ROL Spor Bilimleri Dergisi / *Journal of ROL Sports Sciences*
Cilt/Volume: 4, Sayı/No: 3, Yıl/Year: 2023, ss. / pp.: 920-932
E-ISSN: 2717-9508
URL: https://roljournal.com/

Investigation of the effect of book reading activity on attention level and reaction time in student athletes

Nuray SATILMIŞ[1], Pelin AVCI[2], Gökmen KILINÇARSLAN[3], Işık BAYRAKTAR[1], Akan BAYRAKDAR[1]

[1]Alanya Alaaddin Keykubat University, Faculty of Sport Sciences, Antalya, Turkiye
[2]Dokuz Eylül Universtiy, Faculty of Necat Hepkon Sport Sciences, İzmir, Turkiye
[3]Bingöl University, Faculty of Sport Sciences, Bingöl, Turkiye

Araştırma Makalesi/*Research Article*		**DOI:** 10.5281/zenodo.7567756
Gönderi Tarihi/*Received:*	Kabul Tarih/*Accepted:*	Online Yayın Tarihi/*Published*:
08.06.2022	10.09.2023	20.09.2023

Abstract

The aim of this study is to investigate the effect of regular book reading activity on attention level and reaction time in student athletes. The study group consists of 33 student athletes, 17 individuals in control group and 16 individuals in experiment group, doing individual or team sports. Experiment group read books for a period of 40 minutes, three times a week. In addition to personal information form, "Visual Attention Test" is applied to volunteers. The data of the research were evaluated in the SPSS program. Differences were observed in reaction time of students who regularly read books and not ($p<0.05$). While no difference was observed in accuracy ratio of student athletes who do not read books, differences were found in student athletes who read ($p<0.05$). While no differences were observed on accuracy ratio of student athletes doing individual sports who do not read books regularly, differences were determined on accuracy ratio of student athletes doing team sports. There were differences on accuracy ratio of student athletes doing individual sports or team sports and who read books regularly. In conclusion, it is determined that students doing individual sports or team sports who read books regularly have better attention levels compared to those who do not read books.

Keywords: Individual sports, book reading activity, reaction time, selective attention, team sports

Sporcularda kitap okuma etkinliğinin dikkat düzeyi ve reaksiyon süresine etkisinin incelenmesi

Öz

Bu çalışmanın amacı spor yapan bireylerde düzenli kitap okuma etkinliğinin dikkat düzeyi ve reaksiyon süresine etkisinin incelenmesidir. 17 kontrol ve 16 deney grubu olmak üzere toplam 33 bireysel ve takım sporları yapan sporcu öğrenci gönüllü olarak çalışmaya dâhil edilmiştir. Deney grubu haftada üç gün 40 dakika kitap okuma etkinliği yapmıştır. Gönüllülere kişisel bilgi formu yanı sıra "Görsel Dikkat Testi" uygulanmıştır. Araştırmanın verileri SPSS programında değerlendirilmiştir. Düzenli kitap okuyan ve okumayan sporcu öğrencilerin reaksiyon süresinde farklılık tespit edilmiştir ($p<0,05$). Doğruluk oranında ise kitap okumayan sporcu öğrencilerde farklılık tespit edilmezken, kitap okuyan sporcu öğrencilerde farklılık bulunmuştur ($p<0,05$). Düzenli kitap okumayan bireysel spor yapan öğrencilerin doğruluk oranında farklılık tespit edilmezken, takım sporu yapan öğrencilerin doğruluk oranında farklılık tespit edilmiştir. Takım ve bireysel spor yapan ve düzenli kitap okuyan sporcu öğrencilerin doğruluk oranında farklılık tespit edilmiştir. Araştırma sonucunda düzenli kitap okuyan hem takım hem de bireysel sporcu öğrencilerin kitap okumayan sporcu öğrencilere göre daha iyi dikkat düzeyleri olduğu sonucuna varılmıştır.

