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Investigation of perceived stress and attention deficit and hyperactivity disorder in shooters according to some variables

Zekiye ÖZKAN[1], Gülçin GÜLER[2], Sanem ŞEHRİBANOĞLU[3]

[1]Van Yüzüncü Yıl University, School of Physical Education and Sports, Van, Turkiye
[2]Eskisehir Technical University, Faculty of Sport Sciences, Eskisehir, Turkiye
[3]Van Yüzüncü Yıl University, Faculty of Economics and Administrative Sciences, Van, Turkiye

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Abstract

Attention, focus and concentration are vital components of shooting. Therefore, Attention Deficit Disorder and Hyperactivity Disorder (ADHD) as well as perceived stress are among the factors that significantly affect an athlete's performance. This study aims to examine the cases of ADHD and PS in shooters and the correlation between these two variables. The study was conducted with 200 shooters. The ASRS was administered to measure ADHD of the participants and the PSS was used to measure their PS levels. Mann-Whitney U test, Spearman correlation, and Structural Equation Modeling (SEM) analyzes were performed. The findings of study revealed the ASRS and PSS total and sub-dimension scores of the shooters were found to be low. According to gender results, the ASRS and PSS scores of female athletes were significantly higher than those of males ($p < .05$). Also, it was found a positive and significant correlation between the total scores of ASRS and PSS of the shooters ($r_{spearman} = 0.47$, $p < 0.00$). According to the SEM results, ADHD has a positive effect of 0.66 on PS. In conclusion, it is believed that shooting sports positively affect ADHD and PS by minimizing their symptoms since they require high levels of attention, also, it would be beneficial to direct individuals with ADHD to sports that require focus, such as shooting.

Keywords: Attention-deficit/hyperactivity disorder (ADHD), shooting sport, stress, structural equation model (SEM)

Atıcılarda stres algısı ile dikkat eksikliği ve hiperaktivite bozukluğunun bazı değişkenlere göre araştırılması

Öz

Atıcılık sporunda dikkat, odaklanma ve konsantrasyon oldukça önemlidir. Dikkat eksikliği ve hiperaktivite bozukluğu (DEHB) ve algılanan stres (AS) sporcunun başarısını etkileyen faktörlerdendir. Bu çalışmada, atıcılarda DEHB ile AS durumlarının araştırılması ve bunların birbirleriyle ilişkisinin incelenmesi amaçlanmıştır. Çalışma, Türkiye Atıcılık ve Avcılık Federasyonu bünyesinde aktif olarak faaliyet gösteren farklı branşlardaki 200 atıcı ile gerçekleştirilmiştir. Çalışmada katılımcıların dikkat eksikliği ve hiperaktivite bozukluğunu ölçmek için Erişkin Dikkat Eksikliği ve Hiperaktivite Bozukluğu Kendi Bildirim Ölçeği (ASRS) ve stres algılarını ölçmek için AS ölçekleri kullanılmıştır. Verilerin analizinde, Mann-Whitney U testi, Spearmann Korelasyon ve Yapısal Eşitlik Modeli (YEM) analizleri yapılmıştır. Çalışmadan elde edilen bulgular değerlendirildiğinde, atıcıların ASRS ve AS toplam ve alt boyut puanları düşük bulunmuştur. Cinsiyet faktörü incelendiğinde ise, kadın sporcuların ASRS ve AS puanlarının erkek sporculardan daha yüksek olduğu görülmüştür ($p<0,05$). Araştırmaya katılan atıcıların ASRS ve AS toplam puanları arasında orta düzeyde pozitif ve anlamlı bir ilişki bulunmuştur ($r = 0,47$, $p<0,00$). YEM sonuçlarına göre DEHB'in AS üzerinde 0,66'lık bir pozitif etkisi olduğu tespit edilmiştir. Sonuç olarak, atıcılık sporunun oldukça yüksek dikkat gerektiren bir branş olması sebebiyle dikkat eksikliği ve hiperaktivite bozukluğunu ve algılanan stresi olumlu yönde etkilediği ve DEHB'li bireylerin atıcılık gibi odaklanma gerektiren sporlara yönlendirilmesinin faydalı olacağı düşünülmektedir.

Anahtar Kelimeler: *Atıcılık, dikkat eksikliği ve hiperaktivite bozukluğu (DEHB), stres, yapısal eşitlik modeli (YEM)*

Sorumlu Yazar/ Corresponded Author: Gülçin GÜLER **E-posta/ e-mail:** gguler@eskisehir.edu.tr
The Extended Turkish Abstract is located the end of the Article.

