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Investigation of the Relationship between Character Structures and Mental Toughness of High School and University Students Doing Fencing Sports*

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Ethical Statement: It is declared that scientific and ethical principles have been followed while carrying out and writing this study and that all the sources used have been properly cited.

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Abstract

Investıgatıon of The Relatıonshıp Between Character Structures and Mental Toughness of Hıgh School and Unıversıty Students Doıng Fencıng Sports. The aim of the research is to examine the relationship between character structures and mental toughness of high school and university students doing fencing sports. Survey model, one of the quantitative research methods, has been used in the study. The sample of the research consisted of 286 active licensed fencing athletes who have competing in the classifications of the Turkish Fencing Federation and studying at high schools and university. Athletes were selected from the population by random sampling method. As a data collection tool in the study Personal Information Form, Sport Character Scale (SCS) and Sport Mental Toughness Questionnaire (SMTQ) has been used. In the data analysis, independent group t-test, one-way analysis of variance (ANOVA) test, Tukey HSD multiple comparison test, Pearson Product-Moment Correlation Coefficient test have been applied. As a result of the research; average of sports character scores of high school and university athletes; gender, age, education level, branch and nationality status variables have found to be significantly different. It has been specified that there wasn't significant difference in the fencing experience period variable. Mental toughness score averages in sports; gender, age, education level, branch, fencing experience period, nationality status have found to be significantly different. It has been determined that there is a low and moderate positive and significant relationship in some sub-dimensions of the Sports Character Scale and Sport Mental Toughness Questionnaire.

Keywords: Fencing, character, mental toughness, high school, university

Özet

Eskrim Sporu Yapan Lise ve Üniversite Öğrencilerinin Karakter Yapıları ile Zihinsel Dayanıklılıkları Arasındaki İlişkinin İncelenmesi

Araştırmanın amacı, eskrim sporu yapan lise ve üniversite öğrencilerinin karakter yapıları ile zihinsel dayanıklılıkları arasındaki ilişkinin incelenmesidir. Araştırmada nicel araştırma yöntemlerinden tarama modeli kullanılmıştır. Araştırmanın örneklemini Türkiye Eskrim Federasyonu klasmanlarında mücadele eden, lise ve üniversitede öğrenim gören faal lisanslı 286 eskrim sporcusu oluşturmuştur. Sporcular evrenden tesadüfi örnekleme yöntemiyle seçilmiştir. Araştırmada veri toplama aracı olarak Kişisel Bilgi Formu, Spor Karakter Ölçeği

(SKÖ) ve Sporda Zihinsel Dayanıklılık Envanteri (SZDE) kullanılmıştır. Verilerin analizinde, bağımsız grup t testi, tek yönlü varyans analizi (ANOVA) testi, Tukey HSD çoklu karşılaştırma testi, Pearson Momentler Çarpım Korelasyon testi uygulanmıştır. Araştırmanın sonucunda; eskrim sporcularının spor karakter puan ortalamaları; cinsiyet, yaş, eğitim durumu, branş ve millîlik durumu değişkenlerinde anlamlı farklılığa rastlanırken, eskrim deneyim süresi değişkeninde anlamlı bir farklılık olmadığı saptanmıştır. Sporda zihinsel dayanıklılık puan ortalamaları; cinsiyet, yaş, eğitim durumu, branş, eskrim deneyim süresi ve millîlik durumu değişkenlerinde anlamlı farklılık tespit edilmiştir. Spor Karakter Ölçeği ile Sporda Zihinsel Dayanıklılık Envanterinin bazı alt boyutlarında düşük ve orta düzeyde pozitif yönlü anlamlı bir ilişki olduğu belirlenmiştir.

Anahtar Kelimeler: Eskrim, karakter, zihinsel dayanıklılık, lise, üniversite

INTRODUCTION

Fencing sport B.C. it dates from the 1190s to the present day. In this process, the sport of fencing was taught to knights for use in war from the games that took place in order to celebrate the victories won in the early days, and then gradually took its modern form today (6).

Character is the behavior of individuals that makes them different from other people, which is unique to a person (24). Character is an important factor in sports branches as well as affecting people's behavior in the social environment. The concept of mental endurance shows the attitudes and behaviors that people have shown in the face of the difficulties they have faced in their lives (27). These two concepts significantly affect the attitudes and behaviors of individuals in the social environment. In sports branches, although it highlights the achievements that individuals have made, in fencing sports it becomes even more important that athletes should be alone when they wear the mask, and they should anticipate the moves they make against each other and apply counter-moves.

It has been emphasized in studies that the personality factor has a great importance in the environment where exercise and sports exist (9, 29). When the effect of the concept of physical education and sports on personality was investigated, it was stated that physical education was effective on character education and sports provided development in terms of socio-cultural characteristics (9). For many years, "Does sports develop character?" question has been the subject of examination, and it has been stated that sports are not only effective in physical but also in socio-cultural and character development of individuals (26). Although the concept of mental resilience is given with different perspectives and different definitions, it has been seen that most of the definitions are not based on any theory and are generally associated as a result of visual results (1). In mental resilience, the psychological discomfort that people may face can pose a significant risk, but it can also be considered as a good result (17).