Anahtar Kelimeler: *Bireysel sporlar, kitap okuma etkinliği, reaksiyon süresi, seçici dikkat, takım sporları*

Sorumlu Yazar/Corresponded Author: Akan BAYRAKDAR, **E-posta/e-mail:** akan.bayrakdar@alanya.edu.tr
Genişletilmiş Türkçe Özet, makalenin sonunda yer almaktadır.

INTRODUCTION

Reading is described as an active process for creating new meanings using the information in a text and existing information (Güneş, 2008). On the other hand, understanding is the core of reading in the view of educational perspective (Maine, 2011). Reading develops rapid analysis and rapid analysis results in the enhancement of fast solution finding ability (Zekeriya, 2010). Reading starts with the recognition of symbols and in later stages, symbols emerge into mental concepts and meanings (Balcı, 2009). During reading, directing the energy of mind into a specific subject and focusing the knowledge, emotions and thoughts on that subject signifies the "attention" (Güneş, 2016).

Attention is defined as a matter to which persons can reach with their sense organs; therefore, they become conscious about it, and it is a state in which they can direct their cognitive receivers to a stimulator arising around them (Eyesenck, 2000). The matter of concentration of a person to certain stimulators among various inner or outer stimulators is known as concentration of attention, selective attention, paying attention or just concentration (Cratty, 1984; Harris, 1984). The focus of attention may be lost in case of existence of more than one stimulator around, and the person may have difficulty in paying attention. In this case, the person cannot focus on all stimulators and may have to choose one of them. For example, an athlete serving in volleyball may not be able to focus his attention on the serve due to the loud noise of the supporter. In tennis, on the other hand, since there is no sound when the athlete serves, the athlete can concentrate his attention completely on the serve.

Selectivity is one of the important characteristics of attention. The ability of a person to be able to choose limited number of stimulators in accordance with the order of priority through data processing is defined as attention (Kornhuber, 1984; Fries et al., 2008). Performing sportive activities requires a certain level of attention and concentration (Adsız, 2010). In the literature, it is emphasized that in sports, attention must be paid mainly on target focused, selective and wide spectrum concentration (Afonso, 2012). It is expressed that a person who has a high level of selective attention ability focuses on the matter that interests him/her whereas a person who has a low level of selective attention ability has difficulty on paying attention (Yaycı, 2013). It is possible to talk about selective attention in terms of performance. Athletes are exposed to more than one stimulator during trainings or games; thus, they may have difficulty in focusing on stimulator that interests them. For the performance to reach the targeted level, stimulators must be listed in accordance with their importance, selective attention must be used most effectively, and most important stimulator

must be selected (Boutcher, 2002). In order for the trainers and trainees to be able to reach the targeted level, high level of attention and decision-making abilities are required (Cağlar, 2006). In sports psychology, attention phenomenon is a subject that affects the performance (Güven, 2014) and it is considered as an important performance compound (Gür, 2016; Renk, 2020; İbiş, 2021).

In a study conducted on athlete and sedentary university students, their attention levels and reaction times were compared, and it was reported that attention level and reaction time of athlete students were higher compared to those who are sedentary (Aydın, 2017). Reaction time is a good indicator of decision-making period and its speed; and it is defined as the time passing between the start of stimulator and giving reaction to this stimulator (Çağlar, 2011). In a study that compares professional badminton players and sedentary individuals, it was found that badminton players perceive visual stimulators faster and show reaction faster (Phomsoupha, 2015). In a similar study, attention level of students doing exercise and not doing exercise was compared and it was found that psychomotor speed, selective attention level and concentration performance of students were higher than those who do not do exercise students (Aslan, 2020).

Although attention and reaction time are accepted as factors determining performance in sports, including book reading activity in attention and reaction time training of athletes is important in order it to find a place in practice in sports sciences. In the current study, (i) it was assumed that book reading activity affects the attention level of individuals in a positive way, (ii) book reading activity shortens the reaction time which is one of the performance parameters.

