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Investigation of the Relationship between Body Mass Index and Physical Fitness in Older Women*

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Abstract

This study aimed to examine the effect of Body Mass Index (BMI) on physical fitness levels in women between the ages of 65-75.

The research was conducted with the participation of 687 women who were able to maintain daily life activities independently, who had no serious health problems, and who could be considered healthy in their age category. The cases included in the study were divided into 3 groups as Normal (117 cases), Overweight (273 cases), and Obese (297 cases) according to the calculated Body Mass Index values. Accordingly, those with a body mass index of less than 18.50 kg/m2 were classified as Thin, those between 18.50 and 24.99 kg/m2 as Normal, those between 25.00 and 29.99 kg/m2 as Overweight and those higher than 30 kg/m2 as Obese. 687 cases were included in the study, and the categories were designed as Normal, Overweight and Obese since there were no cases below 18.50 kg/m2 within the body mass index values calculated among these cases.

In the study, the Senior Fitness Test (SFT) protocol consisting of six stations designed by Rikli and Jones (2001) was used to determine the physical fitness levels of the elderly.

In the analysis of the data obtained from the measurements, arithmetic averages, standard deviations, and differences between the averages were found using SPSS 11.0 for Windows package software. As a result of the Kolmogorov Smirnov test conducted to find the level of distribution of the data, it was determined that all groups presented a normal distribution. One-way ANOVA-Scheffe test was applied to compare the test scores of the cases according to body mass index values. The correlation of the body weight of the groups classified according to body mass index with the test scores was examined at the level of 0.05 and 0.01.

As a result, among the cases that were grouped according to their body mass index values, the cases with normal BMI values were found to have the best physical fitness test scores. Performance differences between groups were found to be statistically significant according to their BMI values. Especially in obese individuals, it was determined that their movement skills decreased due to weight gain.

Keywords: Body Mass Index, Physical Fitness, Elderly

*Presented at the 3rd Academic Sports Research Congress held in Batumi on 09.10.2019 and prepared for publication.

Introduction

Aging is a physiological process that occurs in every living being and causes a decrease in all functions. It is also described as all the irreversible structural and functional changes that occur at the level of molecules, cells, tissues, organs, and systems. General signs of aging include decrease in various functions and capacities of the body, decreased adaptation to changes in the internal and external environment, and decreased resistance to potentially harmful effects on the body. Changes in the cell structure, cell number and regeneration ability of the body are observed with aging. The World Health Organization (WHO) considers 60 years of age as the beginning of old age. Many developed countries, on the other hand, refer to the age of 65, especially in terms of the beginning of old age to benefit from the social security system. It is observed that the world population is rapidly aging with a decrease in birth rate and an increase in life expectancy. The population of individuals over the age of 60 is approaching 900 million in the world. According to WHO, countries with the ratio of individuals aged 65 and above to the total population below 4% are considered to have a young population, 4 to 6.9% are considered to have a mature population, 7 to 10% are considered to have and old population, and above 10% are considered to have a very old population. (Who, 2002).

With aging, there are changes in many physical and physiological parameters, including body composition(Evans, 1995). Obesity, when added to the aging process which can affect a large part of the organism, can affect the life much more negatively. Considering the proportion of the elderly population in the world, studies that can positively affect the welfare level of the elderly gain significance.

In general, it is recognized that the decrease in daily physical activity contributes to the increase in obesity worldwide. (French et al., 1994; Grundy et al., 1999; Williamson et al., 1993). Problems such as sarcopenia that occur with old age cause a decrease in movement and its scope (Lauretani et al., 2003). The loss in physiological capacities due to old age supports the occurrence of obesity with physical losses.

Today, obesity is seen as a major public health problem. The percentage of obese elderly people is increasing worldwide due to the increase in the elderly population and obesity. When obesity in the elderly was examined by gender, it was observed that women were more likely to be obese than men. While the rate of obese older men was 17.7%, the rate of obese older women was 32.8% in 2014. (Turkish S.I.2018).Physiological changes that occur with aging are accompanied by changes in body composition. The lean body mass, mostly composed of skeletal muscles, decreases by 40% between the ages of 20 and 70. Due to this decrease, the resting metabolic rate also decreases. The decrease in physical activity levels at an advanced age, with a decrease in resting metabolism, causes a decrease in total energy expenditure leading to a positive energy balance. (Villareal et. al.,2005)

Physical fitness measurement is widely used in preventive and rehabilitative exercise programs to improve health. In recent years, descriptive, preventive, enhancing and protective practices and studies for the evaluation and development of components affecting health in children, adults and the elderly have gained momentum. Studies show that exercise in the old age contributes to individuals physically and physiologically (Yüksek, 2017; Göksu, Yüksek, Ayan, & Güler, 2019). In this sense, the study aims to reveal the effects of physical fitness on obesity by examining the relationship between physical fitness level and body weight.

Material and Method

The study was conducted with the voluntary participation of 687 women, aged 60-75, who could maintain their daily life activities independently, without serious health problems. Participants of the study were asked for some demographic information, orthopedic or mental disability that may hinder or limit the application of the Test protocol, and those with a neurological or advanced cardiovascular chronic disease were excluded from the study. The participants were asked to take off the clothes such as jackets and coats that could prevent or restrict their movement during the tests. An experienced assistant is assigned to each station to ensure that stations run smoothly. Participants who failed to complete any of the stations containing the test protocol were excluded from the evaluation.

An armless, straight-backed chair with a seating height of 43.18 cm, a custom-made dumbbell weighing 2.27 kg, the distance of 2.44 meters, a funnel, a 50 cm long wooden ruler, a 1.5x1.5 m mat for the step test, a stopwatch, scales, and a tensiometer were used in the study (Rikli , Jones, 2001). Each participant completed the two-minute step test with bare feet on a 1.5x1.5 mat. The same devices were used for the physical and physiological measurements of all the participants.

A total of 687 participants that met the test criteria and completed the tests were classified, taking into account the body mass index (BMI) norm values determined by WHO, as Thin (0 case) for those with a body mass index less than 18.50 kg/m^2, normal (117 cases) for those with a body mass index between 18.50-24.99 kg/m^2, Overweight (273 cases) for those with a body mass index between 25.00 and 29.99 kg/m^2, and Obese (297 cases) for those with a body mass index greater than 30 kg/m^2. The categories were designed as Normal, Overweight and Obese since there were no cases in the Thin (under 18.50 kg/m^2) category within the body mass index values calculated in the study.

The body mass index (BMI) of the participants was calculated by dividing the body weight by the square of the height in meters and recorded in kg/m^2.

Tests Applied

The Senior Fitness Test (SFT) protocol consisting of six-stations and developed by Rikli and Jones to determine the physical fitness levels of the elderly aged 60-94, was used in the study (Rikli & Jones, 2001)

Before the tests were applied to the participants, each station of the test protocol was explained and demonstrated one by one, and they were subjected to a warm-up (walking, jogging, stretching exercises) period of 4–5 minutes. The test protocol consisted of 30-sec Chair Stand (30CST), Arm Curl Test (ARCLT), 2-min Step (2MST), 8 Foot Up-and-Go (8FUAGT), Chair Sit & Reach (CSRT), Back Scratch (BST) test stations.

Statistical Analysis

In the analysis of the data obtained from the measurements, arithmetic averages, standard deviations and differences between the averages were found using SPSS 11.0 for Windows package software. As a result of the Kolmogorov Smirnov test conducted to find the level of distribution of the data, it was determined that all the groups presented a normal distribution. The comparison of the test scores of the cases according to their body mass index values was made with the One-Way ANOVA-Scheffe test. The correlation with test scores according to body mass index was examined at the level of 0.05 and 0.01.

Findings

Table 1. Some Descriptive Statistics of Cases Participating in the Research

Variables		n	%
Educational Background	None	330	48.0
	Literate	78	11.4
	Primary School	236	34.4
	Secondary School	16	2.3
	High School	17	2.5
	University	10	1.5
Income Level	Low	60	8.7
	Middle	441	64.2
	High	163	23.7
	Very High	23	3.3
Profession	Civil Servant	19	2.8
	Worker	10	1.5
	Teacher	10	1.5
	Farmer	2	0.3
	Housewife	638	92.9
	Doctor/Nurse	2	0.3
	Self-Employed/Tradeswoman	5	0.7
	Other	1	0.1

Table 2. Age, Height, BMI and body weight values of the groups formed according to the BMI values of the cases participating in the research

Parameters	Category	Min	Max	X	Sd.
Age Years-old	Normal	60.00	75.00	67.27	4.83
	Overweight	60.00	75.00	66.61	4.60

	Obese	60.00	75.00	66.20	4.59
Height Cm	Normal	140.00	178.00	157.74	7.81
	Overweight	140.00	176.00	156.27	6.56
	Obese	138.00	171.00	155.31	6.24
BMI Kg/M^2	Normal	18.59	24.99	23.03	1.49
	Overweight	25.00	29.97	27.55	1.41
	Obese	30.00	45.78	33.57	3.18
Body Weight Kg	Normal	42.00	80.00	57.50	6.82
	Overweight	55.00	98.00	67.19	6.57
	Obese	62.00	120.00	81.10	10.15

In the evaluation, the minimum, maximum, average and standard deviation scores of the age, BMI, height, and body weight values of the participants were examined according to normal, overweight and obese variables (Table 2).

Table 3. Some variables belonging to the groups formed according to the BMI values of the participants in the research, statistical data of the test scores and the differences between the groups

Parameters	Category	Min	Max	X	Sd.	p	Differences
30 CST Chair Stand Test (times/30sec)	Normal	7.00	20.00	14.21	2.91	0.000	N-W** N-O**
	Overweight	7.00	21.00	13.01	2.93		
	Obese	6.00	22.00	12.65	2.94		
ARCLT Arm Curl Test (times/30sec)	Normal	9.00	21.00	14.56	3.24	0.224	-
	Overweight	6.00	22.00	14.87	2.92		
	Obese	5.00	23.00	15.13	3.26		
2MST 2-Min Step Test steps/2min)	Normal	30.00	118.00	65.63	16.27	0.000	N-W* N-O** W-O**
	Overweight	29.00	109.00	60.10	15.40		
	Obese	21.00	106.00	55.80	14.42		
CSRT	Normal	-19.00	22.50	1.24	7.31	0.636	-

Chair Sit and Reach Test (cm)	Overweight	-20.00	17.00	0.81	6.62		
	Obese	-18.50	22.00	1.33	6.78		
BST Back Scratch Test (cm)	Normal	-28.00	14.00	-8.05	8.06	0.000	N-O** W-O**
	Overweight	-32.00	9.50	-8.27	8.18		
	Obese	-32.00	8.50	-11.74	8.09		
8FUAGT 8-Feet Up and Go Test (sec)	Normal	3.87	9.51	5.46	1.02	0.000	N-O** N-W** W-O**
	Overweight	3.89	12.50	6.18	1.57		
	Obese	4.04	15.24	6.80	1.78		

N: Normal Group, W: Overweight Group, O: Obese Group, X: Average, SD: Standard Deviation, p: Significance Level of Differences between Groups, **p <0.01, *p0.05.

In the evaluation, the differences between the minimum, maximum, average and standard deviation values of the SFT parameters and the BMI groups were determined according to the BMI categories of the participants in the study (Table 3).

