindfulness has been one of the most frequently emphasized topics in the field of sport psychology as well as in research on human psychology. In addition, the starting point of mindfulness is the science of positive psychology. From a conceptual point of view, mindfulness is a mental process that enables an individual to be minimally affected by negative conditions and to concentrate more on what he/she is doing. Due to these characteristics, the concept of mindfulness is derived

from the English word "mindfulness" and has become popular in the scientific world (Develi, Güğerçin & İplik, 2017). According to Kesler (2020), successes and failures in sports can be attributed to many reasons. The main factors affecting performance are physical mobility, physiological elements and psychological structure. Each individual participating in sporting activities has to consider the motivation to participate in sports, the ability to combat stress and the optimal performance mood to support performance development. In addition, they should also consider the level of mindfulness as a factor affecting performance. The fact that mindfulness is an important performance component in athletes has contributed to the acceleration of studies in this field (Tingaz, 2020). Based on this information, this study aims to examine the relationship between mental toughness and mindfulness in athletes.

Material and Method

Research Model

In this study, in which the relationship between mental toughness and mindfulness in athletes was examined, "relational screening model" was used among quantitative approaches. The relational survey model is expressed as "research models that aim to determine the presence and / or degree of change between two or more variables together" (Karasar, 2018).

Research Group

The research group consists of 414 active athletes in Turkey, 167 of whom are female and 247 of whom are male, aged between 18 and 32. In determining the research group, different sampling techniques from different population sizes used to minimize sampling errors in social sciences were used. In this context, the research was conducted in accordance with the 384 population corresponding to the largest universe for α= 0.05 (Yazıcıoğlu & Erdoğan, 2004). In addition, since the athlete groups were in different environments and camps, convenience sampling (Altunışık, Çoşkun, Bayraktaroğlu & Yıldırım, 2007) was preferred. Convenience sampling is "the shortest way to obtain data quickly and cheaply" (Karagöz, 2017). Descriptive information about the athletes is presented in Table 1.

Table 1. Descriptive Statistics Results for Athletes

Gender	n	%	$\overline{X}_{age}$	$\overline{X}_{year\ of\ sport}$
Female	167	40,3		
Male	247	59,7		
Sport Branch	**n**	**%**		
Team Sport	182	44,0		
Individual Sport	232	56,0		
Certified Athlete Status	**n**	**%**	22,15±3,51	8,73±4,37
Yes	321	77,5		
No	93	22,5		
National Athlete Status	**n**	**%**		
Yes	116	28,0		
No	298	72,0		
Total	**414**	**100,0**		

According to Table 1, 40.3% (n=167) of the athletes were female and 59.7% (n=247) were male; 44.0% (n=182) were engaged in team sports and 56.0% (n=232) were engaged in individual sports; 77,5% (n=321) were certified athletes and 22,5% (n=93) were not certified athletes; 28,0% (n=116) were national athletes and 72,0% were not national athletes. Finally, it was determined that the mean age of the athletes was 22.15±3.51 and the mean number of years of sport was 8.73±4.37.

Data Collection Tools

"Personal Information Form", "Mental Toughness Questionnaire", and "Mindfulness Inventory for Sport" were used in the study. Detailed information about the measurement tools is given below.

Personal Information Form

In the study, the "Personal Information Form" created by the researcher was used to determine some demographic information about the athletes. In this form, it was aimed to reach information such as gender, age, years of sport, licensed sports, nationality and sports branches of the athletes.

Mental toughness questionnaire (MTQ)

The Mental Toughness Questionnaire (MTQ) developed by Madrigal et al. (2013) and adapted into Turkish by Erdoğan (2016) was used to determine the mental toughness levels of athletes. The measurement tool has 11 items and a 5-point Likert-type scale and is scored as (1) strongly disagree and (5) strongly agree. In the study conducted by Erdoğan (2016), it was found that the Cronbach Alpha internal consistency coefficient of the measurement tool was α=.87. As a result of this study, the Cronbach Alpha internal consistency coefficient of the measurement tool was found to be α=.93.

Mindfulness Inventory for Sport (MIS)

"Mindfulness Inventory for Sport" scale developed by Thienot et al. (2014) and adapted into Turkish by Tingaz (2020) was used to measure the mindfulness levels of athletes. The scale consists of 3 sub-dimensions as awareness (5 items), non-judgment (5 items), refocusing (5 items) and a total of 15 items. The scale has a 6-point Likert-type structure and is scored as (1) "not at all true" and (6) "very true". The scale also gives a total score. The non-judgment sub-dimension items are reverse coded. The Cronbach Alpha internal consistency coefficient of the scale was calculated as α=.82 for the sub-dimensions: Awareness: α=.81, Nonjudgment: α=.70, Refocusing: α=.77 (Tingaz, 2020). As a result of this research, the Cronbach Alpha internal consistency coefficient of the scale was calculated as α=.78 and for the sub-dimensions Awareness: α=.74, Nonjudgment: α=.76, Refocusing: α=.75.