In this context, the aim of the research is to examine the relationship between the character structures and mental toughness of high school and university students who play fencing, and as a result, to reveal the importance of character and mental toughness in fencing and therefore in athletes.

METHOD

Research Model

In this study, the survey model, which is one of the quantitative research methods, was evaluated and the relational survey model, one of the general survey models, was used. Relational survey models are models that determine the presence or degree of change between two or more variables (4).

Population and Sample

The research population consists of active licensed athletes who took part in the Turkish Fencing Federation classifications in 2020. According to the information provided by the Turkish Fencing Federation, the number of athletes who actively participated in competitions at the high school and university levels in the classifications on the dates of the study was reported as 616. The research sample consisted of 286 fencing

athletes selected by random sampling method from the population. This number represents approximately half of the population.

Data Collection Tools

In the research, the "Personal Information Form", "Sport Character Scale" and "Sport Mental Toughness Questionnaire" have been used.

Personal Information Form

The personal information form included questions about the gender, age, educational status, branch of fencing sports, duration of fencing attendance, whether they are national athletes.

Sport Character Scale

In the research, the Sport Character Scale (SCS), developed by Jang (13) and adapted to Turkish by Görgüt and Tuncel (7), was used to measure the character structures of fencing athletes. The Sport Character Scale consists of five sub-dimensions and 27 items. Confirmatory factor analysis was applied to the 5-point likert type scale and found that the fit indices for the five sub-dimensions (X2/df= 3.97, GFI= 0.88, AGFI= 0.86, CFI= 0.97, NNFI= 0.96, NFI = 0.95, IFI= 0.97, RFI= 0.95, RMR= 0.05, SRMR= 0.05, RMSEA= 0.06) were perfect and it has been determined that it is at an acceptable level of compliance. For reliability, two semi-reliability methods were used.

Sport Mental Toughness Questionnaire

In order to measure the mental endurance of fencing athletes, the Sport Mental Toughness Questionnaire developed by Sheard et al. (21) and adapted to Turkish by Altıntaş and Koruç Bayar (2) was used. The scale consists of 3 sub-dimensions and 14 items. According to the confirmatory factor analysis results of the 4-point likert type scale, it was found that the compliance indices (X2/df= 1.98, GFI= 0.90, CFI= 0.91, IFI= 0.91, TLI= 0.88, RMR= 0.04, SRMR= 0.07, RMSEA=0.07) showed good compliance values.

Data Collection Process

The scales were applied by the researcher to 286 fencing athletes who participated in the Stars U17, Junior and Senior Epee-Foil-Sabre Turkey Championships held in Ankara between 16-24 November 2020, in line with the permission obtained by the Turkish Fencing Federation Presidency on 06.10.2020. The scales were applied face to face to the athletes on a voluntary basis. The ethics committee approval of the study was approved by the Necmettin Erbakan University Social and Human Sciences Scientific Research Ethics Committee with its decision dated 13.11.2020 and numbered 2020/82.

Analysis of Data

SPSS 16.0 statistical package program was used in the analysis of the data. The normality distribution of the data was evaluated with the interval of Kurtosis and Skewness coefficients, it was determined that the values did not exceed +1.5 and -1.5 values, and therefore the data showed a normal distribution (23). Independent group t test was used for binary cluster comparisons, One-Way Analysis of Variance (ANOVA) was used for comparisons of more than two clusters. Tukey multiple comparison test was applied to determine the source of significant differences. Pearson Product-Moment Correlation Coefficient was used to determine whether there is a significant relationship between the score averages of the Sport Character Scale and the Sport Mental Toughness Questionnaire sub-dimensions of the participants participating in the study. The significance level was taken as 0.05 in the research.

RESULTS

In this section, the findings obtained as a result of the analysis of the data collected from the participants through data collection tools and comments on the findings are given.

Within the scope of this research, the reliability coefficient of the Sport Character Scale and the Sport Mental Toughness Questionnaire were calculated separately. It is 0.82 for the Sport Character Scale, 0.81 for the "Honesty" sub-dimension, 0.78 for the "Anti-social" sub-dimension, 0.76 for the "Compassion" sub-dimension, 0.78 for the "Sportsmanship" sub-dimension, and 0.84 for the "Justice" sub-dimension. It is 0.77 for the Sport Mental Toughness Questionnaire, 0.81 for the "Confidence" sub-dimension, 0.71 for the "Control" sub-dimension, and 0.74 for the "Continuity" sub-dimension.

The normality distribution of the data was evaluated with the interval of Kurtosis and Skewness coefficients, it was determined that the values did not exceed +1.5 and -1.5 values, and therefore the data showed a normal distribution (16).