Table 4. The Relationship between BMI and Test Performance

		30 CST Chair Stand Test (times/30sec)	ARCLT Arm Curl Test (times/30sec)	2MST 2-Min Step Test steps/2min)	CSRT Chair Sit and Reach Test (cm)	BST Back Scratch Test (cm)	8FUAGT 8-Feet Up and Go (sec)
BMI kg/m^2	r	-0.224**	0.063	-0.259**	-0.042	-0.209**	0.342**
	p	0.000	0.097	0.000	0.274	0.000	0.000
	n	687	687	687	687	687	687

In the evaluation, the relationships between the BMI values of the participants and the SFT protocol were determined (Table 4).

Discussion and Conclusion

As a result of the statistical evaluation of 687 cases participating in the study, it was determined that, in terms of profession, a vast majority (48%) were illiterate, 64% had moderate income levels, and 92.9% were housewives (Table 1). In addition, the age, height, body weight and BMI values of all the participants of the research were examined according to normal, overweight and obese categories (Table 2).

As a result of the statistical evaluation, when 30 CST, 2 MST, BST, and 8 FUAGT scores were examined, the difference between the group with Normal BMI values and the overweight and obese groups was found to be significant in favor of the Normal BMI group. In addition, the difference between the 2 MST and CST scores between the overweight and obese groups was found to be significant in favor of the overweight group ($p<0.01$) (Table 3). There was no statistically significant difference between the groups in ARCLT and CSRT scores ($p>0.05$). The results of the analysis show that the cases in the Normal BMI group had the highest physical performance, and those in the obese BMI group had the lowest physical performance level.

When the literature is examined, it is seen that the elderly have similar BMI values. Valentine et al. reported an average BMI of 28.35 kg/m2 in a field study in which they evaluated the relationship between BMI and physical function in 134 elderly people (Valentine et al.2009). In another study, Syddall et al. evaluated 3225 elderly people and stated the average BMI value as 27.35 kg/m2. (Syddall et al., 2019).

In addition, when the relations between the physical fitness tests that constituted the BMI and SFT protocol were examined, a significant negative relationship was determined between the BMI and 30 CST, 2 MST, and BST scores, and a positive relationship with 8 FUAGT scores. It can be stated that leg strength, cardiovascular endurance and upper limb flexibility skills decrease with increasing body weight and body mass index. There was no significant relationship between body weight and arm strength and lower extremity flexibility values ($p>0.05$) (Table 4).

Asp et al. (2017), in their study with 2558 participants aged 65 and above, reported that 13% of physically active individuals faced obesity while this rate was 22% in physically inactive individuals. In addition, studies indicate that obesity negatively affects physical movement as well as causing various health problems and individuals should be physically active to avoid obesity(Lang, Llewellyn, Alexander, & Melzer, 2008.Riebe et al., 2009) Villareal et al. (2011) reported, as a result of their study with 107 obese participants over 65 years of age, that weight loss and exercise should be planned and implemented together in order to provide the best improvement in physical functions. In another study, Brach JS et al. found that women with normal weight were physically more active, and their physical functions and walking speed were higher than overweight and obese women and that overweight and obese women had similar levels of physical activity and physical fitness. (Brach, Storti et al.,2004). Goggin and Morrow stated in their study, in parallel with the literature, that 89% of Americans who were 60 and older knew that physical activity was beneficial for health, however, 69% of them did not perform adequate physical activity. (Goggin, Morrow,2001). Past studies also support this study.

In a study conducted in Spain, 3605 cases aged 65 and above were examined, and most of the cases in the obese group (BMI 30 or above) were reported to have a poor physical function. Besides, similar studies have revealed that a decrease in functional capacity is observed as the BMI of older people increases. Moreover, the decrease in BMI values resulting from the

decrease in body weight is thought to improve functional mobility. (López et al., 2003). Barbosa et al. , in a cross-sectional study with 1894 individuals aged 60 and above, determined that there was a significant decrease in all physical performance tests with aging, with no gender difference. (Aline et al., 2005).

Chronic diseases arising from obesity increase the risk of functional impairment. In the literature, studies have shown that elderly individuals with low BMIs have a high physical function and that a high BMI value leads to poor mobility and decreased physical function in the elderly (Apovian et al., 2002).The decrease in physical function, on the other hand, leads to an increase in health problems and thus a decrease in the quality of life in the elderly.

As a result, it was determined that the patients who were grouped according to body mass index values had the best scores according to the results of the physical fitness test, and the performance differences between the groups were statistically significant. Especially in individuals with obesity, it was discovered that their mobility skills decreased due to weight gain.

Overweight and obesity are serious problems that limit mobility. Decreasing mobility and increasing body weight greatly complicates the life of the elderly especially with the health problems they bring about. Based on the result of the research and literature, it can be said that exercise creates a therapeutic effect without side effects against overweight, obesity and other problems related to obesity in the elderly.

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Investigation of Aggression Levels of Adolescent Amateur Athletes

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Abstract

The aim of the study is to investigate whether the aggressiveness levels of amateur athletes engaged in various sports in the adolescent age differ in terms of some independent variables. A total of 135 athletes participated in the study with the sampling method and 129 people were evaluated. As a data collection tool, the Kar-Ya Aggression Scale and Personal information form, which was developed in Karataş and Yavuzer (2016), and whose validity and reliability study was carried out, were applied. The evaluation of the data was done with SPSS statistical software. Normal distribution values related to the type of tests to be used were analyzed. Independent sample t test was used for comparisons in which the data showed normal distribution. The significance level was accepted as p = 0.05 for all tests. Cronbach Alpha reliability coefficient was found to be 0.95 for the entire scale. In adolescents athletes, the aggression aggregate scores and physical aggression, anger and verbal aggression subscale scores are higher than the females. In the hostility sub-dimension, there is no difference according to the gender of the participants. There is no statistically significant difference in aggression scores by age and income level. The mean scores of hostility and verbal aggression were higher in those who suffered a first degree imminent loss from the family. Physical aggression, anger and aggression total scores did not differ.

Keywords: Aggression, Adolescent, Amateur Athletes

Introduction

The concept of aggression is annoying, violent behavior aimed at harming someone else, verbally or indirectly. Considering the developmental periods, the behaviors that cause aggression in childhood, adolescence, adulthood and old age may differ (Kesen et al. 2007).

Tiryaki (2000) defines it as to overcome aggression, to manage it, to display hostile behaviors to break a business. Çobanoğlu (2005), on the other hand, defines aggression not as a reaction against external stimuli, but as a stimulation that tries to emerge in the human.When the subject of aggression is examined during adolescence, adolescents struggle to determine and control their own destiny, as the process of identity development and identity confusion continues. Adolescent wants to be independent. Adolescence is the second most rapid development. It is normal for adolescents to try to adapt to a changing and developing body. Adolescence is a very colorful period when viewed from outside. While adolescents prepare for transition to adult life, they experience identity confusion and identity crisis. As a result, it is possible for them to experience some internal distress and negative emotions. These negative emotions during adolescence can sometimes be seen in the form of anger, violence and aggression. In such a situation, sports activities can be used to turn the negative emotions of adolescents into positive behaviors. It is a situation that is desired to transfer the excess energy in a positive direction.Therefore, verbal and physical aggression and feelings of hostility can often be seen in adolescence. (Bauman, 1997). In addition, lessons, exams, school life and developmental difficulties cause adolescents to experience anger and aggression. They found that sportive active youths in adolescence are more likely to be active in adulthood, and future physical activity habits are associated with adolescent physical activity habits (Türkay et al. 2019). Sport has the feature of reducing aggression and similar negative behaviors to adolescents.It may be necessary to provide social or psychological support to adolescents who cannot cope with their problems when necessary. Adolescents need to include physical activity in their daily lives. The relaxation of the sport will be reflected in their daily lives. In addition, it can be suggested that the activities be carried out within the plan and program of the courses (Yiğit and Karakaya 2010). Sport improves self-confidence and posture for adolescents. The posture is that the body is on a straight line (Karakaya 2009).The aim of this study is to examine the aggression levels of adolescent athletes in terms of some variables. The study is thought to contribute to adolescents, their families and the literature.

Method

The aim of this study is to determine whether the aggression levels of amateur athletes in the adolescent period differ according to independent variables (age, gender, income status of the family, whether they lose close to the first degree from the family).The data were analyzed in computer environment with SPSS program, firstly, the normal distribution values related to the type of tests to be used were analyzed. Independent sample t test was used for comparisons in which the values showed normal distribution. The significance level $\alpha = 0.05$ was used for all tests.

Participants

In the data collection process of the research, 64 girls and 65 boys aged 14-18 participated by easy sampling. A total of 135 students were reached and the data were evaluated on 129 students since 6 of the questionnaires filled out by the participants were filled in incompletely.

Recruitment Criteria

Active sports vapors in various branches, licensed athletes in adolescence were included in the study.

Data Collection Tools

Personal Information Form

In the personal information form containing socio-demographic characteristics, age, gender, class, income status of the family and whether the family lost their 1st degree relative (mother-father-brother).

Kar-ya Aggression Scale

It was developed by Karataş and Yavuzer (2016) to measure aggression levels in high school and university students. Kar-Ya Aggression Scale consists of 23 items. It is a 5-point Likert type scale. It measures physical aggression in scale (1, 2, 3, 4, 5, 6, 12) with items. It was determined that it measured the sub-dimension of hostility (35, 36, 38, 39, 40, 43, 44), anger in 5 items (8, 22, 27, 32, 33) and verbal aggression in 4 items (15, 18, 19, 20). The Cronbach Alpha reliability coefficient of the scale was 0.92 for the entire scale, 0.87 for the physical aggression subscale, 0.81 for the hostility subscale, 0.71 for the anger subscale, 0.71 for the verbal aggression subscale.In this study, Cronbach Alpha reliability coefficient was found as 0.951 for the whole scale, 0.896 for the physical aggression subscale, 0.88 for the hostility subscale, 0.854 for the verbal aggression subscale.

Results

In this section, there are findings from the study.

Table 1. Socio-Demographic Features of Participants

	N	**%**
Gender		
Female	65	50,4
Male	64	49,6
Age		
14	41	31,8
15	30	23,3
16	32	24,8
17	13	10,1
18	13	10,1
Economical situation		
Poor	4	3,1
Medium	90	69,8
Good	35	27,1
Death of someone close to the family		
Yes	25	19,4
No	104	80,6
Total	129	100

Table 2. Average Aggressiveness Scale of Participants

	$\overline{X}$	Min	Max	ss
Physical Aggression	17,3333	7,00	35,00	7,89
Hostility	17,4186	7,00	35,00	7,22
Anger	15,5194	5,00	20,00	3,33
Verbal Aggression	10,2558	4,00	20,00	4,04
Aggression Total	60,52	29	110	16,75

Table 3. Comparison of Participants' Aggression Levels by Gender

	Gender	$\overline{X}$	t	p
Physical Aggression	Female	14,8769	**-3,728**	**,000**
	Male	19,8281		
Hostility	Female	16,2615	-1,851	,066
	Male	18,5938		
Anger	Female	16,3385	**2,895**	**,004**
	Male	14,6875		
Verbal Aggression	Female	9,3385	**-2,656**	**,009**
	Male	11,1875		
Aggression Total	Female	56,81	**-2,592**	**,011**
	Male	64,29		

When participants' aggression levels are compared by gender. It is seen that aggression total scores of men and physical aggression, anger and verbal aggression sub-dimension scores are higher than women and this difference is statistically significant. In the hostility sub-dimension, there is no difference according to the gender of the participants.