It was found that the effect of book reading activity on concentration ability training is not included in previous studies in the literature and no study was found which investigates the effect of book reading activity on attention level and reaction time. In this study, the aim is to investigate the effect of regular book reading activity of student athletes on attention level and reaction time.

METHOD

Research group

In the current study, 33 voluntary athlete students consisting of 17 individuals in control group and 16 individuals in experiment group, all of whom are students of Sports Sciences Faculty of Alanya Alaaddin Keykubat University and who are involved in individual sports or

team sports are included. The experimental group read the 40-minute book three times a week for 8 weeks.

Data collection tools

In addition to personal information form, "Visual Attention Test" is also used. Age, sports branch (individual or team sports) and whether involved in book reading activity or not were asked in the personal information form. For eight weeks, at least three times of training in different days of a week in their sports branch for satisfying active training criteria was taken as a measure whereas at least 40-minutes of book reading in three different days of a week for complying with regular book reading criteria was taken as a measure. Ethical approval of the study was taken from Bingöl University Ethical Board Commission on March 8th, 2023, with the number E-22315946-604.01.01-100301.

Visual attention test

Test focusing point consists of an arrow sign and colored square shapes. Stimulators are presented with a white background. For constructing colored square shapes, twelve colors (yellow, orange, light green, dark green, black, beige, light pink, dark pink, red, purple, grey, and turquoise) were selected. Arrow sign placed in the middle of the screen directs the participants towards the direction they are supposed to look (to the right or left). Colored squares are presented at equal numbers on the left and right sides consisting of minimum two, maximum eight squares. For the colored squares placed consecutively, either just one color is changed or remained in the same color without any change in the color. For the whole tests, same – different presentations are made equal (Araz, 2021).

Visual work memory (VWM) prepared using colored squares is constructed on the basis of VWM paradigm developed by Vogel and Machizawa (2004). The goal of this task is to measure VWM performance of the participants. Each cycle in the test was started with a focusing point presented for 200 miliseconds (ms) and then with a directing arrow right above it in order for the participants to control in which direction the colored squares change. The arrow sign shows right or left direction. After presenting the focal point and arrow sign, the arrow sign disappeared and on both sides of the focal point, a memory serial consisting of one to four squares are presented for a period of 100 ms. It was asked from the participants to keep the colors of squares pointed by the arrow sign in their memories. After that, a focal point for a period of 900 ms is presented (keeping in memory interval). Finally, another test series is presented to participants. This series consists of, like in the previous memory series, one to four colored squares on both sides of a focal point in the middle of the screen. The