Data Collection

Before the research data were collected, the necessary permissions were obtained from the Ethics Committee of Bayburt University to conduct the research. After the permission, the questionnaire and scale questions, which were transferred to the online environment through Google form, were delivered to the athletes who continue their active sports life through their coaches. At the beginning of the application, the necessary information about the research (purpose of the research, duration of the research, that identity information will be kept confidential, participation is voluntary, and it will only be used for scientific purposes) was stated to the athletes in writing in the Google form questionnaire entry and the voluntary

participation consent button was added. Data were collected online from athletes who read the written instructions and voluntarily participated in the study.

Data Analysis

The data collected in the study were checked one by one and transferred to the SPSS 25.0 pack program after numerical coding. Before deciding on the statistical analyses to be applied to the data, the skewness and kurtosis values were checked to see whether the data were normally distributed. After the normality test, it was determined that the data were distributed in the range of -2,....,+2. These values were accepted to be in accordance with the normal distribution (George & Mallery, 2001). Independent groups t-test, Pearson correlation and regression analyses were used to evaluate the data. Significance level was accepted as p<.05 in statistical analyses.

Findings

In this section, the data obtained from the athletes participating in the study and statistical findings related to these data are given.

Table 2. t-Test Comparison Results of Athletes' Mental Toughness Scores According to Gender

	Gender	n	$\overline{X}$	ss	t	p
Mental Toughness	Female	167	45,72	6,49	,38	,71
	Male	247	45,45	7,99		

Table 2 shows the results of the "independent samples t-test" used to compare the mental toughness scores of the athletes according to gender. As a result of the analysis, no statistically significant difference was found in the mental toughness scores of the athletes according to gender (p>.05).

Table 3. t-Test Comparison Results of Athletes' Mental Toughness Scores According to Certified Athlete Status

	Certified Athlete	n	$\overline{X}$	ss	t	p
Mental Toughness	Yes	321	45,70	7,59	,74	,46
	No	93	45,05	6,80		

Table 3 shows the results of the "independent samples t-test" used to compare the mental toughness scores of the athletes according to their status as certified athletes. As a result of the analysis, no statistically significant difference was found in the mental toughness scores of the athletes according to their status as certified athletes (p>.05).

Table 4. t-Test Comparison Results of Athletes' Mental Toughness Scores According to National Athlete Status

	National Athlete	n	$\overline{X}$	ss	t	p
Mental Toughness	Yes	116	46,41	7,71	1,47	,14
	No	298	45,22	7,28		

Table 4 shows the results of the "independent samples t-test" used to compare the mental toughness scores of the athletes according to their status of being a national athlete. As a

result of the analysis, no statistically significant difference was found in the mental toughness scores of the athletes according to their status of being a national athlete (p>.05).

Table 5. t-Test Comparison Results of Athletes' Mental Toughness Scores According to Sport Branch

	Sport Branch	n	$\overline{X}$	ss	t	p
Mental Toughness	Team Sport	182	44,68	7,71	-2,14	,03
	Individual Sport	232	46,25	7,12		

In Table 5, the results of the "independent samples t-test" used to compare the mental toughness scores of the athletes according to the sport branch are given. As a result of the analysis, a statistically significant difference was found in the mental toughness scores of the athletes according to the sport branch (p<.05). According to this, the mental toughness scores of individual athletes are significantly higher than those engaged in team sports.

Table 6. t-Test Comparison Results of Athletes' Mindfulness Scores According to Gender

	Gender	n	$\overline{X}$	ss	t	p
Awareness	Female	167	25,50	2,72	,88	,38
	Male	247	25,25	3,00		
Nonjudgment	Female	167	13,59	4,66	1,47	,14
	Male	247	12,93	4,34		
Refocusing	Female	167	23,86	3,43	-1,42	,16
	Male	247	24,36	3,60		
Mindfulness	Female	167	62,95	5,63	,78	,44
	Male	247	62,53	5,04		

Table 6 shows the results of the "independent samples t-test" used to compare the mindfulness scores of the athletes according to gender. As a result of the analysis, no statistically significant difference was found in the mindfulness scores of the athletes according to gender (p>.05).

Table 7. t-Test Comparison Results of Athletes' Mindfulness Scores According to Certified Athlete Status

	Certified Athlete	n	$\overline{X}$	ss	t	p
Awareness	Yes	321	25,20	2,92	-1,94	,05
	No	93	25,86	2,74		
Nonjudgment	Yes	321	13,14	4,40	-,47	,64
	No	93	13,39	4,76		
Refocusing	Yes	321	24,25	3,57	,95	,34
	No	93	23,85	3,43		
Mindfulness	Yes	321	62,59	5,52	-,94	,35
	No	93	63,10	4,33		

Table 7 shows the results of the "independent samples t-test" used to compare the mindfulness scores of the athletes according to their status as certified athletes. As a result of the analysis, no statistically significant difference was found in the mindfulness scores of the athletes according to their status as certified athletes (p>.05).