Table 4. Comparison of Participants' Aggression Levels by Age

	Age	$\overline{X}$	F	p
Physical Aggression	14	15,9512	2,025	,095
	15	17,8000		
	16	16,0000		
	17	22,2308		
	18	19,0000		
Hostility	14	15,9024	,735	,570
	15	18,1000		
	16	18,4688		
	17	18,3077		
	18	17,1538		
Anger	14	14,7561	1,175	,325
	15	15,6000		
	16	15,5938		
	17	16,6923		

	18	16,3846		
Verbal Aggression	14	9,7805	,381	,822
	15	10,4000		
	16	10,1250		
	17	10,8462		
	18	11,1538		
Aggression Total	14	56,3902	1,476	,213
	15	61,9000		
	16	60,1875		
	17	68,0769		
	18	63,6923		

When the aggression levels of the participants were compared by age, it was found that aggression total scores and physical aggression, hostility, anger and verbal aggression sub-dimension mean scores did not differ according to age.

Table 5. Comparison of Participants' Aggression Levels by Economy

	Economic Status	$\overline{X}$	**t**	**p**
Physical Aggression	poor-medium	17,1915	-,333	,740
	good	17,7143		
Hostility	Poor-medium	17,2660	-,392	,696
	good	17,8286		
Anger	Poor-medium	15,4574	-,345	,731
	good	15,6857		
Verbal Aggression	Poor-medium	10,1383	-,539	,591
	good	10,5714		
Aggression Total	Poor-medium	60,0532	-,525	,600
	good	61,8000		

When the aggression levels of the participants according to their families' income status are analyzed, it was found that aggression total scores and physical aggression, hostility, anger and verbal aggression sub-dimension mean scores did not differ according to family income status.

Table 6. Comparison of Participants' Aggression Levels According to Their First-Degree Close Loss from the Family

	Death of someone in the family	$\overline{X}$	**t**	**p**
Physical Aggression	Yes	18,5200	,978	,333
	No	17,0481		
Hostility	Yes	20,5600	**2,946**	**,005**
	No	16,6635		
Angel	Yes	15,3600	-,265	,791
	No	15,5577		
Verbal Aggression	Yes	11,8400	**2,214**	**,029**
	No	9,8750		

Aggression Total	Yes	66,2800	1,933	,056
	No	59,1442		

When the aggression levels of the participants according to the first degree imminent loss of the family are analyzed, it was found that the mean scores of hostility and verbal aggression were higher and the difference was statistically significant. Physical aggression, anger and aggression mean scores were not different from the family compared to having a first degree imminent death.

Discussion

The findings obtained in this study, which examines the aggression levels of amateur athletes who are in adolescence and dealing with various sports, are discussed in the light of the literature.

The aggression levels of the participants were significantly higher than the gender, the aggression total scores of the men, and the sub-dimension scores of physical aggression, anger and verbal aggression compared to the women. In the hostility sub-dimension, there is no difference according to the gender of the participants. Considering the aggression levels of the participants according to the first degree imminent loss of the family, it was found that the average of hostility and verbal aggression score of those who experienced the first degree imminent loss from the family was higher and this difference was statistically significant. Physical aggression, anger and aggression averages were found not to differ. When the literature is analyzed, we frequently encounter similar studies and many studies support our findings. In the study of Bostancı et al. (2017), in a study where the aggression and optimism status of adolescent students according to whether they are doing sports are examined, significant differences were found in terms of aggression in terms of gender. This finding coincides with our study. In a different study than our findings; Güner (2006), in his study on 240 athletes, did not find a significant difference between the aggression score of male athletes and the aggression scores of female athletes. Research shows that catharsis does not always reduce aggressive behavior. For example; Patterson (1983) found that high school footballers' hostility behavior during the season increased rather than decreased. Generally, in our society, boys prefer to play destructive and disruptive games. The fact that physical strength is higher in boys than girls also increases boys' tendency to aggression. This is how we can interpret the conclusion we found about our study. But we cannot generalize. When the aggression levels according to the first degree imminent loss of the family were examined, the aggression tendency of the athletes with close losses was found to be higher than those without. In the literature, Köknel (1982) supports our research findings in adolescents with loss of parents or siblings, in children who do not have parents, who are disdainful, anxious, anti-social and aggressive, and that they are protected from being subjected to anger, aggression, and aggressive behavior. deprivation and sadness caused by death and separation trigger verbal aggression and feelings of hostility. When the aggression levels of the participants were compared by age, it was found that aggression aggregate scores and physical aggression, hostility, anger and verbal aggression sub-dimension scores did not differ.

When the aggression levels were analyzed according to the economic status of the participants, it was found that aggression aggregate scores and physical aggression, hostility, anger and verbal aggression were not different.

When the literature is examined; In a study conducted by age variable, a significant positive relationship was observed in general aggression levels as the age of adolescents increased. This can be related in proportion to the individual's entry into adolescence and that he should now take his own responsibility. On the other hand, no significant relationship was found between age and verbal aggression. This study partially overlaps our findings. (Bauman1994), Riche, 1989). A similar study did not find significant differences according to the age of adolescents engaged in sports. Unlike our study, there was a significant difference in income level in terms of aggression (Bostancı et al. 2017).

According to the income level, Yiğitbaş revealed that there was no statistically significant difference between the monthly income of the families and the aggression scores of the children of athletes (Yiğitbaşı 2002). Considering the income level in the sports environment, it has been revealed that the income level does not have an effect on aggressive behaviors; however, in studies conducted outside the sports environment, when the income level is taken into consideration, the findings show that adolescents grown in the lower income families have more aggression levels (Şahin 2003).

Conclusion

As a result, in this study, in which the aggression levels of amateur athletes in the adolescent period were examined; According to the gender variable of the athletes and the first degree imminent loss from the family, the aggression level was differentiated. It was observed that age and income level did not affect aggression level in adolescents.It is normal to see some unwanted behavior during adolescence, which is called restless period. Aggressive behaviors are frequently observed, especially in athletes. For this reason, the energy excess in the adolescent should be transferred in a positive direction before the anger moves to aggression. With some social and sports activities, the adolescent's excess energy can be reduced. These activities help remove negative thoughts. Adolescent should be taught by keeping alive, not by explaining the concept of good or bad, and to be a good role model. These measures are thought to be effective in preventing and reducing problems.

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The Effect of Regular Exercise on Some Respiratory Parameters in Amateur Footballers and Wrestlers

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Abstract

In this study, it was aimed to determine the effect of regular exercise on some respiratory parameters of amateur footballers and wrestlers. Respiratory parameters of the participants in the study were measured using a spirometer (PonyFx, Italy). SPSS program was used in the statistical analysis of the data obtained. The normality test was assessed by the Shapiro-wilk test. Descriptive statistics, one-way variance analysis (ANOVA) and Tukey HSD, one of the Post Hoc tests, were used to determine the direction of the group differences. Participants of the study were 60 voluntary men including 20 sedentary, 20 footballers and 20 wrestlers. Mean age, height and body weight of amateur wrestlers, footballers and sedentary respectively were 20.15, 20.95 and 20.20 years; 177.75, 173.75 and 173.20 cm; 74.45, 67.05 and 67.70 kg. Footbalers and wrestlers' FVC, FEV1, PEF (L / s), VC and MVV values were found to be statistically significantly higher than sedentary individuals ($p<0.05$). In addition, the FEV1 value of the wrestlers was significantly higher than the footballers ($p <0.05$), while there was no statistically significant difference between the wrestlers and the footballers in other parameters ($p>0.05$). There was no statistically significant difference between the FEV1 / FVC (%) and FEF25-75% (L / s) values of the groups ($p> 0.05$).We think that regular exercise positively affects the respiratory functions, and when examined on the branch basis, there are differences in some parameters due to different training contents.

Keywords: Respiratory parameters, Wrestling, Football, Male

Introduction

Exercise is a state of activity in which the cardiovascular system serves mainly. During exercise, the cardiovascular and respiratory mechanisms work in an organized manner, ensuring the adaptation of the body. The ability of the athlete to exercise in all branches depends on the amount of carrying oxygen to the tissues through the respiratory and circulatory system and capacity increase the carbon dioxide excretion from the body (Günay et al., 2018). Exercise improves the strength and endurance of the respiratory muscles and also contributes to the increase in lung volume and capacity and exercise increases physical capacity (Bilici and Güler, 2018; Leith and Bradley, 1976). Lung volume and capacity varies according to age, gender, body surface, status of being sedentary or athlete. With exercise, tidal and sediment volume, breathing capacity, functional sediment volume increase, breathing reserve volume and total lung capacity decrease, while exhalation reserve volume generally remains the same (Günay et al., 2013). In order to increase the physical performance of athletes, it is important to understand the working principle of the endocrine, muscular and respiratory system during exercise and plan appropriate physiological training accordingly. In resting without physical activity, respiratory volume of a person is 5-7 liters per minute and this may increase up to 140 lt in a maximal exercise and 120 lt in a submaximal exercise (McArdle et al., 1996). In a study that conducted, 20 weeks of regular exercise was found to increase the endurance of the respiratory muscles by 16% (White et al., 1991). When the literature is searched, it is emphasized that different sports branches have positive effects on lung capacities, and especially training and load intensity that increase vital capacity are very important. When the FVC values of different distance runners were analyzed, it was found that short distance runners had lower FVC values than medium and long distance athletes (Patlar et al., 2000; Schone et al., 1997). The development of respiratory muscle strength and functions is protective against pulmonary disorders, and it is supported by the literature that improving these functions positively affects the quality of life with regular exercise (Dübüş et al., 2011).

In this study, it was aimed to determine the effect of regular exercise on some respiratory parameters of amateur footballers and wrestlers.

Method

In the present study, without any health problems 60 participants included. These participants' features were 20 wrestlers with mean age 20.15 years, mean height 177.75 cm, mean body weight 74.45 kg, and, 20 footballers and 20 footballers with mean age 20.95 years, mean height 173.75 cm, mean body weight 67.05 kg, and lastly as a control group male sedentary volunteers with mean age 20.20 years, mean height 173.20 cm, mean body weight 67.70 kg. The inclusion criteria were determined in advance and candidates who did not comply with these criterias were excluded from the study. Inclusion criterias were; 1. for amateur footballers and wrestlers: to have at least four years of training age, not smoking and drinking alcohol; 2. for sedentary group: not to do any physical activity, bronchodilator drugs are not used.

Spirometric Measurements

Before the test, all participants were informed about the study, the behaviors and practices that may affect measurements. After voluntary informed consent forms and ethics committee approval from the Board of Scientific Research and Publication Ethics Committee of Mus

Alparslan University dated 12/11/2019 and numbered 10879717-050.01.04, research had started.

Before the study, all participants were informed that they should not wear clothes that can tighten their rib cage, should not exercise heavily thirty minutes before the test, and should not consume fatty foods two hours before the test.

Respiratory function values of athletes and sedentary participants were measured using spirometry (PonyFx, Italy). All of the spirometric measurements were applied in sitting position. The tests were carried out after the participants' nose was closed with a latch, after they were used to breathe several times with the mouthpiece connected to the spirometry. The measurements were repeated 3 times and the best value was recorded.