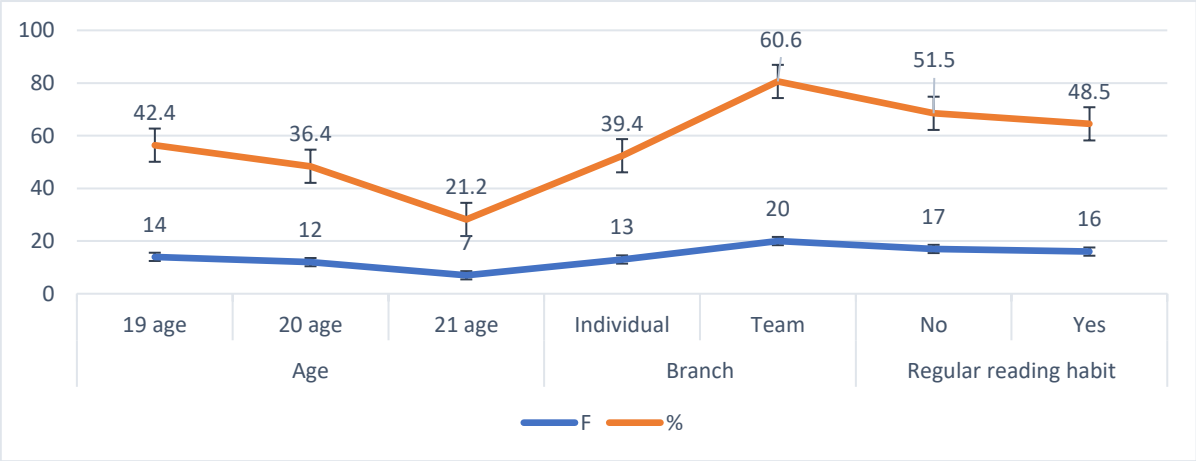
number of squares in test series is equal to the number of squares presented in each memory series. During the whole test, in the fifty percent of the tests, one of the squares has a different color in test series. It was asked from the participants to press "C" button if there is a change and "M" button if there is no change when they determine there is a change in the series. If participants give correct reaction for a color change, the focal point will turn into green for a period of 95 ms whereas if they give wrong reaction, the focal point will turn into red for the same period of time (Yıldırım-Araz, 2021). Stimulator presentations and cycles were created using Open Sesame 3.3.8 software (Mathot et al., 2021). Participants performed this task application on the same PC used for change determining task. The screen was 50 cm away from the participants with a viewing angle of 31.57º to 29.48º and their reactions are measured with computer keyboard. Before the real test, the participants performed a trial test presented in a block consisting of 16 trials and after trial applications, a feedback screen is provided to them showing their reaction times and correctness ratio. After the presentation of this feedback screen, the participants started to real application and they were offered with 160 random tests divided into ten blocks, which consists of 16 trials each. Similar to trial tests, the feedback was provided to participants about the results of the tests. The tests lasted 10 to 15 minutes in total. Visual working memory task is applied first to the half of the participants in the expert and control groups. To the remaining half, the change determining task was applied first; therefore, series effect that might result from the order of task application was controlled.

Statistical analysis

The collected data were analyzed with SPSS 25 statistical software package program and the results were evaluated. Pre-test and post-test distributions of variables according to the groups were investigated. Normality of distributions and homogeneity of variants were determined using Mauchly Sphericity and Levene test. For comparison of inner-group variables according to test results, Paired-Sample T test was used. All the results from tests were expressed as arithmetic mean ± standard deviation (x±ss) and the level of significance was accepted as $p<0.05$.

RESULTS

Data for demographic characteristics of the students participated in the study and the related evaluations are given below.



Graphic 1. Age, branch and regular book reading percentage and frequency analysis of the subjects

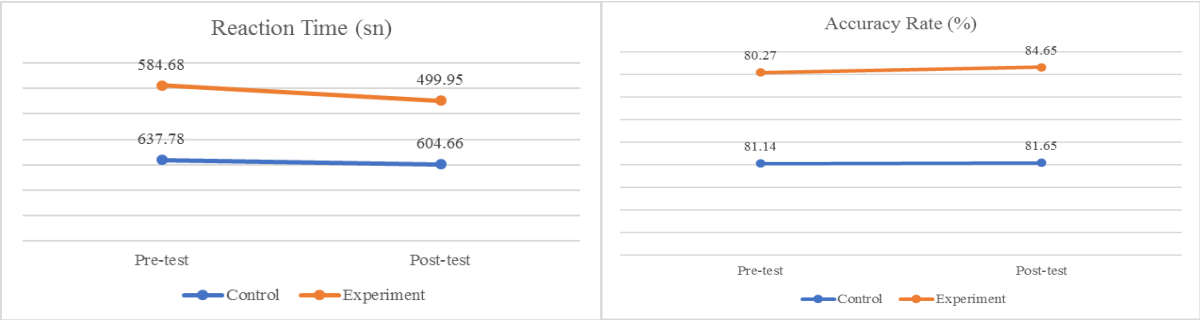
In Graphic 1, percentage and frequency distribution of demographic characteristics of athlete students participated in the study are shown. 42.4% of students (n=19) are at the age of 19, 36.4% (n=12) of the students are at the age of 20 whereas 21.2% (n=7) of the students are at the age of 21. While 39.4% (n=13) of volunteers do individual sports, 60.6% (n=20) play team sports. Students who read books regularly (experiment group) is at a rate of 48.5 % (n=16) while those who do not read books regularly is 51.5% (n=17).