Table 8. t-Test Comparison Results of Athletes' Mindfulness Scores According to Being a National Athlete

	National Athlete	n	$\overline{\text{X}}$	ss	t	p
Awareness	Yes	116	25,29	2,92	-,28	,80
	No	298	25,37	2,88		
Nonjudgment	Yes	116	13,08	4,45	-,33	,74
	No	298	13,24	4,49		
Refocusing	Yes	116	24,41	3,68	,89	,37
	No	298	24,06	3,48		
Mindfulness	Yes	116	62,78	5,46	,18	,86
	No	298	62,67	5,22		

Table 8 shows the results of the "independent samples t-test" used to compare the mindfulness scores of the athletes according to their status of being a national athlete. As a result of the analysis, no statistically significant difference was found in the mindfulness scores of the athletes according to their status of being a national athlete (p>.05).

Table 9. t-Test Comparison Results of Athletes' Mindfulness Scores According to Sport Branch

	Sport Branch	n	$\overline{\text{X}}$	ss	t	p
Farkındalık	Team Sport	182	25,15	2,80	-1,23	,22
	Individual Sport	232	25,50	2,96		
Yargılamama	Team Sport	182	13,48	4,51	1,17	,24
	Individual Sport	232	12,97	4,45		
Yeniden Odaklanma	Team Sport	182	23,78	3,40	-1,93	,06
	Individual Sport	232	24,45	3,62		
Bilinçli Farkındalık	Team Sport	182	62,42	4,92	-,97	,34
	Individual Sport	232	62,92	5,55		

Table 9 shows the results of the "independent samples t-test" used to compare the mindfulness scores of the athletes according to their sport branch. As a result of the analysis, no statistically significant difference was found in the mindfulness scores of the athletes according to the sport branch (p>.05).

Table 10. Results of the Relationship Between Athletes' Mental Toughness Scores and Mindfulness Scores

		Awareness	Nonjudgment	Refocusing	Mindfulness
Mental Toughness	r	,36[**]	-,20[**]	,40[**]	,30[**]
	p	,00	,00	,00	,00

Table 10 shows the results of the "Pearson correlation" analysis showing the relationship between athletes' mental toughness scores and mindfulness scores. As a result of the analysis, there were moderate positive correlations between mental toughness and mindfulness (r=,36), refocusing (r=,40) and mindfulness (r=,30) scores and low negative correlations with non-judgment (r-,20) (p<.05).

Table 11. Regression Analysis Results for Prediction of Mental Toughness

Model	B	Std. Error	β	t	p

Fixed	15,97	3,99	---	4,01	,00
Awareness	,56	,13	,22	4,17	,00
Nonjudgment	,03	,08	,02	,32	,75
Refocusing	,62	,11	,30	5,45	,00

R= ,44 R^2_{adj}= ,19

$F_{(3,410)}$ = 33,27   p= ,01

Dependent variable=Mental toughness

Table 11 shows the results of the multiple linear regression analysis conducted to determine the predictive power of athletes' mindfulness on mental toughness. As a result of the analysis, it is seen that the regression model is statistically significant. When the t-test results regarding the significance of the regression coefficients were analyzed, it was found that mindfulness (β= ,22; t=4,17; p=00) and refocusing (β= ,30; t= 5,45; p=.00) were significant predictors of mental toughness. It can be stated that 19% of the total variance of mental toughness is explained by mindfulness.

Discussion and Conclusion

In this study, it was aimed to examine the relationship between mental toughness and mindfulness in athletes.

When the findings regarding the mental toughness levels of the athletes according to their gender were examined, it was found that the mental toughness level did not differ according to gender, and in this context, the mental toughness levels of female and male athletes were similar. It can be thought that the basis of this result is that participation in sports positively affects the psychological structure of women and men. The results of previous studies also show that sports positively affect the psychological structure in both men and women (Bailey, Cope & Parnell, 2015; Garcia-Falgueras, 2015; Muraki, Tsunawake, Hiramatsu, & Yamasaki, 2000; Berger, 1996). In addition, studies have shown that the mental toughness levels of male and female athletes are similar. In a study conducted on this subject, it was aimed to examine the level of mental toughness in the light of demographic variables in athletes, 99 taekwondo, 106 kick boxing, and 125 muay thai athletes participated in the study. At the end of the study, it was reported that the mental toughness levels of athletes did not differ according to gender (Çoruh, 2020). In another study conducted on young handball players, it was determined that both the general level of mental toughness and the results of mental toughness sub-dimensions in handball players between the ages of 14-22 did not differ according to the gender of the athletes (Maraşlı, 2018).