Statistical Evaluation

SPSS package program was used for statistical analysis of the data. The normality of the data was carried out with the Shapiro-Wilk test. Descriptive statistics, one-way analysis of variance (ANOVA), and Tukey HSD, one of the Post Hoc tests, were used to determine the direction of intragroup difference.

Results

In this study we found body mass index (kg/m²) of participants as wrestlers 23.51, footballers 22.24 and sedentary group 22.58.

Table 1. Body weight, height, age and BMI values of wrestlers, footballers and sedentary group

Groups	Body weight (kg)	Height (cm)	Age (year)	Body Mass Index (kg/m^2)
Wrestlers	74.45	177.75	20.15	23.51
Footballers	67.05	173.75	20.95	22.24
Sedentary	67.70	173.20	21.20	22.58

Table 2. Some respiratory function values of wrestlers, footballers and sedentary group

Parameters	Groups	N	Mean	SD (±)	F	P	Direction of Differences
FVC(L)	Footballer	20	5.27	0.57	11.65	0.000**	Footballer-Sedentary Wrestler-Sedentary
	Wrestler	20	5.60	0.51			
	Sedentary	20	4.74	0.63			
FEV1(L)	Footballer	20	4.46	0.47	12.08	0.000**	Footballer-Wrestler Footballer-Sedentary Wrestler-Sedentary
	Wrestler	20	4.86	0.46			
	Sedentary	20	4.07	0.59			
FEV1/FVC(%)	Footballer	20	84.84	6.17	0.75	0.477	(p>0.05)
	Wrestler	20	86.98	4.96			
	Sedentary	20	85.83	5.40			
	Footballer	20	8.36	1.38	9.07	0.000**	Footballer-Sedentary

PEF (L/s)	Wrestler	20	9.06	1.20			Wrestler-Sedentary
	Sedentary	20	7.45	1.00			
FEF25-75% (L/s)	Footballer	20	4.93	0.91	0.67	0.517	(p>0.05)
	Wrestler	20	5.57	0.97			
	Sedentary	20	5.12	2.83			
VC (L)	Footballer	20	5.01	0.48	12.67	0.000**	Footballer-Sedentary Wrestler-Sedentary
	Wrestler	20	5.31	0.52			
	Sedentary	20	4.35	0.81			
MVV (L/min)	Footballer	20	132.38	22.19	9.04	0.000**	Footballer-Sedentary Wrestler-Sedentary
	Wrestler	20	148.78	22.13			
	Sedentary	20	120.48	18.91			

p<0,005

Abbreviations: FVC(L) - Forced Vital Capasity; **FEV1(L)-** Forced Expiratory Volume in 1 second; **FEV1/FVC (%)-**Forced; Expiratory Volume in 1 second)/Forced Vital Capasity; **PEF (L/s)-** Peak Expiratory Flow; **FEF25-75% (L/s)-** Forced Expiratory Flow at 25-75%; **VC (L)-** Vital Capacity; **MVV (L/min)-** Maximal Voluntary Ventilation

In Table 2, it is determined that the FVC, FEV1, PEF (L / s), VC and MVV values of footballers and wrestlers are statistically significantly higher than the sedentary ones (p<0.05). Wrestlers FEV1 value was found to be significantly higher than footballers (p<0.05), and there were no statistically significant differences between wrestlers and footballers in other parameters (p>0.05). There was no statistically significant difference between the FEV1 / FVC (%) and FEF25-75% (L / s) values of the groups (p>0.05).

Discussion

The strong relation of exercise and lung cannot be ignored. MVV, FVC and FEV1 values decrease when there is a presence of the airways' narrowing in the lung, increased respiratory resistance or any obstruction. FEV1 and PEF (L / s) values give clues about the condition of large airways in the lung in general (Bilici andTürker, 2019). In the literature, it has been concluded in many of the previous studies that exercise affects the respiratory muscles and accordingly improves respiratory functions. (Gökdemir et al., 2007; Sable et al., 2012; Ahmadi et al., 2013;). In a study conducted to examine the respiratory functions of athletes, swimmers and sedentary ones, it was stated that the athletes (athletes and swimmers) have higher FVC and VC values than the sedentary ones (Doherty and Dimitriou, 2007). In the study that was examined, the respiratory functions of university students according to smoking and exercise variables, it was reported that individuals who do sports, have significantly higher FVC, FEV1, FEF25-75% (L / s), VC and MVV values (Sedentary, 2019). In a study, the effect of exercise on different respiratory parameters in different branches were searched and, it was stated that athletes had higher VC, FVC, FEV1, MVV values compared to sedentary ones (Atan et al., 2013). In the study conducted on taekwondo athletes, it was stated that four week technical and tactical training increased the FVC, PEF and MVV values (Çakmakçı et al., 2009). In their research, Alpay et al. (2007) stated that basketball players with an average age of 12.6 years have significantly higher VC and FVC values compared to

the same aged sedentary group (Alpay et al., 2007). In the study that was searched the effect of swimming exercise on FVC, FEV1 and MVV values in primary school children, it was stated that there was no significant difference between children doing sports and sedentary children (Çakır Atabek, 2017). As a result of our study, amateur footballers' and wrestlers' FVC, FEV1, PEF (L / s), VC and MVV values were stated to be statistically significantly higher than sedentary ($p<0.05$).

Looking at previous studies, although there are few studies that suggest that exercise improves respiratory functions similar to our study results, few studies suggest that exercise does not have a special effect on respiratory functions. We think that this difference may be caused by factors such as style and duration of the exercise, sport type, age, and gender.

In a study comparing the blood and respiratory functions of wrestlers and basketballers, it was reported that there was no statistically significant difference in FVC, FEV1, PEF (L / s), VC and FEV1 / FVC (%) values between both branches (Kara et al., 2010). In a study that examined the respiratory functions in different sports branches, it is stated that the respiratory parameters vary according to the sports branch (Durmic et al., 2015). In another study related to swimmers, footballers and sedentary individuals, it is stated that swimmers' VC, FVC and FEV1 values are higher than footballers and sedentary ones. (Lazovic et al., 2016) In some previous studies, it has been stated that water sports improve respiratory functions more than land sports (Bloomfield et al., 1985; Cordain et al., 1990). In our study results, it was determined that the FEV1 (L) value of the wrestlers was statistically higher than the footballers ($p<0.05$). In other parameters, there was no statistically significant difference between wrestlers and footballers ($p>0.05$).

Conclusion

As a result, we think that regular exercise positively affects the respiratory functions, and leads differences in some respiratory parameters, in others, and the differences in these parameters result from different training methods that branch specified.

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Determination of the relationship between the participation level of university students to physical activity and their social media addiction

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Abstract

Purpose: This study was made in order to assess the relationship between the social media addiction of the students studying in the physical education and sports academy and their level of participation to physical activity according to some variables, starting from the importance of social media addiction creating the sedentary life based on the popular usage of internet.

Method: The research group consisted of 143 students studying in the Physical Education and Sport Academy, Bartın University. In the research, as the data collection tool, developed by (Craig et al., 2003). The validity and reliability study of UFAA, the "international physical activity survey" done by (Öztürk, 2005) and the social media addiction scale, developed by (Ünal, 2015) were used. The data obtained for the research were primarily transferred to the computer environment and then, analyzed via SPSS 22 package software. The error margin level was taken as $p < 0.05$ in the research.

Findings: Considering the physical characteristics of the students participating in the research, the age, length and body weight of the male students were found out as respectively: 21,57 ± 1,96 year, 178,41 ± 6,67 cm, 74,92 ± 10,16 kg, and of the female students: 20,48 ± 2,65 year, 166,33 ± 5,58 cm, 54,83 ± 9,91 kg Of the students, 20 study for teaching, 67 for trainer, 36 for sport management, and 20 for recreation departments. Again, of the students participating in the research, 79 stated that they study normal education and 67 evening education.

Result: Statistical meaningfulness was found between the social media addiction level of the students participating in the research and the program they study. The meaningfulness was also seen in the result of the analysis done just after according to the gender variable of the physical activity participation statuses. In addition to this, a meaningful relationship was found out in the positive direction between sub-factors of social media addiction scale.

Keywords: University, Student, Social Media and Physical Activity

Introduction

The rapid development of the technology and industrialization brings the sedentary life with it. The long working hours at the desk in the office and high calorific nutrition style, when merging with sedentary life, create the risk factors which substantially affect the human health. The role of physical activity is big in the process of elimination of these risk factors (İmamoğlu et al., 2001).

While sport is defined as the bodily activities, which aim increasing the strength and power of the body and usually done with game, competition approach (Sevilay G., 2007), physical activity (PA) is defined as the activities, including energy consumption by using our muscles and joints in the daily life, increasing heart and breathing rate, which can be done with different intensities and which usually end with tiredness (Baltacı, 2008; Acsm, 2009). With the improvement of the technology in the recent years, the situations such as the decrease in the walking distance and time allocated for walking because of the increase in the transportation vehicles, the increase in the time passed on the computer and popularization of using e-mail with co-workers cause that the level of physical activity (LPA) decreases (Haskell, 1996; Ball et al., 2001; Patton Gorman 2012).

The human body needs movement as required by its nature. However, today's technological developments provide easiness for the individual and therefore direct people to immobility (inactivity) since the childhood age. This situation causes life style habit, not compatible with the human organism. Inactive life style provides the grounds for children and youth get sick and increases the health problems (Çamlıgüney, 2010). Misusing the social media networks (internet) most of the time and tying individuals to the desks more than necessary, with the sedentary life, may be the sign of many diseases.

The internet, the main purpose of which is a global communication tool and technology, enabling that data is stored and conveyed, is a giant media consisting of the combination of the computer networks spread across the world. Considering the point where internet comes, depended on the development of information networks performed for military purposes at the first stage, it is seen that individuals at every age, small to elder, use internet in many areas such as obtaining information, using dating sites, video film downloading, shopping, making banking procedures (Oskay Yurttaş, 2013). Therefore, almost all people, from elder to small, use social media and are starts to convert inactivity to a life style without noticing.

With this purpose, in the study, the relationship of social media usage of the university students with the physical activity level is researched. It is thought that this study, we made, may constitute a new literature for the physical training and sport fielt.

Material and Method

143 volunteer students consist of the research group who study in the Physical Education and Sports Academy of Bartın University in the 2018 – 2019 education year.

Collecting Data

Within the subject of the research, the personal information form survey, which is required for determining the characteristics, was created and it was collected with IPAQ Short Form - International Physical Activity Questionnaire Short Form.

International Physical Activity Questionnaire (IPAQ) short form

International Physical Activity Questionnaire (IPAQ) was developed by Craig et al. (2003) in order to determine the physical activity level of the participants in the age interval of 15 - 65. The validity and reliability study on IPAQ in Turkey was done by Öztürk (2005). When assessing all activities, making each activity at least for 10 minutes at once is taken as the criterion. By multiplying minutes, day and MET value, a score is obtained as "MET min./week). Physical activity levels are classified as physically inactive (MET min/week<600), low physical activity level (600 – 3000 MET min/week) and one with adequate physical activity level (which is beneficial for health) (MET min/week >3000) (Craig et al., 2003).

Social media addiction scale

The social media addiction scale, used in the research, was created by using the social media addiction scale, which Ünal (2015) used in his study called "Social Media Addiction, A Research on University Students). The scale, consisting of Likert type conclusions of 41 questions, consists of 4 sub-factors as "occupation, emotional status, repetition, and conflict". Occupation factor consists of 12 clauses, emotional status factor of 5, repetition factor of 5, and conflict factor of 19. The statements in the scale was addressed as "1= never, 2= rarely, 3= sometimes, 4= frequently, 5= always".