Table 1. Numerical Distribution of Personal Information Belonging to Athletes

Variable	Group	f	%
Gender	Male	164	57,3
	Female	122	42,7
	Total	**286**	**100,0**
Age	14-15	100	35,0
	16-17	80	28,0
	18 years and over	106	37,1
	Total	**286**	**100,0**
Education Status	High School Level	189	66,1
	University Level	97	33,9
	Total	**286**	**100,0**
Category	Epee	103	36,0
	Foil	98	34,3
	Sabre	85	29,7
	Total	**286**	**100,0**
The Duration of Continued Fencing	1-5 years	144	50,3
	6 years and over	142	49,7
	Total	**286**	**100,0**
National Athlete	Yes	107	37,4
	No	179	62,6
	Total	**286**	**100,0**

Table 2. The Average Scores of the Sub-dimensions of the Sport Character Scale according to the Gender Variable of the Athletes t test Results

	Gender	N	Mean±SD	t	df	p
Honesty	Man	164	4,499±0,475	0,827	284	0,417
	Woman	122	4,543±0,422			
Anti-Social	Man	164	4,484±0,735	2,715	284	**0,010***
	Woman	122	4,691±0,557			
Compassion	Man	164	4,435±0,553	1,232	284	0,228
	Woman	122	4,510±0,486			
Sportsmanship	Man	164	4,762±0,398	1,114	284	0,284
	Woman	122	4,702±0,512			
Justice	Man	164	4,569±0,551	0,091	284	0,929
	Woman	122	4,562±0,606			
P<0.05						

When Table 2 was examined, a statistical difference was found in favor of female athletes in the anti-social sub-dimension of athletes in terms of gender variable ($F(286) = 4.691$; $p<0.05$), while there was no statistically significant difference between participants in all other sub-dimensions.

Table 3. The average score of the sub-dimensions of the Sports Character Scale according to the age variable of the athletes Anova and Tukey test results

	Age	N	Mean±SD	t	df	p	Tukey
Honesty	A 14-15	100	4,416±0,545	4,356	2 283 285	**0,014***	A<C
	B 16-17	80	4,541±0,388				
	C 18 years and over	106	4,597±0,383				
Anti-Social	A 14-15	100	4,608±0,610	0,746	2 283 285	0,475	
	B 16-17	80	4,612±0,634				
	C 18 years and over	106	4,509±0,752				
Compassion	A 14-15	100	4,360±0,634	3,446	2 283 285	**0,033***	A<C
	B 16-17	80	4,497±0,452				
	C 18 years and over	106	4,545±0,447				
Sportsmanship	A 14-15	100	4,713±0,469	1,347	2 283 285	0,262	
	B 16-17	80	4,691±0,516				
	C 18 years and over	106	4,792±0,372				
Justice	A 14-15	100	4,466±0,606	5,336	2 283 285	**0,005***	A<C B<C
	B 16-17	80	4,504±0,658				
	C 18 years and over	106	4,707±0,435				
P<0.05							

When Table 3 was examined, there was no statistically significant difference in the anti-social and sportsmanship sub-dimensions from the Sport Character Scale sub-dimensions according to the age variable of the athletes, while, it was determined that the statistical averages of the scores in favor of the participants aged 18 and over in the honesty and compassion sub-dimensions significantly diference between the participants aged 14-15 and the participants aged 18 and over [Honesty= (F(286) =4,356; p<0.05), Compassion= (F(286) =3,446; p<0.05)]. In the justice sub-dimension, a statistically significant difference was found in favor of participants aged 18 and over (F(286) =5.336; p<0.05) with all other age groups.

Table 4. The score of the sub-dimensions of the Sports Character Scale according to the educational status variable of the athletes average t test results

	Education Status	N	Mean±SD	t	df	p
Honesty	High School Level	189	4,486±0,449	1,669	284	0,099
	University Level	97	4,580±0,456			
Anti-Social	High School Level	189	4,611±0,583	1,368	284	0,172
	University Level	97	4,496±0,816			
Compassion	High School Level	189	4,433±0,536	1,546	284	0,123
	University Level	97	4,534±0,501			
Sportsmanship	High School Level	189	4,705±0,487	1,790	284	0,103
	University Level	97	4,797±0,365			
Justice	High School Level	189	4,492±0,621	3,461	284	**0,002***
	University Level	97	4,711±0,437			
P<0.05						

When Table 4 was examined, a statistical difference was found in favor of athletes with undergraduate education level in the justice sub-dimension of the Sports Character Scale in terms of the educational status variable of athletes (F(286) =3.461; p<0.05), in all other sub-dimensions, there was no statistically significant difference between the participants

Table 5. The average scores of the sub-dimensions of the Sports Character Scale according to the branch variable of the athletes in fencing sport are Anova and Tukey test results

	Category	N	Mean±SD	t	df	p	Tukey
Honesty	A Epee	103	4,516±0,477	2,950	2 283 285	0,054	
	B Foil	98	4,443±0,454				
	C Sabre	85	4,605±0,408				
Anti-Social	A Epee	103	4,495±0,769	3,178	2 283 285	**0,043***	A<C B<C
	B Foil	98	4,522±0,715				
	C Sabre	85	4,724±0,436				
Compassion	A Epee	103	4,415±1,521	4,708	2 283 285	**0,010***	A<C B<C
	B Foil	98	4,396±1,532				
	C Sabre	85	4,611±1,500				
Sportsmanship	A Epee	103	4,792±0,390	6,268	2 283 285	**0,002***	B<A B<C
	B Foil	98	4,608±0,568				
	C Sabre	85	4,815±0,323				
Justice	A Epee	103	4,598±0,522	5,252	2 283 285	**0,006***	B<C
	B Foil	98	4,425±0,641				
	C Sabre	85	4,690±0,521				
P<0.05							