There are also research findings revealing that the level of mental toughness in athletes differs according to gender (Nicholls et al., 2009). In a study conducted on elite runners, it was found that the mental toughness levels of male and female athletes differed significantly, and in this context, male athletes had higher mental toughness levels compared to female athletes (Andrew & Chen, 2014). In studies conducted on athletes in younger age groups, it is also stated that the mental toughness levels of male athletes are higher than female athletes (Merdan, 2020, p. 46). In another study conducted on this subject, it was aimed to examine the effect of gender factor on mental toughness in athletes, and 172 female and 214 male athletes participated in the study. At the end of the study, it was found that both the general mental toughness levels and the scores of the mental toughness sub-dimensions (confidence, control) of female and male athletes differed significantly (Sağlam, 2021). It can be thought

that the main reason for the high level of mental toughness in favor of male athletes at young ages is that male athletes are more resistant to physical challenges at young ages.

When the findings related to mental toughness levels according to the variable of being a certified athlete were examined in the study, it was found that the level of mental toughness did not differ according to being a certified athlete, and in this context, the mental toughness levels of certified and non-certified athletes were similar. This result can be attributed to the fact that both doing performance sports with a certificate and doing sports for a healthy life without a certificate improves psychological health. In the studies in the literature, it is stated that participation in sports in any way improves mental toughness rather than doing sports with a certificate. In a study conducted on this subject, it was found that the mental toughness levels of individuals who played in the school team, who played sports in a certified sports club and who were interested in sports individually without a certificate did not differ significantly (Köklü, 2020). In some studies, it is stated that the level of mental toughness is higher in certificate athletes. In the study conducted on orienteering athletes, it was found that the mental toughness levels of the athletes differed significantly according to their certified status. In the study in question, it was reported that the mental toughness levels of the athletes who prepared for orienteering competitions as certified athletes were higher compared to the participants who did sports as a leisure time activity (Peke, 2020).

When the findings related to the mental toughness levels according to the status of being a national athlete were examined, it was found that the mental toughness level did not differ according to the status of being a national athlete, and in this context, the mental toughness levels of national athletes and non-national athletes were similar. This result may be attributed to the fact that non-national athletes, like national athletes, train at high load intensity. In the studies in the literature, it is stated that being a national athlete is not an important determinant of mental toughness. In fact, in a study conducted on this subject, it was reported that the mental toughness levels of non-national athletes were higher compared to national athletes (Sağlam, 2021).

When analyzed according to the sport branch variable in the study, it was found that the mental toughness levels of the athletes showed significant differences. Within the scope of the research, athletes were divided into two groups as team sports and individual sports athletes according to their sports branches. When the differences between the groups were examined, it was found that the level of mental toughness in athletes interested in individual sports was higher than that of athletes interested in team sports. This result can be attributed to the fact that athletes in individual sports both do the training alone and achieve success in competitions thanks to their individual struggles. On the other hand, it is stated that in some sports, the sport branch is not determinant on mental toughness. In a study conducted on this subject, the mental toughness levels of 158 athletes interested in individual sports and 178 athletes interested in team sports were examined, and at the end of the study, it was found that the mental toughness levels of the participants did not differ according to the sport branch variable (Sağlam, 2021). It can be thought that the main reason for the lack of parallelism between the research findings is that the studies were conducted on athletes in different classes and age groups.

When the findings regarding the mindfulness levels of the athletes according to their gender were examined, it was found that the level of mindfulness did not differ according to gender, and in this context, the mindfulness levels of male and female athletes were similar. In the studies in the literature, it is generally stated that the mindfulness levels of athletes do not differ according to gender. In the study conducted on disabled athletes, it was aimed to

examine the factors related to the mindfulness levels of athletes, and it was reported that the mindfulness levels of physically disabled athletes and hearing impaired athletes did not differ according to gender (Gür, 2020). In another study conducted on young handball players and involving handball players between the ages of 14-22, it was determined that the level of mindfulness did not differ according to the gender of the athletes (Maraşlı, 2018).

In some studies in the literature and conducted on athletes, it has been reported that there are differences between the mindfulness levels of male and female athletes. The fact that the findings of these studies are not in parallel with the results obtained in this study may be attributed to the fact that the studies were conducted on athletes interested in sports branches with different characteristics. In a study conducted on wrestlers, it was reported that the mindfulness levels of female and male wrestlers differed according to gender, and the level of mindfulness was higher in male athletes compared to female athletes (Kesler, 2020). In another study conducted on elite level athletes, mindfulness levels of athletes were examined according to gender variable, and 175 male and 163 female athletes participated in the study. At the end of the study, it was found that the mindfulness levels of athletes differed according to gender, and according to the results obtained, it was determined that the level of mindfulness in female athletes was higher than male athletes (Kozak, Zorba & Bayrakdar, 2021).

When the findings regarding the level of mindfulness according to the variable of engaging in sports with a certificate in the study were examined, it was found that the level of mindfulness did not differ according to the status of being a certified athlete, and in this context, the mindfulness levels of certified and non-certified athletes were similar. In the study conducted by Bayram (2019), it was found that the mindfulness levels of university students who do and do not do sports do not differ significantly. In this context, it can be said that different psychological factors rather than sports participation are effective on mindfulness development.