INTRODUCTION

There are many factors affecting performance in sports, which in turn inevitably achievements of athletes during sports events and activities. It is vital for athletes to focus on the game and keep their stress level under control so that they can display a successful performance. Therefore, attention deficit, hyperactivity disorder and stress play an important role in the achievements and failures.

According to DSM-V diagnosis criteria, attention deficit and hyperactivity disorder (ADHD) is a neurodevelopmental disease (APA, 2013) that do not conform to the specific standards determined for a specific age. The most common problems faced by people suffering from this disease are hyperactivity, restlessness and an accompanied failure to focus one's attention for a long time on certain tasks and situations (Abalı, 2015). ADHD is the most common psychiatric (Yde Ohki et al., 2020) and developmental disorder (King et al., 1998; Yde Ohki et al., 2020) among children and adolescents. Among the symptoms of the disease are impulsivity, lack of attention and hyperactivity (King et al., 1998). Almost % 5-10 of children and at least %3-5 of adults encounter various problems caused by ADHD disease. Furthermore, the reaction of a person with ADHD to a stressful situation may be exaggerated and even cannot be tolerated by other individuals (Wender & Tomb, 2017). Stress is defined as a physical, mental or emotional demand that has the potential to disrupt body balance (Bali, 2015). In addition, it is about challenging and forcing physical and mental limits of an organism. The mechanism of a living organism to trigger a reaction chain in order to protect itself in the event of a threat or problem is often observed in the form of a 'fight or flight" response when it encounters a dangerous situation (Baltaş & Baltaş, 1999). Stress is an unavoidable part of life. It is about one's failure to cope with a threat which results in a series of reactions and adaptations (Kofoworola & Alayode, 2012). Stress causes psychological problems and consequences leading to changes that might have short and long-term effects in the body in terms of health issues (Taylor, 2015). Individuals with ADHD face some problems due to their increased sensitivity to environmental and mental stress factors, which could also increase their chronic stress in daily life (Raz & Leykin, 2015). Perceived stress (PS) refers to one's emotions or thoughts regarding the extent to which he or she is stressful at a certain time or period of time. It is known that perceived stress involves emotions regarding the following issues: the uncontrollable and unforeseeable nature of life; how often one has to deal with challenging problems; the changes in one's life; and one's confidence in his ability to cope with problems and challenges (Anbumalar et al., 2017). Stress can affect an athlete's performance, and how

he or she reacts to a stressful situation, and the way he or she manages this stressful situation might positively and negatively affect his stress level (Singh, 2017).

ADHD is quite common today, and many people with ADHD take part in sports activities at different levels (White et al., 2014). In a review study (Han et al., 2019), it was shown that the percentage of athletes with ADHD might be %7 or 8. Many sports branches require the presence of both superior physical talents and cognitive skills such as attention, perception, working memory and decision making (Tan et al., 2019). Some negative situations experienced by individuals with ADHD such as lack of focus and concentration, an argumentative attitude, frustration, low self-esteem, and labile mood, could affect their athletic performances (White et al., 2014). Likewise, undiagnosed and/or untreated ADHD might lead to high levels of stress, depressive mood and anxiety (Alexander & Harrison, 2013). However, participation in sports could decrease the prevalence and frequency of ADHD symptoms, and psychosocial interventions might be as effective as medications in coping with ADHD (Han et al., 2019). Therefore, participation in sports affects not only the physical development of individuals suffering from ADHD, but also their social, cognitive and emotional development (Ekman et al., 2021). Kaufman et al., (2011) stated that gymnastics reduced the symptoms of ADHD and Rakei et al. (2021) pointed out that childhood ADHD could be controlled owing to sport participation.