When Table 5 is examined, it shows that there is no statistically significant difference in the honesty sub-dimension of the Sport Character Scale in terms of the branch variable of athletes in fencing sports, while the statistical averages differed significantly in favor of athletes in the sabre branch in the anti-social and compassion sub-dimensions [Anti-social= (F(286) =3,178; p<0.05), Compassion= (F(286) =4,708; p<0.05)] it is determined. In the sportsmanship sub-dimension, it was found that the average scores of athletes in the foil branch differed at a statistically significant level in favor of athletes in the other two branches (F(286) =6.268; p<0.05). In the justice sub-dimension, the average scores of athletes in the foil and sabre branches were in favor of athletes in the sabre branch (F(286) = 5.252; p<0.05) it was determined that it differed at a statistically significant level.

Table 6. The average scores of the sub-dimensions of the Sports Character Scale according to the fencing experience duration variable of the athletes t test results.

	The Duration of Continued Fencing	N	Mean±SD	t	df	p
Honesty	1-5 years	144	4,448±0,626	0,230	284	0,847
	6 years and over	142	4,471±0,453			
Anti-Social	1-5 years	144	4,527±0,696	0,811	284	0,466
	6 years and over	142	4,625±0,581			
Compassion	1-5 years	144	4,348±0,626	0,682	284	0,530
	6 years and over	142	4,424±0,546			
Sportsmanship	1-5 years	144	4,656±0,489	0,050	284	0,961
	6 years and over	142	4,651±0,517			
Justice	1-5 years	144	4,555±0,531	0,603	284	0,579
	6 years and over	142	4,489±0,617			
P<0.05						

When Table 6 was examined, there was no statistically significant difference in all sub-dimensions of the Sport Character Scale in terms of the athletes' fencing experience duration variable.

Table 7. The average score of the sub-dimensions of the Sports Character Scale according to the nationality status variable of the athletes t test results

	National Athlete	N	Mean±SD	t	df	p
Honesty	Yes	107	4,602±0,382	2,613	284	**0,014***
	No	179	4,467±0,484			
Anti-Social	Yes	107	4,534±0,723	0,741	284	0,473
	No	179	4,595±0,,641			
Compassion	Yes	107	4,557±0,478	2,336	284	**0,025***
	No	179	4,413±0,546			
Sportsmanship	Yes	107	4,834±0,311	3,239	284	**0,004***
	No	179	4,677±0,508			
Justice	Yes	107	4,663±0,454	2,411	284	**0,027***
	No	179	4,508±0,629			
P<0.05						

When Table 7 was examined, there was no statistically significant difference in the anti-social sub-dimension of the Sport Character Scale in terms of the nationality status variable of athletes; in other sub-dimensions [Honesty= (F(286) =2,613; p<0,05), Compassion= (F(286) =2,336; p<0,05), Sportsmanship= (F(286) =3,239; p<0,05), Justice= (F(286) =2,411; p<0,05)], a statistical difference was found in favor of athletes who are national.

Table 8. The average scores of the sub-dimensions of the Sport Mental Toughess Questionnaire according to the gender variable of the athletes t test results

	Gender	N	Mean±SD	t	df	p
Confidence	Male	164	3,192±0,587	4,296	284	**0,000***
	Female	122	2,905±0,534			
Continuity	Male	164	3,327±0,499	0,489	284	0,627
	Female	122	3,299±0,479			
Control	Male	164	2,262±0,711	3,390	284	**0,001***
	Female	122	1,998±0,613			
P<0.05						

When Table 8 was examined, there was a statistically significant difference in favor of male athletes in the confidence and control sub-dimension of the Sport Mental Toughness Questionnaire in terms of the gender variable of athletes [Confidence= (F(286) =4,296; p<0,05), Control= (F(286) =3,390; p<0,05)], while no statistically significant difference was found between participants in the continuity sub-dimension.

Table 9. The average scores of the Sport Mental Toughess Questionnaire sub-dimensions according to the age variable of the athletes Anova and Tukey test results

	Age	N	Mean±SD	t	df	p	Tukey
Confidence	A 14-15	100	2,941±0,517	4,433	2 283 285	**0,013***	A<C
	B 16-17	80	3,085±0,601				
	C 18 years and over	106	3,179±0,605				
Continuity	A Epee	100	3,282±0,430	0,379	2 283 285	0,685	
	B Foil	80	3,343±0,474				
	C Sabre	106	3,325±0,554				
Control	A Epee	100	2,192±0,640	0,715	2 283 285	0,490	
	B Foil	80	2,178±0,712				
	C Sabre	106	2,087±0,690				
P<0.05							

When Table 9 was examined, no statistically significant difference was found in the continuity and control sub-dimension of the Sport Mental Toughness Questionnaire according to the age variable of the athletes, in

the confidence sub-dimension, it was determined that the mean scores of the participants aged 18 and over and those aged 14-15 differed significantly in favor of the participants aged 18 and over (F(286) =4.433; p<0.05).