Analysis of the data

For analyzing the data, SPSS 22.0 (Statistical Package for Social Sciences 22.0) package software was used and the frequency (f) and percentage (%) distributions of the variables were calculated. In order ensure normal distribution of the data, skewness and kurtosis was evaluated and checked. For analyzing the data, the relationship between variables were looked at via Pearson correlation. If there is difference according to gender variable was looked at via Sample T-Test. The significance level was determined as ($p<0.05$) for all tests.

Findings

Table 1. Physical characteristics of the students participating in the study

	N	age (year) (Mean±SD)	Length (cm) (Mean±SD	Body weight (kg) (Mean±SD
Male	75	21,57±1,96	178,41±6,67	74,92±10,16
Female	68	20,48±2,65	166,33±5,58	54,83 ±9,91

Evaluating the physical characteristics of the students participating in the study in the Table 1, the age, length and body weight of the male students are respectively 21,57±1,96 year, 178,41 ± 6,67 cm and 74,92 ± 10,16 kg, female students 20,48±2,65 year, 166,33 ± 5,58 cm, 54,83 ± 9,91 kg/m

Table 2. Frequency and percentage distributions of the students participating in the study according to the demographic variables

Variables		N	%
Gender	Female	68	47,6
	Male	75	52,4
	Total	143	100,0
Department	Teaching	20	14,0
	Training	67	46,9
	Sports management	36	25,2
	Recreation	20	14,0
	Total	143	100,0
Education status	Normal education	79	55,2
	Evening education	67	44,8)
	Total	143	100,0

Considering the table 2, it was found out that of the students, 20 study for teaching, 67 for trainer, 36 for sport management, and 20 for recreation departments. Again, of the students participating in the research, 79 stated that they study normal education and 67 evening education. Again considering the same table, it is seen that 79 persons study normal education and 67 evening education.

Table 3. Distribution of social media addiction level of the participants

Scale/Sub-scale	$\overline{X}$	Sd
Social media addiction	108,81	31,06
Occupancy factor	36,32	9,86
Emotional status regulation factor	17,21	6,27
Repetition factor	18,13	6,86
Conflict factor	37,15	10,01

Assessing the table, it is understood that the social media addiction of the participants is ($\bar{X}$= 108.81) at the "moderately addicted" (score interval = 107 – 139) according to the total scores they got in the framework of the scoring table. In spite of this, assessing the addiction levels of the participants with respect to the sub-factors, it is seen that they are at the "moderate addiction" level (score interval = 32 – 41) for the occupancy factor ($\bar{X}$= 36.32), "high addiction" (score interval = 17 – 20) in the emotional status regulation factor ($\bar{X}$= 17.21),

"high addiction" (score interval = 17 – 20) in the repetition factor ($\bar{X}$= 18.13), and "little addicted" (score interval = 34 - 48) in the conflict factor ($\bar{X}$= 37.15).

Table 4. T-test results per gender of the participants' physical activity participation status

GENDER	N	$\bar{X}$	Std	t	p
FEMALE	68	3108,5294	2598,62753	-1,669	0,049*
MALE	75	4092,4933	4095,86533		

Assessing the Table 5, it is seen that the physical activity participation statuses of the students participating in the research indicate significant difference per gender ($p<0.05$). It was found out that the physical activity participation statuses of the female students ($\bar{X}$: 3108.5294) provides participation at a level higher than it is. It was found out that the male participants, it was found out that they are at high level too, with the average score ($\bar{X}$: 4092.4933) participate in physical activities more frequently compared to female participants.

Table 6. T-test results for the participants' physical activity participation status per education status

EDUCATION STATUS	N	$\bar{X}$	Std.	t	p
NORMAL EDUCATION	79	4219,4688	3836,43249	-748	0,030*
EVENING EDUCATION	64	3427,8354	3191,17944		

p<0,05*

Assessing the Table 6, it is seen that the physical activity participation statuses of the students participating in the research indicate significant difference compared to the education status ($p<0.05$). It was found out that the physical activity participation statuses of the normal education students ($\bar{X}$: 4219.4688) provides participation at a level higher than it is. It was found out that the evening education students, it was found out that they are at high level too, with the average score of ($\bar{X}$: 3427. 8354) participate in physical activities less often compared to the students studying normal education.

Table 7. The relationship between sub-dimensions of the social media addiction levels of the participants and physical activity participation levels

Variables		Physical activity level
Social media addiction	R	,382
	P	,001
	N	143

According to the findings in the table 7, it was found out that there is a positive, low level, statistically significant relation (r=-0.382; p<0.05) between physical activity level and social media addiction.

Table 8. Arithmetical average table for social media addiction levels and physical activity participation of the participants

VARIABLES	N	$\bar{X}$ ± Std.
Social media addiction	143	108,81±31,06
Physical activity level	143	3017,00±2895,02

In the table 8, it is confirmed that the physical activity level of the participants (high level) is 3017.00±2895.02 MET-min/week, social media addiction averages 108.81±31.06 (moderate addictive).

Table 9. Correlation of the sub-factors of social media addiction

VARIABLES		Occupancy factor	Emotional status factor	Repetition factor	Conflict factor
Occupancy factor	R	1			
	P				
	N	143			
Emotional status factor	R	,628**	1		
	P	,000			
	N	143	143		
Repetition factor	R	,549**	,621**	1	
	P	,000	,000		
	N	143	143	143	
Conflict factor	R	,441**	,548**	,724**	1
	P	,000	,000	,000	
	N	143	143	143	143

As a result of the correlation analysis applied in order to find out the relationship between the sub-factors of the social media addiction scale, it is seen that the strongest relationship is between occupancy factor and emotional status regulation factor (r=.628, p<0.01). In other words, there is a positively, high level and significant relationship between occupancy factor and emotional status factor. In addition to this, it was found out that there is a positively, medium level and significant relationship between again occupancy factor and repetition (r=.549, p<0.01) and conflict (r=.441, p<0.01) factors. Starting from the table, we can say that a positive, medium level and significant relationship was found out between the emotional status regulation factor and repetition factor (r=.621, p<0.01) and conflict (r=.548, p<0.01) factors. In spite of this, there is no positive, high level, significant relationship between repetition factor and conflict factor (r=.724, p<0.01).

Discussion and Conclusion

In this part, the findings are discussed and interpreted where the relationship between the physical activity participation statuses of the students, participating in this research, studying in the Physical Education and Sports Academy, Bartın University, and the social media addiction according to certain variables.

Considering the social media addiction levels of the students, while it was found out that their social media addiction score is "medium level addiction" with ($\bar{X}$= 108.81), also considering the sub-factors of the addiction levels at the same time, it was determined that they are "moderately addictive" with ($\bar{X}$=36.32) in occupancy sub-factor, "highly addictive" with ($\bar{X}$=17.21) in the emotional status regulation sub-factor, "highly addictive" with ($\bar{X}$=18.13) in the repetition sub-factor, and finally "less addictive" with ($\bar{X}$=37.15) in the conflict sub-factor. Based on these scores, it can be said that the addition of the students to the social media in the developing internet world is over normal. In the research done by (Ercan, 2018), as a result of researching the social media addition levels of the participants, with respect to the sub-factors, the result is obtained that they have moderate level of addiction level with respect to the occupancy, emotional status regulation and repetition behavior in the social media; in spite of this, they have low level addiction with respect to the conflict sub-factor. Because it will be dealt with positively that they don't have a problem caused by conflict because the participants are low addictive with respect to the conflict sub-factor in our study result too, it shows similarity with this study.

Evaluating the physical activity participation levels according to the gender factor of the students participating in the research, it was found out that male students participate in physical activity more frequently than female students. It supports our study that (Cengiz C., İnce M.L. and Çiçek, Ş., 2009) found similar result on behalf of males between the gender, finding that physical activity level of males is higher than females. Again in another finding we obtained, it was found out that the program in which the students study affects the physical activity participation status on behalf of the students studying normal education.

Another result obtained in the study is that there is a significant relationship between physical activity participation status of the students and social media addition. (Karademir M. 2017) has reached a conclusion indicating that as the social network usage level increases, the physical activity levels decreases concordantly. It was found out that there is a positive, low level relationship between social media addiction level and physical activity participation levels of the students in our study too. This result we obtained indicates statistical significance.

In conclusion, a significant difference was observed between social media addictions and physical activity participation statuses based on gender and education status variables of the students participating in the research. At the same time, a significant relationship was seen between sub-factors of social media addiction. It can be observed that the repetition factor and emotional status regulation factor, taking place in the social media, extends the time in which the university students pass in the social media. Because of this, the students may tend to a sedentary life, not having any physical activity during the time they pass in the social media. Inactive life slightly opens the door of obesity disease, therefore, the means should be provided for preserving and developing the health of the university students, we think that when the facilities necessary for increasing the physical activity are created and means are provided, healthier environments would be created for the future generations too.

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The Correlatıon between Mental Toughness and Goal Orıentatıon of Elıte Wrestlers

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Abstract

This study examined the correlation between mental toughness and goal orientation of elite wrestlers. A total of 50 wrestler (age=20.22±2.98) were participated in the study. In the study; "Task and Ego Orientation Scale in Sport Questionnaire" developed by Duda and Whitehead (1998) used to determine goal orientation levels. "Sport Mental Toughness Questionnaire (MTTQ)" developed by Sheard et. al (2009) used. Also, a personal information form used that prepared by the researchers. Descriptive, relational and comparative model were used in the article. In the analysis of the data, Spearman correlation coefficient was applied in the article. Also, Mann-Whitney U test used to comparisons. Wrestlers found a moderate negative correlation between age variable and control scores of the mental toughness scale ($p<0.01$). A positive correlation was found between task orientation scores of the goal orientation scale and the confidence ($p<0.01$) of the mental toughness scale and the continuum ($p<0.05$) scores. A low-level positive correlation was detected between the ego orientation score of the goal orientation scale and the confidence scores of the mental toughness scale ($p<0.05$). A significant difference was found between wrestlers age variable scores and control scores of the mental toughness scale ($p<0.05$). As a result, the correlation between mental toughness and goal orientation is important for elite athletes. As the age of elite wrestlers' increases, their concerns appear to increase in the face of unexpected or uncontrollable events.

Keywords: Mental Toughness, Goal Orientation, Wrestling, Elite Athlete

Introduction

In order for the athletes to compete at the elite level, they must demonstrate regular physical, technical and tactical development throughout the process. In addition, it is reported that athletes should not have physical and mental problems such as sports injuries and overtraining in order to reach high performance levels. (Maffulli et al., 2013; MacKinnon, 2000; Rugg et al, 2018; Uluöz, 2016a, 2016b). Athletes who reach the competition level, gain awareness that performance is not only affected by physical skill in a short time (Bhambri, Dhillon & Sahni, 2005).