Shooting is a sport that is represented by 15 disciplines in Olympic Games. The shooting competitions are generally represented by three categories, such as pistol, rifle and shotgun. This static sports branch requires high levels of precision (Mon-López et al., 2022) and mental skills (Coleman, 1980) as well as physiological, psychological and technical skills and effective attention and concentration. Self-paced sports do not normally require athletes to make too much mental effort in terms of decision making and strategy development (Jackson & Baker, 2001); however, the ability to control attention processes is essential in closed-skill performances (Boutcher & Crews, 1987). In the literature, the correlation between ADHD and stress and depression (Harrison et al., 2013; Rychik et al., 2021), perceived stress and ADHD symptomatology in French university students (Salla et al., 2019), PS and ADHD symptoms in adults (Combs et al., 2015), were existed. As well as ADHD and PS have a significant impact on people's daily lives and success, they also affect not only performance but also athletes' behaviour (etc. anger management, anxiety) in sports. Therefore, it is important to investigate ADHD and PS in athletes. Although shooting is a sport branch in which high levels of attention, concentration skills and stress management are crucial, no study has been found that focuses

on this issue. To the best of our knowledge, this is the first study that investigated ADHD and PS in shooters. In the present study, it was aimed to examine ADHD and PS in shooters and the correlation between these two.

METHOD

The number of active licensed athletes affiliated with the shooting federation and participating in the competitions is not known exactly. However, the number of athletes participating in the Turkish Championship held in the relevant year was determined as 800. Shooters were selected using the random sampling method.

The present study is a quantitative study and was carried out according to the survey model principles. Survey models are applied to the entire universe consisting of more than one element or to a sample group selected from this particular population in order to make objective judgments (Karasar, 2011).

Participants

The participants of the study consist of 200 licensed shooters (pistol, rifle and shotgun) with different skill levels (elite, intermediate and novice) in Turkish Shooting and Hunting Federation. For data collection purposes, the World Health Organization *Adult Attention Deficit Hyperactivity Disorder Self-report Scale* and *Perceived Stress Scale* (PSS) were administered to the voluntary participants via Google Docs as an electronic survey. 106 (%53) of the participants were female and 94 (%47) male. 44 (%22) shooters did not have any medals while 141 shooters (%70.5) had national and 15 shooters (%7.5) international medalists. 121 participants (%60.5) are graduates of an undergraduate program while 79 (%39.5) are not. The necessary permissions for the study were granted from the Turkish Shooting and Hunting Federation and the Van Yuzuncu Yil University Social Sciences and Humanities Ethics Committee.

Data collection

ASRS was adapted to Turkish by Doğan et al., (2009) and validity and reliability studies were conducted accordingly by the same researchers. This 18-item scale is composed of two 9-item subscales; namely “attention deficit” and “hyperactivity/impulsivity”. The items aim to determine how often certain symptoms have been experienced by participants in the last six months.

The perceived stress scale was developed by Cohen et al., (1983), the scale was adapted to Turkish by Eskin et al., (2013) and its validity and reliability studies were conducted. This

14-item scale was designed to measure to what extent a specific situation in the life of a person is perceived as stressful. The PSS-14 scores range between 0 and 56. In addition, the scale evaluates this specific situation under two dimensions as well: perceived incompetence/self-competence and perceived stress/discomfort.

Statistical analyses

The present study used SPSS software to obtain descriptive statistics of demographic information about the participants. Kolmogorov-Smirnov test was used for normality of the variables. The Mann-Whitney U test was employed for binary comparisons and the Spearmann correlation tests for correlations. Finally, SEM analysis was done by using LISREL software to examine the interactions between ASRS and PSS.

Structural equation modelling (SEM)

SEM, which is a statistical modeling technique, is a comprehensive statistical approach aiming to examine the cause-effect relationship between observed variables and manifest variables (Şehrïbanoğlu et al., 2022) and to test hypotheses through latent variables (Hoyle, 1995). Latent variables in SEM generally refer to hypothetical structures or factors that cannot be directly observed (Kline, 2015).

Before the analysis, the reliability of the variables and the internal consistency of the items were tested. The hypothesis of the study is presented below.

H1: There is a positive correlation between Attention-deficit/hyperactivity disorder (ADHD) and perceived stress. To test this hypothesis, SEM analysis was performed using maximum likelihood method, and goodness of fit indexes were calculated accordingly.

RESULTS

Table 1. ASRS and PSS total and dimension-based scores

Groups	N	M ± SD	Groups	M ± SD
ASRS Total	200	21.83 ± 9.76	PSS Total	25.33 ± 8.22
Hyperactivity/Impulsivity	200	10.88 ± 5.25	Perceived Insufficient Self-competence	11.48 ± 5.21
Attention Deficit	200	10.95 ± 5.66	Perceived Stress/Discomfort	13.85 ± 5.51

The mean of the total ASRS score of the shooters was found to be 21.83, the mean score for "impulsivity" as 10.88 and the mean score for "attention deficit" as 10.95. The mean of total PSS score was 25.33, the mean scores were found to be 11.48 for "incompetence/self-competence" and 13.85 for "stress/discomfort".