Table 10. Score averages of Sport Mental Toughess Questionnaire sub-dimensions according to the educational status variable of athletes t test results

	Education Status	N	Mean±SD	t	df	p
Confidence	High School Level	189	3,007±0,562	2,576	284	**0,013***
	University Level	97	2,192±0,603			
Continuity	High School Level	189	3,305±0,450	0,481	284	0,655
	University Level	97	3,335±0,562			
Control	High School Level	189	2,165±0,661	0,551	284	0,592
	University Level	97	2,118±0,715			
P<0.05						

When Table 10 was examined, a statistically significant difference was found in favor of athletes with a high school education level in the Sport Mental Toughness Questionnaire confidence sub-dimension in terms of the educational status variable of athletes (F(286) =2,576; p<0,05), while there was no statistically significant difference between participants in the continuity and control sub-dimensions.

Table 11 Average scores of Sport Mental Toughess Questionnaire sub-dimensions according to the branch variable of athletes in fencing sport Anova and Tukey test results

	Category	N	Mean±SD	t	df	p	Tukey
Confidence	A Epee	103	2,954±0,554	16,297	2 283 285	**0,000***	A<C B<C
	B Foil	98	2,942±0,495				
	C Sabre	85	3,356±0,610				
Continuity	A Epee	103	3,291±0,459	9,724	2 283 285	**0,000***	A<C B<C
	B Foil	98	3,186±0,476				
	C Sabre	85	3,494±0,495				
Control	A Epee	103	2,021±0,532	12,543	2 283 285	**0,000***	A<C B<C
	B Foil	98	2,025±0,620				
	C Sabre	85	2,447±0,806				
P<0.05							

When Table 11 was examined, a statistically significant difference was found in the confidence, continuity and control sub-dimensions of the Sport Mental Toughness Questionnaire in terms of the branch variable of the athletes. It has been determined that the statistical score averages of the participants in the sabre branch differ significantly in all sub-dimensions [Confidence= (F(286)=16,297; p<0,05), Continuity= (F(286)= 9,724; p<0,05), Control= (F(286)= 12,543; p<0,05)].

Table 12 Average scores of Sport Mental Toughess Questionnaire sub-dimensions according the duration of continued fencing variable of athletes t test results

	The Duration of Continued Fencing	N	Mean±SD	t	df	p
Confidence	1-5 years	144	2,978±0,570	2,720	284	**0,007***
	6 years and over	142	3,163±0,580			
Continuity	1-5 years	144	3,298±0,466	0,588	284	0,557
	6 years and over	142	3,332±0,514			
Control	1-5 years	144	2,232±0,681	2,097	284	**0,037***
	6 years and over	142	2,065±0,669			
P<0.05						

When Table 12 was examined, a statistically significant difference was found in favor of participants with a duration of experience of 6 years and over in the Sport Mental Toughness Questionnaire confidence sub-dimension in terms of the fencing experience duration variable of athletes (F(286) =2,720; p<0,05), while a statistically significant difference was determined in favor of participants with a duration of experience of 1-5 years in the control sub-dimension. A statistically significant difference was determined in favor of participants with a duration of experience of 1-5 years (F(286) =2,097; p<0,05). In the continuity sub-dimension, there was no statistically significant difference between the participants according to the fencing experience duration variable.

Table 13. Average scores of Sport Mental Toughess Questionnaire sub-dimensions according to the nationality status variable of athletes t test results

	National Athlete	N	Mean±SD	t	df	p
Confidence	Yes	107	3,261±0,549	4,494	284	**0,000***
	No	179	2,955±0,571			
Continuity	Yes	107	3,357±0,502	1,118	284	0,270
	No	179	3,290±0,482			
Control	Yes	107	2,128±0,639	0,413	284	0,687
	No	179	2,162±0,703			
P<0.05						

When Table 13 was examined, a statistically significant difference was found in favor of national athletes in the Sport Mental Toughness Questionnaire confidence sub-dimension in terms of the athletes' nationality status variable (F(286) =4,494; p<0,05), while there was no statistically significant difference between participants in the continuity and control sub-dimensions.