In the study, when the findings regarding the level of mindfulness according to being a national athlete were examined, it was found that the level of mindfulness did not differ according to being a national athlete, and in this context, the level of mindfulness of national athletes and non-national athletes was similar. Although there are limited studies in the literature comparing the mindfulness levels of national and non-national athletes, it has been reported that the level of success of athletes and the type of competition in which they achieve success are not determinant on mindfulness in studies examining the level of mindfulness of athletes according to their amateur or professional level achievements (Tingaz, 2020). In another study examining the mindfulness levels of athletes interested in different sports, it was determined that both the mindfulness levels and the scores of the sub-dimensions of mindfulness of national and non-national athletes did not differ significantly (Vural & Okan, 2021). In another study conducted on elite athletes, the mindfulness levels of athletes were compared according to their status as amateur and professional athletes, and it was reported that the mindfulness levels of professional athletes were higher than amateur athletes (Kozak et al., 2021).

When analyzed according to the sport branch variable in the study, it was found that the mindfulness levels of the athletes did not differ significantly. In this context, it was determined that the mindfulness levels of athletes interested in team sports and athletes interested in individual sports branches were similar. It can be thought that both team sports and individual sports branches develop the mental structure in the emergence of this result. In

a study conducted by Gür (2020), the level of mindfulness in disabled athletes according to the sport branch variable was examined, and at the end of the study, it was reported that the level of mindfulness in hearing and visually impaired athletes did not differ according to the sport branch (team sports, individual sports) variable. In another study conducted by Bayram (2019) on this subject, it was aimed to examine the mindfulness levels of students according to their sporting status and sports branches of interest. In the study, it was determined that there was no significant relationship between the mindfulness levels of students who do and do not do sports and students who are interested in team and individual sports branches.

In the study, it was found that there was a significant positive relationship between mindfulness levels and mental toughness levels of athletes. In addition, it was determined that mindfulness had a significant effect on mental toughness, and in this context, 19% of the total variance of mental toughness was explained by mindfulness. The basis of this result may be that athletes with high levels of mindfulness use their mental functions better. Studies also show that participation in sports generally reduces the factors that negatively affect the mental structure, and that high levels of mindfulness positively affect the psychological structure (Chiesa & Serretti, 2009; Grossman, Niemann, Schmidt, & Walach, 2004). The results of studies conducted on individuals in different age groups also show that there is a significant relationship between mindfulness and mental toughness (Okan, Yılmaztürk & Kürüm, 2020).

In a similar study, it was aimed to examine the relationship between mental toughness levels and mindfulness levels of university students and to determine the mediating role of emotional intelligence in the relationship between mental toughness and mindfulness. At the end of the study, it was found that there was a significant positive relationship between the participants' mental toughness levels and mindfulness levels, and it was also determined that emotional intelligence level had a mediating role in the relationship between mental toughness and mindfulness (Deniz, Erus & Büyükcebeci, 2017). In a similar study conducted on adult individuals, it was found that as the level of mental toughness increased, the participants' mindfulness levels also increased, and in this context, there was a significant positive relationship between mindfulness and mental toughness level (Özer, 2018).

Although the studies examining the mental toughness and mindfulness levels of athletes are limited in the literature, it is seen that some studies have reached results that are not in parallel with the findings of this study. It can be thought that the reason for the lack of parallelism between the research findings lies in the fact that the studies were conducted on athletes in different age groups and league / classification levels. In the study conducted by Maraşlı (2018), it was aimed to examine the relationship between mental toughness and mindfulness level in young handball players, and 172 young handball players between the ages of 14-22 participated in the study. At the end of the study, it was determined that there was no significant relationship between the mental toughness levels of the athletes and their mindfulness levels.

One of the main reasons why a high level of mindfulness positively affects mental toughness is that mindfulness positively affects the cognitive elements associated with mental toughness. In a study conducted on this subject, it was stated that high levels of mindfulness have positive effects on self-management and self-efficacy, which are closely related to mental toughness. In the aforementioned study, it was stated that people with high levels of mindfulness provide self-control in the face of different situations and act in accordance with the plans they make thanks to the aforementioned characteristics and competencies. In addition, the phenomenon of patience, which is another element that creates mindfulness, is a

concept closely related to mental toughness. In this context, it is seen that individuals with high levels of mindfulness try to reach the result without acting hastily (Akçakanat & Köse, 2018).

Another reason for the positive effect of mindfulness level on mental toughness is that mindfulness affects factors related to mental toughness such as coping with stress and anxiety. In a study conducted on this subject, it was stated that a high level of mindfulness improves the individual's characteristics such as accepting the current situation, focusing on problems and psychological well-being. In the same study, it was stated that with a high level of mindfulness, the individual will be more tough in the face of psychologically damaging factors such as stress and depression (Arslan, 2018, p. 73). In addition, in many studies in the literature, it is stated that the level of mindfulness is a factor that strengthens the psychological structure and improves the ability to cope with challenging situations (Brown & Ryan, 2003; Kang, Choi & Ryu, 2009).