Table 2. ASRS Total and Dimension-Based Scores according to gender variable (Mann-Whitney U Testi)

Variables	Group	n	Mean Rank	Sum of Rank	U	P
ASRS	Female	106	111.89	11860.50	3774.50	0.003
	Male	94	87.65	8239.50		
Hyperactivity/Impulsivity	Female	106	111.71	11841.00	3794.00	0.004
	Male	94	87.86	8259.00		
Attention Deficit	Female	106	110.68	11732.50	3902.50	0.008
	Male	94	89.02	8367.50		

Table 2 shows that total ASRS and subdimensions of ASRS are significantly different according to gender variable in favor of men ($p < 0.01$).

Table 3. PSS Total and Dimension-Based Scores according to gender variable (Mann-Whitney U Testi)

Variables	Group	n	Mean Rank	Sum of Rank	U	P
Stress Total	Female	106	111.14	11780.50	3854.50	0.006
	Male	94	88.51	8319.50		
Perceived Insufficient Self-comptence	Female	106	103.82	11005.00	4630.00	0.388
	Male	94	96.76	9095.00		
Perceived Stress/Discomfort	Female	106	114.70	12158.50	3476.50	0.000
	Male	94	84.48	7941.50		

Table 3 shows that the total stress and stress/discomfort dimensions significantly according to gender variable in favor of men ($p < .01$). No significant difference was found for the dimension of stress. According to the correlation results, a positive and significant correlation was found between ASRS and PSS scores of the shooters ($r_{sperman}$= 0.47, p = 0.00).

The World Health Organization (WHO) calculated the KMO coefficient for ASRS as 0.81 and the Barlett sphericity test $\chi 2$ value (Barlett) as 515.50 (p = 0.00). The overall scale explains 61.78% of the total variance, and Cronbach's Alpha (α) value is 0.79. Regarding PSS, the KMO coefficient was calculated as 0.84 and the Barlett test value as 1227.38 (p = 0.00). The overall scale explains 60.24% of total variance, and (α) value is 0.79. When the alpha value is greater than 0.7, the scale is accepted as "reliable" and a KMO value higher than 0.8 means that the data set is suitable for the analyses (Büyüköztürk, 2002).

Table 4. Goodness-of-fit results

Fit indices	$\chi 2$/df	RMSEA	NFI	NNFI	CFI	IFI	GFI	AGFI
Recommended value	≤3	≤0.08	≥0.90	≥0.95	≥0.95	≥0.90	≥0.90	≥0.85
Value in the model	1.93	0.067	0.89	0.95	0.95	0.93	0.90	0.85

Goodness of fit statistics test whether a model matches reality. The goodness of fit values calculated in this study and the recommended values (Schermelleh-Engel et al., 2003) are presented in Table 4. All values are within the acceptable range, which proves the suitability of the research model.

Table 5. Items and loadings

items	loadings	t-value
ASRS		
Q1	0.47	5.57
Q2	0.40	4.89
Q3	0.44	5.21
Q4	0.52	5.96
Q5	0.53	6.06
Q6	0.45	5.34
Q7	0.57	-
Q8	0.65	7.05
Q9	0.43	5.14
Q10	0.53	6.11
Q11	0.57	6.37
Q12	0.59	6.57
Q13	0.61	6.68
Q14	0.49	5.76
Q15	0.46	5.41
Q16	0.49	5.72
Q17	0.59	6.54
Q18	0.40	4.82
PSS		
PSS1	0.77	-
PSS2	0.80	11.04
PSS3	0.73	10.07
PSS7	0.34	4.54
PSS9	0.17	2.42
PSS10	0.16	2.22
PSS11	0.62	8.47
PSS12	0.46	6.13
PSS14	0.65	8.80

Table 5 displays the items and loading results of the factors. The variables used in the study were found to be significant.

Testing of hypothesis - Results of the structural equation model

Table 6. Hypothesized relationships

Hypothesis	Standardized estimates	t value	Conclusion
H1: ADHD → PSS	0.66	6.29 (0.05)	Support

The SEM results, which was done to test the hypothesis, showed that the hypothesis is statistically significant (Table 6). ADHD was also found to have a positive effect of 0.66 on PS.