Today's coaches and athletes realized the fact that the competition process is difficult, and the winning process fits within a narrow time frame although the athletes have technical, tactical and physical abilities. With the increase in the quality standards of the competitions and the increase in institutional expectations, the pressure on the athletes increased. However, the stress level of athletes also increased and psychological performance has become an important element of success in this field. According to Hardy, Jones and Gould (1996) and Weinberg (1992), athletes have increased their interest in how to cognitively strengthen to cope with these factors. They are focused on developing their psychological skills such as visualization, goal setting and relaxation, both to realize their potential and to increase their performance. Gould et. al (2002) showed that Mental Toughness is one of the basic elements of success in sports in their studies with Olympic champions. It has been determined that champions are successful in important psychological features such as stress management, Mental Toughness, self-confidence, and focus. Erdogan and Kocaekşi (2015), who reached the same results with this study, emphasized the importance of the presence of Mental Toughness in athletes. Jones, Hanton and Connaughton (2007) defined Mental Toughness as the ability to deal with negativity, stress, oppression, failure and misfortunes, avoid giving up and staying under stress. Thelwell, Weston and Greenlees (2005) described this concept as natural or developable. They emphasized that individuals with high performance in this regard have the ability to react positively to negative standards encountered in sports or different life conditions, to ignore the factors that cause distraction and to maintain calm in high pressure environments.

Mental Toughness often represents a number of psychological factors to be used to maintain successful performance in adverse environments (Clough et.al. 2002). It is an area with difficult conditions that includes many concepts such as stress, failure and problems in sports. For this reason, the Mental Toughness should be kept as high as possible in order to enable the athletes to perform high or to recover quickly after a difficult situation. Gould et. al (1987), reached the conclusion that the most important factor for success in 82% of the participants is Mental Toughness in their study conducted with wrestling coaches. However, Mental Toughness has been defined not only as a valid concept in negative situations, but also as a versatile concept (Crust, 2008). Weinberg and Gould (2015) found that the player who used the free throw at the last minute in a basketball game, believed that he had friends and family among the audience during the time-out and experienced the stress of this, was not accurate. In summary, cognitive and emotional factors are above the physical and technical sides of performance. In order to have strong cognitive skills, athletes must have high Mental Toughness values (Weinberg and Gould, 2015).

One of the concepts associated with Mental Toughness is goal orientation (task-ego orientation). Kuan and Roy (2007) evaluated the Mental Toughness they determined with the "Psychological Performance Inventory" according to the goal orientation (task-ego orientation) of the athletes. As a result of this study, they reported that the athletes with high

task and moderate ego levels achieved higher scores in the imagination, negative energy control, motivational control, positive energy control and attitude control sub-dimensions as a result of this study (Kuan and Roy, 2007). Similar to this study Kuan et. al (2007), conducted a study with 203 athletes, and results showed that athletes with high task-high ego and high task-medium ego orientation have high Mental Toughness scores. In this context, one of the concepts thought to have an impact on Mental Toughness is the goal orientation of athletes.

The pioneers of the goal orientation concept, Nicholls (1984) and Duda (1988) have focused on the cognitive dimension in this approach. In this context, the existence of two independent dimensions within the goal orientation in sports has been reported. In sport, the first goal-oriented perspectives are *task-oriented goals*, and the second is *ego-oriented goals*. According to Duda and Nicholls, ego orientation; goals that refer to others in the sport, such as doing better than others (competitors or teammates), more attention (self-disclosure) and ranking higher than others (what they see as competitors).

Task orientation, on the other hand, expresses the goal orientation "one refers to himself", such as doing better than his previous performance, learning new things and mastering a task (Duda and Nicholls 1992). These two goal orientations are related to the skill level of the athlete (Toros and Yetim, 2000). Task orientation and ego orientation determine the goal orientation exhibited by the athlete to the extent that these dimensions are present in each athlete (Jagacinski and Nicholls 1984). In the athlete of two independent dimensions, task and ego oriented; goal high-ego high, goal high-ego low, goal low-ego high, goal low-ego low. Accordingly, the degree of having athletes' task and ego goal orientation requires a certain assessment of life and judgment (Toros, 2002). The individual, who has task-oriented goals, focuses on learning new skills and hard work (Toros, 2001). Task-oriented sportsman behavior tends to believe that talent will be demonstrated through development and effort (Murcia et. al., 2008). So in order to be successful, the athlete must work hard and make the best effort he can. At the same time, it is intuitive that a task-oriented athlete seeks a sense of inner satisfaction during the success process. This sense of satisfaction may be proportional to the amount of effort exhibited and the amount of development compared to the past (Toy, 2015).

An ego-oriented athlete believes that success can be achieved by proving his superior ability and defeating his opponents (Kocaeşki, 2010). These athletes want to be successful in demonstrating their abilities, the tasks to be accomplished, to demonstrate their ability, and to show how good others are (Elliot, 1999). The purpose of the behavior or movement applied by the athlete; show their own abilities associated with the abilities of others (Bruin, et. al. 2009). Ego-oriented behaviors to be carried out by the athlete in a work environment with high team concussion compared to ego-oriented behaviors can separate the athlete from the team, conflicts between other members of the team and the athlete may be expected, and even athletes with ego-oriented behaviors may be excluded. Athletes exhibiting ego-oriented behaviors may experience great traumas after finding their performance as failing in important competitions despite the conduct of rules or illegal behaviors and may even find excuses that can completely break away from sports (Toy, 2015). Task and ego-oriented goals can be said to be related to how the athlete judges (evaluates) his talent (Toy, 2015).

The interest of the researchers working in the field of sports psychology, which is one of the important issues, is that the goal orientation and mental toughness issues were examined in terms of the wrestling branch. In Turkey, the studies regarding mental toughness and goal orientation is discussed in terms of a limited number of sports. It is thought that the determined results will be beneficial for the researchers in this field.

Materials and Methods

Participants

The wrestler research group consists of elite athletes who are in the Istanbul metropolitan sport club and provide their economic livelihood from its sports club. The research group is composed of 50 wrestlers who were engaged in professional wrestling sport (located in the participating teams and national championships in Turkey) in Istanbul metropolitan sports club.

Research Model

In this study; elite wrestlers' task orientation and ego orientations and Mental Toughness; differences and correlation were investigated by examining the variables of age, educational status, sports experience, and being elected to the national team. In this study were used descriptive, relational and comparative model.

In this study, demographic information form, Mental Toughness scale, and goal orientation scale were applied to freestyle and Greco-Roman wrestlers. Within the scope of the model; correlation tables for the Mental Toughness and goal orientation scales were prepared and interpreted. On the basis of the comparative model; the demographic data were tested to see whether there was a significant difference in the goal orientation (task orientation and ego orientation sub-dimensions) and Mental Toughness (control, confidence and continuity sub-dimensions) scales.

Data Collection Tools

Data collection tools consist of following scales;

1. Demographic Information Form: This form includes the following information received from the wrestlers: Age, sports experience, educational status, and the status of being selected to the national team.

2. Mental Toughness Scale: Mental Toughness Inventory in Sports: To determine the Mental Toughness of athletes, Sheard et. al. (2009), and adapted to Turkish by Altıntaş (2015). Inventory consisting of 14 questions determining the sub-dimensions of trust (1, 5, 6, 11, 13, 14), continuity (3, 8, 10, 12) and control (2, 4, 9, 7), and information about total Mental Toughness. In order to determine the level of participation in the questions asked in the inventory, a 4-point Likert-type (completely wrong, wrong, correct, completely correct) evaluation is made. The scale also includes reverse scored questions (2, 4, 7, 8, 9, 10) (Altıntaş, 2015).

3. Task and Ego Orientation in Sport Questionnaire, – SGEYÖ (Task and Ego Orientation in Sport Questionnaire, Duda ve Whitehead, 1998) was developed by Duda and Nicholls in order to reveal individual differences in goal setting. Task and Ego Orientation Scale in Sport includes 13 items and 2 sub-scales in which the evaluation is made according to 5 levels. These subscales are; task orientation and ego orientation. The validity and reliability study of the scale for Turkish athletes was done by Toros (2001). In the study of Toros (2001), the Cronbach alpha value is 0.87 in the “task orientation” subscale. The internal consistency coefficient was found as 0.85 in the "ego orientation" subscale. In general, the reliability coefficient of the scale was determined as 0.86. (Toros, 2001).

Data Analysis

22 packages in SPSS program were used to analyze the demographic data, goal orientation and Mental Toughness, which constitute the main variables of the research. It has been

checked whether the data was entered correctly or not. All variables were evaluated separately using the central distribution and variability criteria. Correlations between variables were examined by Spearman correlation analysis. Mann Whitney-U test was used in the comparison of two groups. The findings were interpreted in the light of theories and research in the literature.

Findings

Table 1. Demographic variables of participants (n / %).

Variables		n	%
Age	20 years and under	28	56,0
	21 years and above	22	44,0
Education Level	High School	22	44,0
	University	28	56,0
Experience Time	6 year and under	14	28,0
	7 year and above	36	72,0
National Team Level	Young National	35	70,0
	National	15	30,0

Table 1 shows the frequency analysis distribution for variables of age, education level, duration of experience and national team level.

Table 2. Descriptive analysis for Goal Orientation and Mental Toughness scales sub-dimensions.

Sub-dimensions		n	min.	max.	$\overline{X}$	SD
Goal Orientation	Goal Orientation	50	2,00	5,00	3,574	,768
	Ego Orientation	50	1,50	5,00	3,308	,820
Mental Toughness	Confidence	50	1,00	4,00	3,150	,676
	Continuity	50	2,50	4,00	3,650	,426
	Control	50	3,00	4,00	3,630	,414

Table 2 shows the frequency analysis distribution for the task orientation and goal orientation, which are the sub-dimensions of the Goal orientation scale, and the confidence, continuity, and control sub-dimensions of the Mental Toughness scale.

Table 3. Spearman Rank Difference Correlation Analysis Results to Determine the Correlation between Goal Orientation Scores and Mental Toughness Scores

n=50	Age	Education	Experience Year	Nationality Level	Task	Ego	Confidence	Continuity	Control
Age	1	,542**	,553**	,475**	,074	-,115	,113	,059	-,368**
		,000	,000	,000	,609	,427	,435	,682	,009
Education	**,542****	1	,704**	,404**	-,004	-,049	,004	-,018	-,245
	,000		,000	,004	,977	,735	,977	,902	,086
Experience Year	**,553****	**,704****	1	,311*	-,029	-,023	-,012	-,104	-,266
	,000	**,000**		,028	,839	,873	,931	,474	,062
Nationality level	**,475****	**,404****	**,311***	1	-,105	-,215	,214	-,014	-,124
	,000	**,004**	**,028**		,470	,133	,136	,920	,392

Confidence	,113 ,435	,004 ,977	-,012 ,931	,214 ,136	**,471**** **,001**	**,322*** **,023**	1	,430** ,002	,104 ,471
Continuity	,059 ,682	-,018 ,902	-,104 ,474	-,014 ,920	**,301*** **,033**	-,053 ,712	**,430**** **,002**	1	,399** ,004
Control	- **,368**** **,009**	-,245 ,086	-,266 ,062	-,124 ,392	-,175 ,223	-,180 ,211	,104 ,471	**,399**** **,004**	1

In Table 3, as a result of the Spearman Rank Differences Correlation analysis conducted to determine the correlation between the variables, the scores between the age variable and education level, years of experience and nationality level shows statistical positive correlation level that is equal (p <.05). However, a negative correlation was found between age variable and control sub-dimension of mental Toughness Scale that is equal (p <.05). A statistically significant positive correlation was found between the Task orientation sub-dimension, which is the sub-dimension of the goal orientation, and the confidence and continuity sub-dimensions of mental toughness scale (p <.05). There was found a statistically significant positive correlation between ego orientation sub-dimension and confidence sub-dimension (p <.05). A statistically significant positive correlation was found between the confidence sub-dimension and the continuity sub-dimension (p <.05). There was a statistically significant positive correlation between the continuity sub-dimension and the control sub-dimension (p <.05).