Table 1. Reaction time and accuracy ratio analysis of athlete students who read books regularly and not.

Variables	Groups	N	Pre-test x̄±Sd	Post-test x̄±Sd	Change within Group (%)	t	p
Reaction Time (ms)	Control	17	637.77±117.67	604.66±112.34	33.11 (5.19)	**3.225***	**0.005**
	Test	16	584.68±111.96	499.95±82.20	84.73 (14.49)	**5.345****	**0.000**
Accuracy Ratio (%)	Control	17	81.14±5.96	81.65±5.50	-0.51 (0.62)	0.422	0.679
	Test	16	80.27±6.28	84.65±6.47	-4.38 (5.45)	**6.553****	**0.000**

In Table 1, statistically significant differences were observed between the students who read books regularly and not (control and experiment groups) when compared to their inner-group reaction times. A visible development was observed at a ratio of 5.19% when pre-test and post-test reaction times of control group were compared while this ratio was seen to be 14.49% for experiment group.

In the accuracy ratio comparison, while there were no statistically significant changes for students who do not read books regularly (control group), statistically significant changes were observed at a ratio of 5.45% for students who read books (experiment group) regularly.



Graphic 2. Averages of reaction times and accuracy ratios in accord with reading books.

Table 2. Reaction time and accuracy ratio analysis in accordance with sports type variable.

Groups	Variables	Groups	N	Pre-test x̄±Sd	Post-test x̄±Sd	Inner-group Change (%)	t	p
Control	Reaction Time (ms)	Individual	8	598.47±114.82	565.84±112.67	32.63 (5.45)	-1.329	0.204
		Team	9	672.71±115.06	639.16±106.24	33.55 (4.98)	-1.381	0.188
	Accuracy Rate (%)	Individual	8	84.68±4.82	83.58±6.54	1.1 (1.29)	1.051	0.310
		Team	9	77.98±5.19	79.93±7.64	-1.95 (-2.50)	**2.742***	**0.015**
Experiment	Reaction Time (ms)	Individual	5	559.11±74.72	489.69±64.31	69.42 (12.41)	0.603	0.556
		Team	11	596.30±126.86	504.61±91.68	91.69 (15.37)	0.326	0.749
	Accuracy Rate (%)	Individual	5	82.75±1.36	87.25±2.32	-4.50 (5.43)	**2.668***	**0.034**
		Team	11	79.14±7.35	83.46±7.47	-4.32 (5.45)	**2.792***	**0.021**

*p<0.05

According to the Table 2, no statistically significant differences were observed when pre-test and post-test results are compared in terms of reaction time of students participated in the study who do individual sports or play team sports and who do not read books. Similarly, statistically significant differences were not observed when pre-test and post-test results are compared in terms of accuracy ratio of students participated in the study who do individual sports and who do not read books regularly (control group). However, statistically significant differences were observed when pre-test and post-test results are compared in terms of accuracy ratio of students participated in the study who play team sports and who do not read books regularly (control group).

Statistically significant differences were not observed when pre-test and post-test results are compared in terms of reaction time of students participated in the study who do individual sports or play team sports and who read books regularly (experiment group). On the other hand, statistically significant differences were observed when pre-test and post-test results are compared in terms of accuracy ratio of students participated in the study who do individual sports or play team sports and who read books regularly (experiment group).

DISCUSSION AND CONCLUSION

The key role of reading in the field of education is books. Reading contributes greatly on providing benefit and functionality to individuals. Reading develops the language and

mental abilities and helps to develop new relations with knowledge (Güneş, 2016). Attention is a matter of fact that requires mental ability, and it is one of the factors determining performance at sports. In addition, it is believed that it contributes to reaction time which is one of the performance elements in sports. In this study, the goal is to investigate to effect of regular book reading activity of athletes on attention level and reaction time.