DISCUSSION AND CONCLUSION

According to the results of the present study, the means of the total ASRS and PSS scores based on dimension and the total scores of the shooters who participated in this study were quite low. Although the maximum ASRS score is 72, the maximum score received in the present study was 47 and the number of participants who got 40 and above was only 9 (%4.5). Similarly, although the maximum score to be received from PSS is 56, the highest score was 50 in the present study and only 8 participants (%4) received a higher score than 40. Considering the

maximum scores obtained from the scale, it could be said that the ADHD and PS of the athletes competing in this sport are at a positive level. The study conducted by Han et al., (2019) reported that %7-8 of athletes might suffer from ADHD. The reason behind these low ASRS and PSS scores could be that this sport branch is relatively calmer and requires a stronger stress control mechanism and concentration as well as precision. In shooting, the athlete could more easily manage time and decision-making mechanisms when compared to other sports branches (athletics, gymnastics, swimming etc.). In other words, the shooter can give up a shot if he thinks that he will get a low score or he can change his position and even leave the stand so as to talk to his coach. Since the athlete must create his own motivation and manage his own concentration without allowing negative external stimulants to decrease his motivation, the control mechanism developed by the athlete himself facilitates the management of his perceived stress and attention deficit.

There are not many studies focusing on the positive effects of ADHD on sports performance. However, Parr, (2011), suggested that hyperactivity/impulsivity positively affects the performance of point guards in basketball and baseball, which require rapid movements and reactive decision-making processes. However; this is just the opposite in shooting, in which focusing is more important. 28 Olympic medal winner American swimmer Michael Phelps, in an interview published in a British Daily Newspaper called Guardian, stated that swimming pools have become a shelter for him after he started swimming and being in the pool always relaxes his mind (Barkham, 2012). Indeed, the related studies in the literature support the idea that physical activities have positive effects in many areas, minimize ADHD and the related symptoms, which proves that ADHD in fact is beneficial for individuals (Gapin et al., 2011). Kaufman et al., (2011) stated that gymnastic sport creates a behavioral therapy effect on ADHD symptoms.

When the PSS scores in the present study are examined in terms of gender variable, it was found that female shooters have a higher mean score than male shooters. This finding is supported by some studies in the literature (Anbumalar et al., 2017; Combs et al., 2015). The evaluation of the ASRS scores in terms of gender variable revealed some results that are similar to those of PSS scores. In other words, the ASRS scores of the female shooters were higher than those of the male ones.

There are different results in the literature on gender status. As a result of the study conducted by Doğan et al., (2009) with university students, similar to our findings, it was

determined that women have higher ADHD scores than men. However, Rychik et al., (2021) found that gender does not significantly differ in ADHD symptoms with college students. According to Nolen-Hoeksema (1990), compared to men, women face many responsibilities in daily life as a result of their social status and roles, and these situations trigger higher stress (cited by Anbumalar et al., 2017). This study was carried out with shooting athletes, which is a specific and not very common sport. It is thought that the findings of the current study may be related to a branch-specific situation. Shooting is a sports branch with a high probability of being successful for athletes who can focus well, isolate themselves from external stimuli that negatively affect performance, and control their stress when compared to athletes who are at similar levels in terms of performance and skill level.

The present study showed a moderate positive correlation between ASRS and PSS total score. In other words, as the ASRS scores increased, PSS scores also increased. This result is in line with the literature. Indeed, Öster et al., (2020) reported a positive correlation between PS symptoms and ADHD and Combs et al., (2015) found a positive correlation between ADHD and PS.

According to SEM results, attention deficit and hyperactivity disorder has a positive effect of 0.66 on perceived stress. Similar studies conducted with different samplings in the literature revealed a positive correlation between ADHD and anxiety and stress (Asghari & Elham, 2019) and a strong correlation between ADHD symptoms and perceived stress (Gbessemehlan et al., 2020). Harrison et al., (2013) found that ASRS scores significantly correlate with depression, anxiety and stress levels and the study conducted by Salla et al., (2019) showed a significant correlation between hyperactivity/impulsivity symptoms and perceived stress. Finally, Rychik et al., (2021) reported that there is no significant difference between ADHD symptoms and dependent stress and depressive symptoms, in the literature, there are similar results to our findings.