Table 4. Goal Orientation Scale and the Mental Resistance Scale Scores

	Groups	**n**	$\overline{X}$	**Total Rank**	*U*	*p*
Goal	20 Years and Under	28	24,55	687,50	281,500	,604
	21 Years and Above	22	26,70	587,50		
Ego	20 Years and Under	28	26,96	755,00	267,000	,422
	21 Years and Above	22	23,64	520,00		
Confidence	20 Years and Under	28	24,07	674,00	268,000	,429
	21 Years and Above	22	23,72	601,00		
Continuity	20 Years and Under	28	24,79	694,00	288,000	,677
	21 Years and Above	22	26,41	581,00		
Control	20 Years and Under	28	29,88	836,50	185,500	**,010***
	21 Years and Above	22	19,93	438,50		

In Table 4, it was found that there is no significant difference in the task sub-dimension, ego sub-dimension, confidence sub-dimension and continuity sub-dimensions of the athletes by age variable. However, a significant difference was found between the control averages of athletes aged until 20 years old (includes 20 years old), and 21 years old (includes 21 years old) and older in terms of age variable (U=185.500, p<.05).

Table 5. Difference between the Goal Orientation Scale and the Mental Resistance Scale **Scores.**

	Groups	n	$\overline{X}$	Total Rank	*U*	*p*
Goal	6 Years and Under	14	26,18	366,50	242,500	,837
	7 Year and Above	36	25,24	908,50		
Ego	6 Years and Under	14	26,04	364,50	244,500	,871
	7 Year and Above	36	25,29	914,50		
Confidence	6 Years and Under	14	25,79	361,00	248,000	,930
	7 Year and Above	36	25,39	914,00		
Continuity	6 Years and Under	14	27,75	388,50	220,500	,469
	7 Year and Above	36	24,63	886,50		
Control	6 Years and Under	14	31,21	437,00	172,000	,063
	7 Year and Above	36	23,28	838,00		

In Table 5, was found that there was no significant difference in the task sub-dimension, ego sub-dimension, confidence sub-dimension, continuity sub-dimension and control sub-dimension scores of athletes according to years of experience (p>.05).

Table 6. Difference between the Goal Orientation Scale and the Mental Toughness Scale Scores According to the Level of Education

Education Level	Groups	n	$\overline{X}$	Total Rank	*U*	*p*
Goal	High School	22	25,57	562,50	306,500	,977
	University	28	25,45	712,50		
Ego	High School	22	26,30	578,50	290,500	,732
	University	28	24,88	696,50		
Confidence	High School	22	25,43	519,50	306,500	,976
	University	28	25,55	715,50		
Continuity	High School	22	25,77	567,00	302,000	,901
	University	28	25,29	708,00		
Control	High School	22	29,20	642,50	226,500	,086
	University	28	22,59	632,50		

In Table 6, there was no significant difference in the task sub-dimension, ego sub-dimension, confidence sub-dimension, and continuity sub-dimension and control sub-dimension scores of the wrestlers according to the educational status variable (p > .05).

Table 7. Difference between the Goal Orientation Scale and the Mental Toughness Scale Scores According to the National Athlete Category Level

Nationality Level	Groups	n	$\overline{X}$	Total Rank	*U*	*p*
Goal	Young National	35	26,49	927,00	228,000	,464
	Senior National	15	23,20	348,00		
Ego	Young National	35	27,53	963,50	191,500	,132
	Senior National	15	20,77	311,50		
Confidence	Young National	35	23,50	822,50	192,500	,134
	Senior National	15	30,17	452,50		
Continuity	Young National	35	25,63	897,00	258,000	,919
	Senior National	15	25,20	378,00		
Control	Young National	35	26,59	930,50	224,500	,386
	Senior National	15	22,97	344,50		

In Table 7, was found that there was no significant difference in the task sub-dimension, ego sub-dimension, confidence sub-dimension, continuity sub-dimension and control sub-dimension scores of the athletes according to the Nationality level variable and the status variable ($p>.05$).

Conclusion

Findings about the correlation between elite wrestlers' goal orientation and Mental Toughness scores were discussed within the framework of research purposes.

In the results of the research, a significant difference was found in the control sub-dimension of Mental Toughness scale according to the age variable of the wrestlers. According to the results of the binary group comparisons that made to determine between which groups the meaningful differences emerged as a result of the analyzes made; According to athlete groups between the ages of 21 and over, was found a significant difference in Mental Toughness levels that showed better results of athletes aged between 20 and under. However, in the control sub-dimension of the wrestlers' Mental Toughness scale, it is observed that their Mental Toughness levels decrease as their ages increase. Also, Crust et. al (2014) states that age is an important factor in determining the level of Mental Toughness that is in positive correlation with the results of our research. In contradiction with our research, Marchant et. al. (2009) and Nicholls et. al (2009) also found that Mental Toughness increases or decreases in by age factor. In another study, Crust (2009) found that there was no correlation between Mental Toughness and age factor. Gürer (2015) emphasized that characteristics of mountaineering sports, such as decision making and problem-solving skills, are important in a study. Accordingly, it can be said that the Mental Toughness scores decrease as the age factor increases, the athletes are not controlled and comfortable in sports that require intense physical and Mental Toughness, not being under pressure or unexpected conditions.

There was no statistically difference between the Mental Toughness sub-dimensions according to the duration of wrestling athletes' experience variable. In the study conducted by Dede (2019) can be observed similarity with the results of this paper research, it was found that there is no difference according to the experience period of elite wrestlers. However,

Crust (2009) found in his research that there is no correlation between Mental Toughness and duration of athletes' experience variable.

It was observed that the level of Mental Toughness of elite wrestlers did not differ from the nationality level variable. In contrast to the results of this paper research, Konter (2015) found that the results of his study with professional footballers show that footballers who cannot be selected to the national teams have a higher level of Mental Toughness than those chosen for the national team.

Considering the results of statistical analysis regarding whether the Mental Toughness levels of elite wrestlers differ according to their educational status; no statistically difference was found between subscales of Mental Toughness scale. Considering the literature, unlike the results in our study; Crust et. al. (2014) stated that education and Mental Toughness are in parallel proportion. In another study by Fisher and Hood (1987) revealed that the level of education should be increased in order to increase Mental Toughness.

There was no correlation between the ego and task orientation sub-dimensions (of the wrestlers participating in the research) and the age variable. This paper research found out overlap with the studies in the literature. In a study of 317 wrestlers, no difference was found between the age variable and goal orientation sub-dimensions of Freestyle and Greco-Roman style wrestlers (Toy, 2015). The paper written by Toros shows no difference between the ego and task orientation subscale of the elite and non-elite basketball players and the age variable (Toros, 2001). In another study written by Üngür was mentioned that there was no difference between the age variable and the goal orientation in the research results, which examined the correlation between goal orientation in amateur and professional football players (Üngür, 2009). In addition, there are studies that differ from this paper research results. Flores et. al (2008) observed a decrease in the perceptions of Colombian athletes perceptions of ego goal orientations, learning perceptions, and performance orientations in the physical education lessons and motivational climate perceptions (Flores, et. al 2008). In Flores research was found no difference between the goal orientation scores in terms of the experience level variable of elite wrestlers. When this paper research results are compared with the literature, there are similar and opposite results. In the research written by Toy (2015) mentioned that there is no difference between the task orientation sub-dimension of freestyle wrestlers and the experience variable of the ego orientation sub-dimension. However, there is a significant difference in terms of experience variable and task orientation subscale scores of Greco-Roman style wrestlers. In terms of freestyle wrestlers, there is no difference between experience variable and task orientation scores (Toy, 2015). In the research results by Üngür (2009), was found out that goal orientation has no effect on the variable of experience in amateur and professional football players (Üngür, 2009). However, Fernandes et. al. states that there is a positive correlation between Alpinist mountaineers' ages of sports experience and task orientation levels (Fernandes et. al. 2009). In another study by Toros is written that elite basketball players have a negative correlation between the athletes experience and their goal orientation, and as the age of elite athletes increased with their sports age, their ego orientation decreased. In non-elite athletes groups, mentioned that as the age of athletes experience increases, the task orientation increases (Toros, 2001). Under literature researching, Kristiansen et. al. (2008) stated that experienced wrestlers prefer the task orientation behavior, and they show a positive harmony towards staying and competing by maintaining their strategies to deal with stress (problem oriented and emotion oriented) (Kristiansen et. al. 2008). Basketball sportsmen research mentioned no observed differentiation in the task and ego orientations of elite and non-elite basketball players (Toros, 2001). Duda found out the conclusion that athletes with high task orientation (recreational)

continue their chosen sports (experienced winners) for a longer period of time (Duda, 1992). In another study, college and university athletes compared younger and recreational sports individuals stated that high school boys exhibit lower task orientation (White and Duda, 1994). So, there is no difference in terms of education level of elite wrestlers participating in the research. This paper research results correspond with the literature studies. In a comprehensive study conducted in 2015, there is no difference in terms of education level variable of Free style and Greco-Roman style wrestlers and ego orientation and task orientation scores (Toy, 2015). In the research results found out by Üngür of football players mentioned that educational status variable does not have an effect on goal orientation on amateur and professional football players (Üngür, 2009).

According to Toy (2015) there is no difference in terms of the nationality of elite wrestlers participating in the research. Although research works of similar papers are limited in the literature in this area, possible to observe matching in this paper results. By Toy paper (2015), there is no difference in terms of the nationality variable of Freestyle and Greco-Roman wrestlers and ego and task orientation subscale scores. Also, in Toy's paper mentioned no difference in Free style and Greco-Roman style. Also, there is no difference (in wrestlers in this paper research group) in term of nationality variable, ego and task orientation scores (Toy, 2015). According to Potgieter and Steyn, the task oriented athletes have better psychological resilience than ego oriented athletes in succeed or failure matches (Potgieter and Steyn, 2010).

As a result of this study is statistical positive correlation between the age variable of the wrestlers participating in the research and the level of education, years of experience and nationality. However, negative correlation was found between the age variable and the control sub-dimension. Statistical positive correlation was found between the task orientation sub-dimension, which is the sub-dimension of the goal orientation, and the sub-dimensions of Mental Toughness, the confidence and continuity sub-dimensions. Statistical positive correlation was found between the ego orientation sub-dimension and the confidence sub-dimension. Statistical positive correlation was found between the confidence sub-dimension and the continuity sub-dimension. Statistical positive correlation was found between the continuity sub-dimension and the control sub-dimension.

So, results of this paper show that wrestlers who are younger have high control scores. It shows that younger wrestlers are worried about unexpected or uncontrolled situations. In other words the confidence of task-oriented wrestlers has increased and they have high expectations that they can overcome long-term hard situations.