In a study performed by Türkeri et al. (2019), attention and reaction time of individuals who do individual sports or play team sports were compared (age average 13.08±1.36) and they found statistically significant differences in their reaction times. They concluded that reaction time of athletes play team sports is shorter than those who perform individually. They did not see any statistically significant differences in attention level of athletes but total material error values in D2 attention test of athletes who do individual sports are statistically higher than those who play team sports. This difference can be explained with the finding that accuracy ratios of athletes who play team sports are higher than those who do individual sports, and they have better attention levels. Rahimi et al. (2022) studied attention and reaction times of university students who are athletes and who play football and they determined that attention level and reaction time of football players are higher than athletes.

In a study performed by Meng et al. (2019) on volleyball and badminton players, they found that visual attention of volleyball players is better than badminton players. Team players show much faster performance under complex stimulator and high-level attention conditions. It can be said that cognitive levels of team players are more developed, and this affects positively the reaction time performance of players. The results of our research indicate that statistically significant differences are evident for reaction time of both control and experiment groups of students who do individual sports or in a team. Statistically significant differences are also observed for accuracy ratio of control group students who do individual sports and experiment group students who play team sports. Similarities and differences between our study and results of other researchers may be arising from the differences in biological age, sports age and branch differences of athletes included in studies.

Findings of different studies in literature indicate that visual attention is one of the most critical factors affecting reading (Kadesjo et al., 2001; Lai et al., 2014; Sesma et al., 2009; Clair & Gathercole, 2006). Based on this result, it can be said that implementing visual attention is very important for both reading and learning (Kadesjo et al., 2001; Savage et al. 2006). Fluency, particularly at young ages, is strongly associated with the capacity to read

passages and answer questions about them (Lai et al., 2014). There are studies in literature showing that age affects visual attention and reading time in a considerable level. It was shown that visual attention and reading time of adults are in high level compared to children and there is a positive correlation between visual attention and reading time of adults and therefore governing function of attention and reading time increases with age (Wei, 2017). Reading is a subject matter that is realized with the coordination of a series of abilities like capacity, knowledge and strategy (Öztürk, 2013). As the attention gets more mature with age, and as more training is supplied to increase attention, the people's remembering possibility of what they learn increases and as a result, their reading performance, accuracy of their reading and their ability to comprehend what they read develop (Savage et al. 2006). Performing sportive activities requires a certain amount of attention and concentration (Adsız, 2010). Attention is a parameter that affects performance in sports (Güven, 2010).

When reaction time of athlete students are compared in our study, statistically significant differences were determined between the students who read and do not read books regularly. On the other hand, when accuracy ratio is compared, while no statistically significant difference was observed in control group, statistically significant differences were found in the experiment group. This difference can be explained with the fact that accuracy ratio of athlete students who read books is higher than those who do not read; in this respect, they have a higher level of attention ability. It was concluded in this study that attention level of athletes who do individual sports or play team sports who read books regularly is higher than those who do not read. Attention is a matter that requires mental ability, and it is thought that it contributes to reaction time which is one of the performance parameters in sports. We think that more studies should be performed to be able to more precisely measure the effect of reading activity on attention level and reaction time of athletes.

GENİŞLETİLMİŞ ÖZET

GİRİŞ

Okuma, bir metindeki bilgiyi ve var olan bilgiyi kullanarak yeni anlamlar yaratmak için aktif bir süreç olarak tanımlanmaktadır (Güneş, 2008). Öte yandan, anlamak, eğitim perspektifi açısından okumanın özüdür (Maine, 2011). Dikkat, kişilerin duyu organları ile ulaşabilecekleri bir konu olarak tanımlanmakta; bu nedenle, bu konuda bilinçlenirler ve bilişsel alıcılarını etraflarında ortaya çıkan bir uyarıcıya yönlendirebilecekleri bir durumdur (Torun ve ark., 2009; Eyesenck, 2000). Seçicilik, dikkatin önemli özelliklerinden biridir. Bir kişinin veri işleme yoluyla öncelik sırasına göre sınırlı sayıda uyarıcı seçebilmesi dikkat olarak tanımlanmaktadır (Kornhuber, 1984; Fries ve ark., 2008).