When the results of the research were evaluated, it was found that the mental toughness level of the athletes did not differ according to the variables of gender, being certified in sports and being a national athlete, but the mental toughness level differed according to the sport branch variable. According to the results obtained, it was determined that the level of mental endurance was high in favor of athletes interested in individual sports. When the findings related to the mindfulness levels of the athletes participating in the study were evaluated, it was determined that the mindfulness levels of the athletes did not differ significantly according to gender, being a certified athlete, being a national athlete and sport branch variables. As a result, it was determined that there is a significant relationship between the mental endurance levels of athletes and their mindfulness levels and that mindfulness directly affects mental endurance. It was concluded that these results were similar to the literature.

Considering the findings of this study, the following suggestions can be made;

- In the studies in the literature, it is generally seen that the mental toughness levels and mindfulness levels of athletes are examined according to demographic variables, and it is seen that studies examining the effects of different factors affecting performance in sport on mental toughness and mindfulness are limited. In this context, studies examining the relationship between different variables affecting performance in sport (personality, motivation, concentration, perceived social support, optimal performance mood, situational anxiety, achievement motivation, stress, etc.) and mental toughness and psychological resilience in athletes can be conducted.

- When the findings obtained in this study were evaluated, it was seen that mindfulness positively affected mental toughness. This situation reveals the idea that mindfulness practices can increase mental toughness in athletes. On the other hand, it was observed that the studies examining the effects of mindfulness on mental toughness were limited in the studies in the literature. In this context, studies examining the effects of mindfulness practices on mental toughness in athletes can be conducted.

- It is seen that studies examining the effects of mental toughness level and mindfulness on performance in athletes are limited. At this point, studies on the relationship between the level of mental toughness and mindfulness in athletes and sportive performance can be conducted.

- In this study, all demographic variables that may affect the psychological structures of athletes were not included. In this context, studies can be conducted to examine the effects of different demographic variables (education level of parents, socio-economic status, education level, marital status, etc.) on both mental toughness and mindfulness.

Conflict of Interest

The authors declared no conflicts of interest to authorship and/or publication of the article.

Financial Disclosure

The authors received no financial support for the research and/or publication of this article.

Ethical Aspect of Research/Ethical Approval Statement

Permission was obtained from Bayburt University Scientific Research and Publication Ethics Committee (IRB:2021/43762) for the research. Identity information of the individuvals was not obtained or shared in any way.

This article Extract from a Master's Degree Thesis

REFERENCES

Akçakanat, T., & Köse, S. (2018). Bilinçli farkındalık (mindfulness): Kavramsal bir araştırma. *International Journal of Business Economics and Management Perspectives, 2*(2), 16-28.

Altunışık, R., Coşkun, R., Bayraktaroğlu, S., & Yıldırım, E. (2007*). Sosyal bilimlerde araştırma yöntemleri: SPSS uygulamalı*. Sakarya: Sakarya Yayıncılık.

Andrews, P., & Chen, M. (2014). Gender differences in mental toughness and coping with injury in runners. *Journal of Athletic Enhancement, 3*(6), 1-5.

Arslan, I. (2018). Bilinçli farkındalık, depresyon düzeyleri ve algılanan stres arasındaki ilişki. *Birey ve Toplum Sosyal Bilimler Dergisi, 8*(2), 73-86.

Bailey, R., Cope, E., & Parnell, D. (2015). Realising the benefits of sports and physical activity: the human capital model. *Retos: Nuevas Perspectivas de Educación Física, Deportey Recreación, (28),* 147-154.

Bayram, E. (2019). *Üniversite öğrencilerinin sosyal görünüş kaygı düzeyleri ile bilinçli farkındalık düzeyi arasındaki ilişkinin spor ve farklı değişkenler açısından incelenmesi (Atatürk Üniversitesi)* (Yüksek lisans tezi). Yükseköğretim Kurulu Ulusal Tez Merkezi'nden edinilmiştir. (Tez No. 539700)

Berger, B. G. (1996). Psychological benefits of an active lifestyle: What we know and what we need to know. *Quest, 48*(3), 330-353.

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology, 84*(4), 22-48.

Bühlmayer, L., Birrer, D., Röthlin, P., Faude, O., & Donath, L. (2017). Effects of mindfulness practice on performance-relevant parameters and performance outcomes in sports: A meta-analytical review. *Sports Medicine, 47*(11), 2309-2321.

Carraça, B., Serpa, S., Guerrero, J. P., & Rosado, A. (2018). Enhance sport performance of elite athletes: the mindfulness-based interventions. *Cuadernos de Psicología del Deporte, 18*(2), 79-109.

Chiesa, A., & Serretti, A. (2009). Mindfulness-based stress reduction for stress management in healthy people: A review and meta-analysis. *The Journal of Alternative and Complementary Medicine, 15*(5), 593-600.