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Are Mobile Applications Effective on Preventing Urinary Incontinence and Reducing Urinary Incontinence Symptoms?: A Review

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Abstract

Urinary incontinence (UI) is a condition which frequently occurs among the adult women and emerges as a typical symptom of pelvic floor disorders. Kegel exercise is an effective method for the treatment of urinary incontinence by strengthening the pelvic floor muscles. On the other hand, failure to maintain continuity with exercise is a major problem. New approaches are needed to solve this problem. Today, with the increasing use of mobile technology, the use of mobile health applications has increased. Mobile applications which are being more popular can be an effective treatment option for teaching these exercises to the patients. There are many mobile applications developed in this field, but there is not enough study on the effects of these mobile applications on health. The purpose of this paper is to evaluate the effects of mobile applications involving pelvic floor exercise on the prevention and treatment of urinary incontinence by examining evidence-based research. Recent evidence-based studies have shown that mobile applications of urinary incontinence reduce symptoms, make pelvic floor exercise continue, improve quality of life, speed up healing process, increase self-management and effectiveness in treating patients, and provide convenience access to care. These results suggest that the use of mobile apps of Kegel exercise may be recommended to the patients suffering from urinary incontinence.

Keywords: Kegel Exercise, Mobile Application, Pelvic Floor Muscle Training, Urinary Incontinence

Introduction

Urinary incontinence (UI) is a condition which frequently occurs among the adult women and emerges as a typical symptom of pelvic floor disorders (Bo et al., 2017). In a review to determine UI prevalence, it was concluded that the prevalence of UI ranges from 5% to 70%. Prevalence rates increase with getting older and more than 40% of the female population is affected in women those who are older than 70 years-old (Milsom & Gyhagen, 2019). In a study conducted in our country, it was found that the prevalence of urinary incontinence was %14.6 (Çayan et al., 2016).

In their systematic review by Radzimińska et al. (2018) was demonstrated that pelvic floor exercise is an effective treatment for urinary incontinence in women. Pelvic floor exercise is an effective treatment option for women with stress urinary incontinence used without the need for surgical treatment. It can also be recommended as a first-line preventive treatment for older women. Pelvic floor exercise should be performed for at least 6 weeks to be effective; therefore, continuity of treatment is essential to success (Radzimińska et al., 2018). On the other hand, lack of continuity of exercise is an important problem. There are differences between continuity of short-term treatment (kegel exercise during incontinence treatment in the health care facility) and continuity of long-term treatment (self-kegel exercise after completion of treatment). Clinicians estimate that only 23% of patients keep to treatment for a long time. The most common problems in providing continuity in treatment are the difficulty of remembering the exercise and lacking of time (Borello-France et al., 2010).

In “Digital in 2019” internet, mobile phone and social media usage statistics report, there are 5.11 billion mobile phone users in the world and this constitutes 67% of the world population. 77% of mobile phone users are smartphone users (“DIGITAL 2019: GLOBAL INTERNET USE ACCELERATES,” 2019). The use of mobile health has positive characteristics such as increasing commitment to treatment and also reducing health expenditures (Hamine, Gerth-guyette, Faulx, Green, & Sarah, 2015). Mobile applications which are being more popular can be an effective treatment option for teaching these exercises to the patients. (Han, Grisales, & Sridhar, 2017). There are many mobile applications developed in this subject. These mobile applications vary by many parameters. (Latorre, de Fraga, Seleme, Mueller, & Berghmans, 2019). Although eHealth is a promising and developing technology, urogynecology applications have not been adequately tested or differences between usual care and those applications have not been investigated. In addition, there are not enough studies related to the utiliser's experiences and preferences (Loohuis et al., 2018).

In a study compared adherence in the treatment of Kegel exercise, mobile applications were shown to be more effective than by using written material (Araujo, Marques, & Juliato, 2019). More than half of the women who use a mobile application that includes Kegel exercise think that mobile applications are an effective and successful treatment option in the treatment of urinary incontinence. At the same time, its providing weight control, increasing adherence to the treatment and making the patients gain self-management were defined as the factors affecting the success of mobile applications (Nyström, Asklund, Sjöström, Stenlund, & Samuelsson, 2017). It was shown in the studies that mobile applications reduce the severity of symptoms and therefore they increase the women’s life qualities (Asklund et al., 2016; Hoffman, Söderström, & Samuelsson, 2017). Because of all these reasons, mobile applications for kegel exercise can be among the alternative treatment methods that can be used in clinical practice (Saboia et al., 2019). Pregnancy and giving a birth are known as important risk factors causing the perineum and pelvic floor weaken and get injured (Leroy, Lúcio, & Lopes, 2016). For this reason, mobile applications can be used as a supportive

therapy not only for elderly women, but also for women who have postpartum urinary incontinence problems (Saboia et al., 2019). Studies on the health effects of mobile applications is not enough. There is a need for more researches regards to effects of these practices on health. The purpose of this review is to evaluate the effects of mobile applications including pelvic floor exercise in the prevention and treatment of urinary incontinence.

The Effect of Mobile Applications for Pelvic Floor Exercise on Urinary Incontinence

There are few evidence-based studies examining the effect of mobile applications for pelvic floor exercise on urinary incontinence. These studies and their findings are summarized below:

In a randomized controlled study conducted by Arauja et al. (2019), the effects of mobile application prepared to ensure patients' continuity to pelvic floor exercise were evaluated on urinary symptoms. 33 women (intervention group: 17, control group: 16) diagnosed with UI were included in the study. The same pelvic floor muscle exercise program was applied to both intervention and control groups. The exercise program applied, consisted of 8 seconds retention / 8 seconds relaxation, 3 times in a row, repeated 8 times. This application was repeated 2 times a day for 3 months. These exercises were applied to the initiative group via mobile application. In this mobile application, an electromyography image is provided to match the application of the pelvic floor exercise without a vaginal probe and it has a reminder that reminds the exercise application twice a day. When the intervention group heard the ringtone, which is the reminder of the application, they made the exercise program. The control group was given printed material and asked to apply the same exercise protocol twice a day at any time of the day. The results were evaluated using pelvic floor muscle examination, The International Consultation on Incontinence Questionnaire: ICIQ, electromyography. The women were examined again at the first appointment and then in the 1st, 2nd and 3rd months. As a result of this study; It has been concluded that this application, which includes pelvic floor exercise, increases the compliance of patients to home exercise program compared to written material. At the same time, it was found that women using the application exercised more than those who received written material and decreased incontinence symptoms (Araujo et al., 2019).

The effect of mobile application in the treatment of women with stress urinary incontinence was evaluated in a randomized controlled study conducted by Asklund et al. (2016). 123 women diagnosed with stress urinary incontinence (intervention group: 62, control group: 61) were participated in the study. Women in the intervention group used the mobile application Tät® 2 times a day for 3 months, which includes information about pelvic floor training, stress urinary incontinence and lifestyle advice prepared by experts. Women in the control group did not receive any intervention and their treatment was delayed for 3 months. The International Incontinence Questionnaire (Urinary Incontinence Short Form: ICIQ-UI SF) was used to evaluate the urinary system symptoms, and the Urinary System Symptoms Quality of Life Questionnaire (ICIQ: Lower Urinary Tract Symptoms Quality of Life) was used to evaluate the situation-specific quality of life. Compared to women in the control group, it was concluded that women in the intervention group had fewer symptoms, improved quality of life, healed faster, had less frequent weekly urinary incontinence, and used less pads (Asklund et al., 2016).

In the randomized controlled study conducted by Hoffman et al. (2017) as a continuation of the study of Asklund et al. (2016), the long-term effects of the 2-year use of mobile application for pelvic floor exercise in women with stress urinary incontinence were

evaluated. In the previous study, 46 of the 62 women in the intervention group continued to use the same practice for two years. 61 women were included in the control group. The exercise program, which is included in the mobile application (Tät®), consists of 8 seconds of retention / 8 seconds of relaxation, 3 times in a row, repeated 8 times. This practice was repeated 3 times a day for 2 years. The research was completed with 46 women in the intervention group and 60 women in the control group. The International Incontinence Questionnaire (Urinary Incontinence Short Form: ICIQ-UI SF) was used to evaluate the results and the Lower Urinary Tract Symptoms Quality of Life (ICIQ: Lower Urinary Tract Symptoms Quality of Life) was used to evaluate the situation-specific quality of life. This mobile application, which was prepared for the treatment of stress urinary incontinence at the end of this study, was observed to decrease the severity of symptoms and increase the quality of life at 2-year follow-up (Hoffman, Söderström, & Samuelsson, 2017).

Other studies for mobile applications involving pelvic floor exercise in recent years are summarized below:

Latorre et al. (2018) conducted a systematic review to figure out mobile applications and introduce a mobile application called iPelvis. In this systematic review study, Pubmed, Embase, CINAHL, LILACS, PEDro, and Scielo search engines were scanned. Of the applications, prepared for pelvic floor training, 12 variables were determined to create the most suitable mobile application. In the examination, 61 Android and 16 Apple mobile applications were examined and it was found that none of these applications had 12 variables. iPelvis application is prepared according to these 12 variables. The examined variables; identification of the relevant bladder and pelvic problem, micturition diary, case-specific questionnaires, pelvic floor training protocol, educational steps arranged according to the patient's needs, a funny character that stimulates the patient's positive attitude considering the age, condition and ethnic group, recommended, adequate and effective behavioural therapy protocol (eg. recommendations regarding drinking), empathic verbal and visual instructions for optimum use of pelvic floor exercises, especially for the early stages of pelvic floor exercise; an effective feedback protocol to instruct the patient to find and feel the contraction and relaxation of the pelvic floor muscle remind the patient through notifications constantly to continue and encourage the application. As a result of this review study, although there are many mobile applications in pelvic floor exercise, it was emphasized that no application is evidence-based and has deficiencies. As the developed iPelvis application contains a evidence-based approach, it has been concluded that it will provide ease of access and care as a primary care service (Latorre et al., 2019).

Nyström et al. (2017) examined the factors associated with the success of the mobile application Tät® for pelvic floor exercise used in the treatment of stress incontinence. This study was conducted with 61 women who experienced stress incontinence problems at least once a week and who used the mobile application called Tät® for 3 months. In addition to being the main theme of pelvic floor exercise, Tät®'s mobile application contains information about stress incontinence, lifestyle advice, a reminder that reminds them to do a pelvic floor exercise and it has statistical usage rates of the individual. In this study, 56% of women thought that the mobile application was successful in treatment. It has been emphasized that providing weight control, increasing the commitment to treatment and gaining self-management to patients play an important role in the success of the application (Nyström et al., 2017).

In the qualitative study of Asklund et al. (2019); the experiences of women using mobile applications for stress urinary incontinence were investigated. This qualitative study was

conducted with 15 women selected among women using mobile applications in the study of Asklund et al. (2016). Interviews were made with these women by telephone conversations using a semi-structured interview guide. As a result of this study, women using mobile applications reported that the mobile application provided their management in treatment. At the same time, women stated that implementation is a useful, easily accessible, time-saving, inexpensive, new and modern tool. On the other hand, some women stated that they experienced insecurity about whether they were practicing correctly (Asklund, Samuelsson, Hamberg, Umefjord, & Sjöström, 2019).

Conclusion

In conclusion, evidence-based studies in recent years have shown that mobile applications for urinary incontinence reduce symptoms of incontinence, improve quality of life, heal faster recovery, decrease the frequency of weekly urinary incontinence and are effective in maintaining pelvic floor exercise. These results show that the use of mobile applications for kegel exercise can be recommended to patients with urinary incontinence. Continuing treatment is an important issue in pelvic floor exercise and mobile applications can play an active role in the developing technology world in terms of being effective in reducing therapy as well as reducing symptoms. Further evidence-based studies are needed for the effectiveness of mobile applications.

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