In the present study, conducted with shooters, a positive correlation was revealed between ADHD and PS and found that female shooters had higher ASRS and PSS scores than male shooters. Furthermore, it is believed that shooting sport positively affects ADHD and PS when ASRS and PSS scores of the shooters are evaluated. Similarly, ADHD has a positive effect on PS. In conclusion, ADHD and PS should be evaluated in different sport branches as well.

Recommendations

It is clear that the shooting sport requires high concentration and focus. In recent years, the number of researches on ADHD and sports has increased. It is thought that it would be beneficial for individuals or athletes with ADHD in different age groups to be led to sports branches where cognitive processes and focus are at the forefront, such as shooting. It is recommended to investigate why female shooters have higher ASRS and AS scores than men. Finally, ADHD and PS should be evaluated in different sport branches as well.

GENİŞLETİLMİŞ ÖZET

GİRİŞ

Sporda performansı etkileyen birçok faktör vardır. Bu faktörler, spor aktiviteleri sırasında sporcuların yarışma başarısını önemli derecede etkilemektedir. Sporcuların müsabakaya odaklanması, stresi kontrol altında tutabilmesi başarı için kritik öneme sahiptir. Dikkat eksikliği ve hiperaktivite bozukluğu ile stres faktörü performans sporcularının kazanma ve kaybetme durumu için önemli bir etkiye sahiptir. Atıcılık sporunda dikkat, odaklanma ve konsantrasyon oldukça önemlidir. Dikkat eksikliği ve hiperaktivite bozukluğu (DEHB) ve algılanan stres (AS) sporcunun başarısını etkileyen faktörlerdendir.

Atıcılık branşı; yüksek derecede hassasiyet (Mon-López ve ark., 2022), zihinsel beceri (Coleman, 1980) ayrıca fizyolojik, psikolojik ve teknik beceri gerektiren, dikkat ve konsantrasyonun ön planda olduğu statik bir spor branşıdır. Sporcunun kendi temposunu kendisinin ayarladığı (self-paced) sporlarda, sporcuların strateji veya karar vermeleri anlamında çok fazla mental çabaya gerek duyulmaz (Jackson & Baker, 2001), ancak kapalı beceri performansında dikkat süreçlerinin kontrolü önemlidir (Boutcher & Crews, 1987). Bu çalışmada, atıcılarda DEHB ile AS durumlarının araştırılması ve bunların birbirleriyle ilişkisinin incelenmesi amaçlanmıştır.

METHOD

Mevcut çalışma, Türkiye Atıcılık ve Avcılık Federasyonu bünyesinde aktif olarak faaliyet gösteren farklı branşlardaki 200 atıcı ile gerçekleştirilmiştir. Çalışmada katılımcıların dikkat eksikliği ve hiperaktivite bozukluğunu ölçmek için ASRS ve Stres Algılarını ölçmek için AS ölçekleri kullanılmıştır. Verilerin analizinde, Mann-Whitney U testi, Spearmann Korelasyon ve Yapısal Eşitlik Modeli (YEM) analizleri yapılmıştır.

BULGULAR

Çalışmadan elde edilen bulgular değerlendirildiğinde, atıcıların ASRS ve AS toplam ve alt boyut puanları düşük bulunmuştur. ASRS toplam ve alt boyutları cinsiyet değişkeni ile incelendiğinde anlamlı farklılık bulunmuştur ($p<0,05$). Sonuçlar erkek sporcuların lehinedir. Cinsiyet değişkeni AS kapsamında incelendiğinde stres toplam ve stres/rahatsızlık alt boyutunda anlamlı farklılık erkek sporcuların lehinedir ($p<0,05$). Stresin yetersizlik öz yeterlilik alt boyutunda ise anlamlı farklılık tespit edilmemiştir.

Araştırmaya katılan atıcıların ASRS ve AS toplam puanları arasında pozitif ve anlamlı bir ilişki bulunmuştur ($r_{sperman}$= 0,47, p= 0,00). Hipotezi test etmek için uygulanan YEM sonuçlarına bakıldığında, kurulan hipotez istatistiksel olarak anlamlı bulunmuştur. DEHB'in AS üzerinde 0,66'lık bir pozitif etkisi olduğu tespit edilmiştir.