Sportif faaliyetlerde bulunmak belli bir düzeyde dikkat ve konsantrasyon gerektirir (Adsız, 2010). Dikkat ve tepki verme süresi sporda performansı belirleyen faktörler olarak kabul edilse de dikkat ve tepki verme süresinde kitap okuma etkinliği de dahil olmak üzere sporcuların eğitimi, spor bilimlerinde pratikte yer bulabilmesi açısından önemlidir. Bu çalışmada (i) kitap okuma etkinliğinin bireylerin dikkat düzeyini olumlu yönde etkilediği, (ii) kitap okuma etkinliğinin performans parametrelerinden biri olan tepki verme süresini kısalttığı varsayılmıştır. Kitap okuma etkinliğinin konsantrasyon yeteneği eğitimi üzerindeki etkisinin literatürde daha önceki çalışmalarda yer almadığı ve kitap okuma etkinliğinin dikkat düzeyi ve tepki verme süresi üzerindeki etkisini araştıran çok az çalışma olduğu görülmektedir. Bu çalışmada amaç, öğrenci sporcuların düzenli kitap okuma aktivitelerinin dikkat düzeyi ve tepki verme süresi üzerindeki etkisini araştırmaktır.

YÖNTEM

Alanya Alaaddin Keykubat Üniversitesi Spor Bilimleri Fakültesi öğrencisi olan ve bireysel spor veya takım sporlarıyla uğraşan 33 gönüllü sporcu öğrenci çalışmaya dahil edilmiştir. Deney grubu, 8 hafta boyunca, haftada üç kez, 40 dakikalık bir süre boyunca kitap okumuştur. Kişisel bilgi formunun yanı sıra "Görsel Dikkat Testi" de kullanılmaktadır. Yaş, spor branşı (bireysel veya takım sporları) ve kitap okuma etkinliğine dahil olup olmadığı kişisel bilgi formunda sorulmuştur. Spor branşında haftanın farklı günlerinde en az üç kez aktif antrenman kriterlerini karşılamaya yönelik antrenman ölçütü alınırken, düzenli kitap okuma kriterlerine uyulması için haftanın üç farklı gününde en az 40 dakika kitap okuma önlemi alınmıştır. Toplanan veriler SPSS 25 istatistik yazılım paket programı ile analiz edilmiş ve sonuçlar değerlendirilmiştir. Değişkenlerin gruplara göre ön-test ve son-test dağılımları araştırılmıştır. Dağılımların normalliği ve varyantların homojenliği Mauchly Sphericity ve Levene testi kullanılarak belirlendi. Test sonuçlarına göre grup içi değişkenlerin karşılaştırılmasında Paired-Sample T testi kullanılmıştır. Testlerden elde edilen tüm sonuçlar aritmetik ortalama ± standart sapma (x±ss) olarak ifade edilmiş ve anlamlılık düzeyi $p<0,05$ olarak kabul edilmiştir.

BULGULAR

Düzenli olarak kitap okuyan ve okumayan öğrenciler (kontrol ve deney grupları) arasında grup içi tepki sürelerine göre istatistiksel olarak anlamlı farklılıklar gözlenmiştir. Kontrol grubunun ön test ve son test reaksiyon süreleri karşılaştırıldığında (%5,19) oranında gözle görülür bir gelişme gözlenirken, deney grubunda bu oranın (%14,49) olduğu görülmüştür. Doğruluk oranı karşılaştırmasında düzenli kitap okumayan öğrencilerde (kontrol grubu) istatistiksel olarak anlamlı bir değişiklik gözlenmezken, düzenli kitap okuyan öğrencilerde (deney grubu) (%5,45) oranında istatistiksel olarak anlamlı değişiklikler gözlenmiştir. Tablo 2'ye göre bireysel ve takım sporu yapan ve kitap okumayan öğrencilerin tepki verme süreleri ve doğruluk oranı açısından aralarında $p<0,05$ düzeyinde anlamlı farklılık bulunmamıştır. Ancak çalışmaya katılan takım sporları yapan ve düzenli kitap okumayan öğrencilerin (kontrol grubu) ön test ve son test sonuçları karşılaştırıldığında doğruluk oranı açısından istatistiksel olarak anlamlı farklılıklar tespit edilmiştir. Çalışmaya katılan bireysel spor