Çoruh, E. (2020). *Algılanan sosyal desteğin mücadele sporcularının özgüvenleri ve psikolojik dayanıklılıkları üzerindeki rolünün incelenmesi*. (Yüksek Lisans Tezi). Yükseköğretim Kurulu Ulusal Tez Merkezi'nden edinilmiştir. (Tez No. 645452)

Demir, İ. (2019). *Takım sporları ile bireysel spor yapanların psikolojik karakteristiklerinin incelenmesi ve karşılaştırılması* (Yüksek lisans tezi). Yükseköğretim Kurulu Ulusal Tez Merkezi'nden edinilmiştir. (Tez No. 573504)

Deniz, M. E., Erus, S. M., & Büyükcebeci, A. (2017). Bilinçli farkındalık ile psikolojik iyi oluş ilişkisinde duygusal zekanın aracılık rolü. *Türk Psikolojik Danışma ve Rehberlik Dergisi, 7*(47), 17-31.

Develi, A., Güğerçin, S., & İplik, E. (2017). Bilinçli farkındalık ve örgütsel stres kaynakları: Banka çalışanları örneği. *Social Sciences Studies Journal, 3*(2), 44-51.

Erdoğan, N. (2016). Zihinsel dayanıklılık ölçeği (ZDÖ): Türkçe'ye uyarlama, geçerlik ve güvenirlik çalışması. *International Journal of Sport Culture and Science, 4*(Special Issue 2), 652-664.

Garcia-Falgueras, A. (2015). Psychological benefits of sports and physical activities. *British Journal of Education, Society & Behavioural Science, 11*(4), 1-7.

Grossman, P., Niemann, L., Schmidt, S., & Walach, H. (2004). Mindfulness-based stress reduction and health benefits: A meta-analysis. *Journal of Psychosomatic Research, 57*(1), 35-43.

Gür, Y. (2020). *Farklı branşlardaki engelli sporcuların algılanan stres düzeyleri ve bilinçli farkındalık seviyeleri arasındaki ilişkinin incelenmesi* (Doktora tezi). Yükseköğretim Kurulu Ulusal Tez Merkezi'nden edinilmiştir. (Tez No. 656047)

Jones, G., Hanton, S., & Connaughton, D. (2002). What is this thing called mental toughness? An investigation of elite sport performers. *Journal of Applied Sport Psychology*, *14*, 205-218.

Kang, Y. S., Choi, S. Y., & Ryu, E. (2009). The effectiveness of a stress coping program based on mindfulness meditation on the stress, anxiety, and depression experienced by nursing students in Korea. *Nurse Education Today, 29*(5), 538-543.

Karabacak, A. H. (2021). *Türkiye profesyonel futbol liglerinde mücadele eden futbolcuların zihinsel dayanıklılıklarının olumsuz üst bilişlerle ilişkisinin incelenmesi* (Yüksek lisans tezi). Yükseköğretim Kurulu Ulusal Tez Merkezi'nden edinilmiştir. (Tez No. 670023)

Karagöz, H. (2017). *Spss ve Amos uygulamalı nitel-nicel-karma bilimsel araştırma yöntemleri ve yayın etiği* (1. Baskı). İstanbul: Nobel Kitabevi.

Karasar, N. (2018). *Bilimsel araştırma yöntemleri: Kavramlar, ilkeler ve teknikler*. (32.Baskı). Ankara: Nobel Yayın Dağıtım.

Kesler, E. (2020). *Elit güreşçilerde bilinçli farkındalık, sürekli optimal performans duygu durumu, spora katılım motivasyonu ve stres düzeylerinin incelenmesi* (Yüksek lisans tezi). Yükseköğretim Kurulu Ulusal Tez Merkezi'nden edinilmiştir. (Tez No. 625116)

Kesler, E. (2020). *Elit güreşçilerde bilinçli farkındalık, sürekli optimal performans duygu durumu, spora katılım motivasyonu ve stres düzeylerinin incelenmesi* (Yüksek lisans tezi). Yükseköğretim Kurulu Ulusal Tez Merkezi'nden edinilmiştir. (Tez No. 625116)

Kozak, M., Zorba, E., & Bayrakdar, A. (2021). *Sporcularda zihinsel antrenman becerileri ile bilinçli farkındalık. Herkes için Spor ve Rekreasyon Dergisi, 3*(2), 89-97.

Köklü, O.E. (2020). *Sporcu eğitim merkezlerindeki güreşçilerin psikolojik dayanıklılık düzeylerinin incelenmesi*. (Yüksek lisans tezi). Yükseköğretim Kurulu Ulusal Tez Merkezi'nden edinilmiştir. (Tez No. 638019)

Madrigal, L., Hamill, S., & Gill, D. L. (2013). Mind over matter: The development of the Mental Toughness Scale (MTS). *The Sport Psychologist, 27*(1), 62-77.