Table 14. Pearson Product-Moment Correlation Coefficient Results for Determining the Relationship between Athletes' Sport Character Scale and Sport Mental Thoughness Questionnaire Sub-dimensions Mean Scores

			Honesty	Anti-Social	Compassion	Sportsmanship	Justice
Sport Mental Toughness Questionnaire	**Confidence**	**r**	**0,313****	0,045	**0,188****	**0,232****	**0,228****
		p	0,000	0,446	0,001	0,000	0,000
	Continuity	**r**	**0,345****	0,257	**0,240****	**0,217****	**0,173****
		p	0,000	0,275	0,000	0,000	0,003
	Control	**r**	0,009	0,026	-0,058	0,063	0,045
		p	0,886	0,659	0,329	0,287	0,453
	Total	**N**	**286**	**286**	**286**	**286**	**286**

****P<0,01**

When Table 14 was examined, Pearson Product-Moment Correlation Coefficient results were performed to determine the relationship between the Sport Character Scale of athletes and the score averages of the Sport Mental Toughness Questionnaire sub-dimensions. A significant relationship was found between the honesty sub-dimension of the Sport Mental Toughness Questionnaire and the honesty sub-dimension of the Sports Character Scale in a decently positive direction, and between the honesty sub-dimension and the compassion, sportsmanship and justice sub-dimensions in a decently positive direction. A significant relationship was determined between the continuity sub-dimension of the Sport Mental Toughness Questionnaire and the honesty sub-dimension of the Sport Character Scale in a decently positive direction, and between the continuity sub-dimension and the compassion, sportsmanship and justice sub-dimensions in a decently positive direction. In the control sub-dimension of the Sport Mental Toughness Questionnaire, a statistically significant relationship was not found in any of the sub-dimensions of the Sport Character Scale.

DISCUSSION AND CONCLUSION

According to the results in Table 2, it can be said that the reason why women's antisocial behavior is higher than men's is that women who have grown up in a patriarchal society have always had to prove themselves, they have a more ambitious structure, and therefore they are more antisocial than male athletes, because they try to prove themselves more. Özlü (19), Yıldız and Özmaden (33), İmamlı and Ünver (12) and Yazıcı (30) reached similar results in their research. Mouratidou, Goutza & Chatzopoulos (18) concluded that there was no significant difference between male and female in terms of character development.

Contrary to the research results, Kavussanu and Roberts (15) determined that men's self-centered approaches are higher than women in sports, Kavussanu, Stamp, Slade, and Ring (16) determined that men exhibit more anti-social behavior than women in football. Öztürk (20), Gürpınar and Kurşun (8), and Yıldız and Özmaden (33) found that women exhibit more positive behaviors than men in sports.

As regards the results in Table 3, it can be interpreted as that increasing the age, maturation and sports experience of fencing athletes has a positive effect on honesty, compassion and justice scores. İmamlı & Ünver (12), Kaplan and Akyüz (14) and Öztürk (20) reached similar results in their research.

Nevertheless Yıldız (32) and Yıldız and Özmaden (33) reached conclusions contrary to the research results in their studies.

In proportion to the results in Table 4, it can be said that the reason why athletes with a high school level education level have a lower justice sub-dimension compared to athletes with a bachelor's level education level is because high school level athletes are younger in age than undergraduate level athletes and do not fully understand the concept of justice. Yazıcı (30), Özlü (19), Yıldız (32) and Öztürk (20) reached similar results in their research.

In comparison with the results in Table 5, it shows that there are various differences in terms of sports character in epe, foil and sabre branches in fencing branch. However, it can be said that the sports character may not show great differences between sports branches. Sinulingga et al. (22) in their research, in which they examined the sports characters of athletics, taekwondo, wrestling, volleyball and football athletes, they concluded that there is no difference between the branches in terms of sports character.

In reference to the results in Table 6, it has been observed that the honesty and compassion dimensions of the lower dimensions of the scale are positively affected and increase as the experience time of athletes increases. It is thought that this situation may be related to the athletes' experiences gained in training and competitions. İlhan et al. (11), Kaplan and Akyüz (14), Yıldız (32) and Yazıcı (30) reached similar results in their research.

In compliance with the results in Table 7, it can be said that national athletes who get the chance to compete in many domestic and international competitions have more competition experience than non-national athletes, and the sub-dimensions of honesty, compassion, sportsmanship, anti-social and justice are positively affected depending on their long-term spending in national team camps and the mental and physical training they have received during this time. Yazıcı (30) and Özlü (19) reached similar results in their research.

In accordance with the results in Table 8, it can be said that the responsibility given to boys from a young age in patriarchal societies is greater than that of girls, and the fact that men's feelings of confidence and control are more developed due to the freer upbringing of boys' children causes the confidence and control sub-dimensions of the Sport Mental Toughness Questionnaire to be higher than women's. Farrokhi et al. (5) they determined that the mental endurance of men is higher than that of women.

Contrary to the research results, Bülbül (3) found that the psychological endurance of female athletes is better compared to male.

In regard to the results in Table 9, athletes aged 14-15 compete in the U17 class, while athletes aged 18 and over compete in the seniors class. The fact that the athletes competing in the senior class have more competition experience and the more extensive training they receive has enabled them to dominate the fencing branch more. It is believed that this condition causes the confidence sub-dimension of the mental endurance sub-

dimensions to be higher in athletes aged 18 and older than in athletes aged 14-15. Yıldız (31) and İlhan (10) reached similar results in their research. Uçar and Kaplan (28) Bülbül (3) and Tekkurşun Demir and Türkeli (25) reached results contrary to their research results.