TARTIŞMA VE SONUÇ

Literatürde spor branşlarında DEHB'in performans üzerine olumlu etkilerine yönelik yapılan çok fazla bir çalışma bulunmamaktadır. Ancak, Parr, (2011) hızlı hareketler ve reaktif karar vermeyi içeren basketbol ve beyzbol sporlarındaki oyun kurucu pozisyonlarında bulunan sporcuların hiperaktivite/dürtüselliğinin sporcunun performansını pozitif yönde etkilediğini belirtmiştir. Ancak odaklanmanın ön planda olduğu atıcılık sporunda ise bu durum tam tersinedir. 28 olimpiyat madalyalı, DEHB'li olan en popüler ve başarılı sporculardan olan Michael Phelps, Guardian, the British Daily Newspaper ile olan bir röportajında yüzmeye başladıktan sonra yüzme havuzunun onun için güvenli bir sığınak olduğunu ve havuzda olmanın zihnini rahatlattığını belirtmiştir (Barkham, 2012). Nitekim alanda yapılan araştırmalar da (Gapin ve ark., 2014; Kaufman ve ark., 2011) bu durumu desteklemektedir; fiziksel aktivitelerin bir çok alanda pozitif yönde etkili olduğu, DEHB'i ve bununla ilişkili semptomları azalttığı ve bu nedenle DEHB'li bireyler için faydalı olduğu belirtilmiştir (Gapin ve ark., 2014). Kaufman ve ark. (2011) jimnastik sporcuları ve aileleri ile ilgili yaptıkları çalışmada bu sporun, DEHB septomları üzerinde davranışsal terapi etkisi yaratığını tespit etmişlerdir. Çalışmamızda ASRS toplam puan ile AS toplam puan arasında orta düzeyde pozitif bir korelasyon tespit edilmiştir. Diğer bir deyişle atıcıların ASRS puanları arttıkça AS puanları da artmıştır. Ayrıca, Öster ve ark., (2020) AS belirtileri ile DEHB arasında, Combs ve ark., (2015) ise DEHB ile AS arasında pozitif ilişki olduğunu belirtmiştir.

Sonuç olarak, atıcılık sporunun oldukça yüksek dikkat gerektiren bir branş olması sebebiyle DEHB ve AS'yi olumlu yönde etkilediği düşünülmektedir. Atıcılık branşındaki sporcular ile yaptığımız çalışma sonucunda, DEHB ile AS arasında pozitif yönde bir ilişki tespit edilmiş olup kadın atıcıların ASRS ve PSS puanlarının erkek atıcılardan daha yüksek olduğu bulunmuştur. Ayrıca atıcılık branşındaki sporcularının ASRS ve AS puanları değerlendirildiğinde, atıcılık sporunun DEHB ve AS durumunu olumlu yönde etkilediği düşünülmektedir. DEHB'in AS üzerinde pozitif etkisi olduğu tespit edilmiştir.

Atıcılık sporunun yüksek konsantrasyon ve odaklanma gerektirdiği açıktır. Son yıllarda DEHB ve sporla ilgili araştırmaların sayısı artmıştır. Farklı yaş gruplarındaki DEHB'li bireylerin veya sporcuların atıcılık gibi bilişsel süreçlerin ve odaklanmanın ön planda olduğu spor dallarına yönlendirilmesinin faydalı olacağı düşünülmektedir. Sonuç olarak farklı spor branşlarında DEHB ve AS' nin değerlendirilmesi önerilmektedir.

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KATKI ORANI ***CONTRIBUTION RATE***	**AÇIKLAMA** ***EXPLANATION***	**KATKIDA BULUNANLAR** ***CONTRIBUTORS***
Fikir ve Kavramsal Örgü *Idea or Notion*	Araştırma hipotezini veya fikrini oluşturmak *Form the research hypothesis or idea*	Zekiye ÖZKAN Gülçin GÜLER
Tasarım *Design*	Yöntem ve araştırma desenini tasarlamak *To design the method and research design.*	Zekiye ÖZKAN Gülçin GÜLER
Literatür Tarama *Literature Review*	Çalışma için gerekli literatürü taramak *Review the literature required for the study*	Zekiye ÖZKAN Gülçin GÜLER
Veri Toplama ve İşleme *Data Collecting and Processing*	Verileri toplamak, düzenlemek ve raporlaştırmak *Collecting, organizing and reporting data*	Zekiye ÖZKAN Gülçin GÜLER Sanem ŞEHRİBANOĞLU
Tartışma ve Yorum *Discussion and Commentary*	Elde edilen bulguların değerlendirilmesi *Evaluation of the obtained finding*	Zekiye ÖZKAN Gülçin GÜLER Sanem ŞEHRİBANOĞLU

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