Maraşlı, H. (2018). *Genç hentbolcuların zihinsel dayanıklılık ve bilinçli farkındalık düzeyleri arasındaki ilişkinin incelenmesi* (Yüksek lisans tezi). Yükseköğretim Kurulu Ulusal Tez Merkezi'nden edinilmiştir. (Tez No. 605762)

Merdan, H. E. (2020). *Optimal performans duygu durumu, zihinsel dayanıklılık, takım sargınlığı ve antrenör sporcu ilişkisinin yordayıcısı olarak mizah tarzı: adolesan sporcular*

üzerine çalışma. (Yüksek lisans tezi). Yükseköğretim Kurulu Ulusal Tez Merkezi'nden edinilmiştir. (Tez No. 635495)

Muraki, S., Tsunawake, N., Hiramatsu, S., & Yamasaki, M. (2000). The effect of frequency and mode of sports activity on the psychological status in tetraplegics and paraplegics. *Spinal Cord, 38*(5), 309-314.

Nicholls, A. R., Polman, R. C., Levy, A. R., & Backhouse, S. H. (2009). Mental toughness in sport: Achievement level, gender, age, experience, and sport type differences. *Personality and İndividual Differences, 47*(1), 73-75.

Okan, N., Yılmaztürk, M., & Küröm, B. (2020). Bilinçli farkındalık ve psikolojik sağlamlık arasındaki ilişkide temel empati becerilerinin aracı rol etkisinin incelenmesi. *IBAD Sosyal Bilimler Dergisi, (8),* 319-335.

Özer, Ö. (2018). *Sigara kullanan ve kullanmayan bireylerin bilinçli farkındalık ve psikolojik dayanıklılık düzeylerinin karşılaştırılması*. (Yüksek lisans tezi). Yükseköğretim Kurulu Ulusal Tez Merkezi'nden edinilmiştir. (Tez No. 526997)

Peke, K. (2020). *Oryantiring katılımcılarının spora bağlılıkları ve zihinsel dayanıklılıklarının incelenmesi.* (Yüksek lisans tezi). Yükseköğretim Kurulu Ulusal Tez Merkezi'nden edinilmiştir. (Tez No. 645591)

Sağlam, A.F. (2021). *Spor yapan bireylerin zihinsel dayanıklılık ile yaratıcılık düzeylerinin incelenmesi.* (Yüksek lisans tezi). Yükseköğretim Kurulu Ulusal Tez Merkezi'nden edinilmiştir. (Tez No. 661393)

Sezgin, F. (2012). İlköğretim okulu öğretmenlerinin psikolojik dayanıklılık düzeylerinin incelenmesi. *Kastamonu Eğitim Dergisi, 20*(2), 489-502.

Thienot, E., Jackson, B., Dimmock, J., Grove, J. R., Bernier, M., & Fournier, J. F. (2014). Development and preliminary validation of the mindfulness inventory for sport. *Psychology of Sport and Exercise, 15*(1), 72-80.

Tingaz, E. O. (2020). *Spor bilimleri fakültesindeki sporcu öğrencilerde bilinçli farkındalık ve öz şefkatin incelenmesi* (Yüksek lisans tezi). Yükseköğretim Kurulu Ulusal Tez Merkezi'nden edinilmiştir. (Tez No. 657535)

Tingaz, E. O. (2020a). Sporcu bilinçli farkındalık (mindfulness) ölçeği: Türkçeye uyarlama, geçerlik ve güvenirlik çalışması. *Spormetre Beden Eğitimi ve Spor Bilimleri Dergisi, 18*(1), 71-80.

Tingaz, E. O. (2020b). *Spor bilimleri fakültesindeki sporcu öğrencilerde bilinçli farkındalık ve öz şefkatin incelenmesi* (Yüksek lisans tezi). Yükseköğretim Kurulu Ulusal Tez Merkezi'nden edinilmiştir. (Tez No. 657535)

Vural, C., & Okan, İ. (2021). Sporda bilinçli farkındalık: Atıcılık spor branşları üzerine bir araştırma. *Akdeniz Spor Bilimleri Dergisi, 4*(2), 265-273.

Yazıcı, A. (2019). *Kavramsal bakış açısı ile sporda üstün başarı için zihinsel dayanıklılık*. Dal, N. (Ed.). Spor psikolojisinde yeni yaklaşımlar içinde (pp. 75–97). Ankara: Akademisyen Kitabevi.

Yazıcıoğlu, Y., & Erdoğan, S. (2004). *SPSS uygulamalı bilimsel araştırma yöntemleri*. Ankara: Detay Yayıncılık.

Stanford, P. (2003). Multiple intelligence for every classroom. Journal of Education

Psychology, 39(2): 81-89, http://www.makalearsivi/tarih.ornnek.html (14 Mayıs 2016 tarihinde erişim sağlanmıştır).

Turkmen, M. (2004). The effects of martial arts on children development. International Journal of Contemporary Educational Studies (IntJCES), 8(1): 276-281.