According to the results in Table 10, depending on the increase in education level and age, it is expected that the confidence of individuals will also increase. However, as a result of the research, it can be interpreted that the high school level athletes' sense of confidence is higher than undergraduate level athletes, high school athletes have developed a much higher sense of self-confidence than expected through sports, despite being in adolescence. While there is no study in the literature that supports the research results, Yıldız (31) and Uçar and Kaplan (28) reached results contrary to the research results.

Considering the results in Table 11, it can be interpreted as the fact that there are more achievements in the sabre branch compared to other branches, which causes the athletes of the sabre branch to have higher average scores in the sub-dimension of confidence, continuity and control. There have not been any studies that have similarities with the study or that have obtained opposite results.

As regards the results in Table 12, it can be interpreted that athletes with a lot of experience master the subtleties of sports and their confidence levels are higher because they know how to cope with the challenges they face. The reason why control levels are high in athletes with fencing experience between 1-5 years can be said to be due to the fact that their knowledge and skills are not developed much compared to athletes with fencing experience of 6 years and over, and they behave more controllably during the competition due to their low competition experience. Yıldız (31) and İlhan (10) reached results contrary to their research results.

In proportion to the results in Table 13, since the achievements of national athletes, the time they spend on sports, the training they have received in national team camps and as a result of these trainings, they consider themselves to have sufficient knowledge and skills in sports, it can be interpreted that their confidence levels are higher than non-national athletes. Contrary to the research results, Yıldız (31) found that there is no significant difference in the mental endurance levels of professional and non-professional athletes.

In comparison with the results in Table 14, it is believed that the reason why there is a positive relationship between confidence, which is the sub-dimension of the Sport Mental Toughness Questionnaire, and honesty, compassion, sportsmanship and justice from the sub-dimensions of the Sport Character Scale, is directly proportional to the increase in the athlete's self-confidence. Continuity, which is the sub-dimension of the Sport Mental Toughness Questionnaire, can be interpreted as positively affecting the honesty, compassion, sportsmanship and justice behaviors of an athlete who fights without giving up under all conditions and difficulties, from the sub-dimensions of the Sport Character Scale.

SUGGESTIONS

In the research, it has been seen that there is a linear relationship between the duration of athletes' experience in sports and their character traits in sports. For this reason, orientation, promotion and incentive studies can be carried out for the development of character traits in the sport of fencing.

It has been observed that the mental endurance characteristics of athletes in the sabre branch are higher compared to other branches. According to the investigation of the reason for this and the results obtained, the training programs necessary for the mental endurance of athletes in the epe and foil branches can be applied.

It has been observed that the sports character traits and mental endurance characteristics of national athletes are in a positive direction. According to the results obtained by investigating the differences between the mental endurance of elite fencing athletes with international achievements and national athletes in Turkey, it can be ensured that positive characteristics are applied decently to fencing athletes in Turkey and that the achievements of Turkish fencing in international competitions are increased.

It should be investigated whether the positive effect of the sports character traits and mental endurance characteristics of national athletes is due to the training they received at the national team camps, and if it is due to the national team camps, fencing coaches can be provided with training to increase these characteristics of athletes.

It can be investigated whether the character traits and the mental endurance characteristics of athletes have an effect on success.

REFERENCES

1. Ahern N, Kiehl E, Lou Sole M, Byers J. A review of instruments measuring resilience. Issues in Comprehensive Pediatric Nursing, 2006; 29(2): 103-125.

2. Altıntaş A, Koruç Bayar P. Sporda zihinsel dayanıklılık envanteri'nin psikometrik özelliklerinin incelenmesi. Spor Bilimleri Dergisi, 2015; 27(4): 162-171.

3. Bülbül A. Tenis ve basketbol sporcularının psikolojik dayanıklılık seviyelerini incelemesi ve karşılaştırılması. (Yüksek Lisans Tezi). İstanbul: Gedik Üniversitesi Sağlık Bilimleri Enstitüsü, 2015.

4. Büyüköztürk Ş, Çakmak EK, Akgün ÖE, Karadeniz Ş, Demirel F. Bilimsel araştırma yöntemleri. Ankara: Pegem Akademi Yayıncılık, 2017.

5. Farrokhi A, Kashani V, Motasharei E. Comparison of mental toughness of contact and non-contact men and women athletes in different skill levels. Motor Behavior (Research on Sport Science), 2011; 3(8): 71-86.

6. FIE (International Fencing Federation). Eskrimin tarihçesi. http://fie.org/fie/history, (Erişim Tarihi: 08.01.2021), 2021.

7. Görgüt İ, Tuncel S. Spor karakter ölçeğinin Türkçeye uyarlanması. Spormetre Beden Eğitimi ve Spor Bilimleri Dergisi, 2017; 15(3): 149-156.

8. Gürpınar B, Kurşun S. Basketbolcuların ve futbolcuların sportmenlik yönelimleri. Akdeniz İnsani Bilimler Dergisi, 2013; 3(1): 171-176.

9. Honeybourne J, Hill M, Moors H. Advanced PE and sport. United Kingdom: Nelson Thornes, 2004.

10. İlhan A. Tenis oyuncularının zihinsel dayanıklılık düzeyleri. Journal of Global Sport and Education Research, 2020; 3(2): 28-35.

11. İlhan A, Göktepe B, Ergün K. Tenisçilerin spor karakterleri ve özgüven duygularının incelenmesi. Uluslararası Egzersiz Psikolojisi Dergisi, 2021; 3(2): 79-84.

12. İmamlı H, Ünver G. Spor karakterinin demografik nitelikler açısından incelenmesi. Akdeniz Spor Bilimleri Dergisi, 2018; 1(1): 36-49.

13. Jang CY. Development and validation of the sport character scale. (Doctorate Thesis). USA: The University of Utah, 2013.

14. Kaplan E, Akyüz O. Futbolcuların başarı hedefleri ve spor karakterleri arasındaki ilişkinin incelenmesi. Uluslararası Egzersiz Psikolojisi Dergisi, 2020; 2(2): 82-90.

15. Kavussanu M, Roberts GC. Moral functioning in sport: An achievement goal perspective. Journal of Sport and Exercise Psychology, 2001; 8(3): 37-54.

16. Kavussanu M, Stamp R, Slade G, Ring C. Observed Prosocial and Antisocial Behaviours in Male and Female Soccer Players. Journal of Applied Sport Psychology, 2009; 21(1): 62-76.

17. Masten A, Reed M. Resilience in development. CR. Synder, SJ. Lopez (Eds.). In: The Oxford Handbook of Positive Psychology, USA: Oxford University Press, p. 74-88, 2002.

18. Mouratidou K, Goutza S, Chatzopoulos D. Physical education and moral development: An intervention programme to promote moral reasoning through physical education in high school students. European Physical Education Review, 2007; 13(1): 41-56.

19. Özlü C. 15-18 Yaş aralığındaki sporcuların karakter düzeylerinin incelenmesi. (Yüksek Lisans Tezi). Eskişehir: Anadolu Üniversitesi Sağlık Bilimleri Enstitüsü, 2020.

20. Öztürk AV. Vücut geliştirme ve bilek güreşi müsabık sporcularının sportif ahlaki yaklaşımları ile karakterlerinin incelenmesi. (Yüksek Lisans Tezi). Antalya: Akdeniz Üniversitesi Sağlık Bilimleri Enstitüsü, 2018.

21. Sheard M, Golby J, Van Wersch A. Progress towards construct validation of the sports mental toughness questionnaire (SMTQ). European Journal of Psychological Assessment, 2009; 25: 186-193.

22. Sinulingga A, Hardinoto N, Karo-Karo AAP. Differences in character of competitive sports athletes. Advances in Health Sciences Research, 2019; 23: 21-23.

23. Tabachnick BG, Fidell LS. Using multivariate statistics. Boston: Allyn and Bacon, 2013.

24. TDK (Türk Dil Kurumu). http://www.tdk.gov.tr/ (Erişim Tarihi: 08.01.2021), 2021.

25. Tekkurşun Demir G, Türkeli A. Spor bilimleri fakültesi öğrencilerinin egzersiz bağımlılığı ve zihinsel dayanıklılık düzeylerinin incelenmesi. Aksaray Üniversitesi Spor Bilimleri Araştırmaları Dergisi, 2019; 4(1): 10-24.

26. Theodoulides A, Armour K. Personal, social and moral development through team games: Some critical questions. European Physical Education Review, 2001; 7(1): 5-23.

27. Tusaie K, Dyer J. Resilience: A historical review of the construct. Holistic Nursing Practice, 2004; 18(1): 3-10.

28. Uçar M, Kaplan T. Konya amatör lig futbolcularında zihinsel dayanıklılığın incelenmesi. Beden Eğitimi ve Spor Bilimleri Dergisi, 2020; 14(2): 145-157.

29. Weinberg R, Gould D. Foundations of sport and exercise psychology. USA: Human Kinetics, 2010.

30. Yazıcı FÖ. Sporcu karakterinin sportmenlik davranışları rekabetçi agresiflik ve öfke ile ilişkisi. (Doktora Tezi). Samsun: Ondokuz Mayıs Üniversitesi Lisansüstü Eğitim Enstitüsü, 2021.

31. Yıldız AB. Sporcularda zihinsel dayanıklılık ve öz yeterlik düzeyleri arasındaki ilişkinin incelenmesi. (Yüksek Lisans Tezi). Ankara: Yıldırım Beyazıt Üniversitesi Sağlık Bilimleri Enstitüsü, 2017.

32. Yıldız Y. Bireysel ve takım sporcularının sportif karakterlerinin ve zekâ boyutlarının sportif başarı motivasyonları üzerine etkisinin incelenmesi. (Doktora Tezi). Muğla: Muğla Sıtkı Koçman Üniversitesi Sağlık Bilimleri Enstitüsü, 2019.

33. Yıldız Y, Özmaden M. Spor yapan üniversite öğrencilerinin sportif karakter durumlarının çeşitli değişkenler açısından değerlendirilmesi. Journal of Human Sciences, 2019; 16(4): 1197-1206.