yapan veya takım sporları yapan ve düzenli olarak kitap okuyan öğrencilerin (deney grubu) tepki verme süreleri açısından ön test ve son test sonuçları karşılaştırıldığında istatistiksel olarak anlamlı farklılıklar bulunmamıştır. Diğer taraftan, çalışmaya katılan bireysel spor yapan veya takım sporları yapan ve düzenli olarak kitap okuyan öğrencilerin (deney grubu) doğruluk oranı açısından ön test ve son test sonuçları karşılaştırıldığında istatistiksel olarak anlamlı farklılıklar gözlenmiştir.

TARTIŞMA VE SONUÇ

Çalışmamızda sporcu öğrencilerin tepki süreleri karşılaştırıldığında, düzenli kitap okuyan ve okumayan öğrenciler arasında istatistiksel olarak anlamlı farklılıklar tespit edilmiştir. Diğer taraftan, doğruluk oranı karşılaştırıldığında, kontrol grubunda istatistiksel olarak anlamlı bir fark gözlenmezken, deney grubunda istatistiksel olarak anlamlı farklılıklar bulunmuştur. Bu fark, kitap okuyan sporcu öğrencilerin doğruluk oranının okumayanlara göre daha yüksek olması; bu bakımdan dikkat yeteneği daha yüksektir. Bu çalışmada bireysel spor yapan veya takım sporları yapan, düzenli olarak kitap okuyan sporcuların dikkat düzeylerinin okumayanlara göre daha yüksek olduğu sonucuna ulaşılmıştır. Dikkat, zihinsel yetenek gerektiren bir konudur ve sporda performans parametrelerinden biri olan reaksiyon süresine katkı sağladığı düşünülmektedir. Okuma aktivitesinin sporcuların dikkat düzeyi ve tepki verme süresi üzerindeki etkisini daha hassas ölçebilmek için daha fazla çalışma yapılması gerektiğini düşünüyoruz.

REFERENCES

Adsız, E. (2010). *İlköğretim çağındaki öğrencilerde düzenli yapılan sporun dikkat üzerine etkisinin araştırılması* [Yüksek lisans tezi, Ege Üniversitesi]. YÖK Tez Merkezi.

Afonso, J., Garganta, J., & Mesquita, I. (2012). Decision-making in sports: the role of attention, anticipation and memory. *Revista brasileira de cineantropometria & desempenho humano*, *14*(2), 592-601. https://doi.org/10.5007/1980-0037.2012v14n5p592

Aslan, H. A. (2020). Öğrencilerde spor durumu ve yaş kategorisine göre dikkat düzeyinin karşılaştırılması. *Turkish Studies, 15*(2), 729-738. https://doi.org/10.29228/TurkishStudies.41719

Aydın, S. (2017). *12-18 Yaş aralığında spor yapan ve yapmayan öğrencilerin dikkat düzeyleri ve reaksiyon hızlarının araştırılması (Van İli Örneği)* [Yüksek lisans tezi, Van Yüzüncü Yıl Üniversitesi]. YÖK Tez Merkezi.

Balcı, A. (2009). İlköğretim 8. sınıf öğrencilerinin kitap okuma alışkanlığına yönelik tutumları. *Mustafa Kemal Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, *6*(11), 264-299. https://dergipark.org.tr/en/pub/mkusbed/issue/19558/208492

Boutcher, S. H. (2002). *Attentional processes and sport performance*, Human Kinetics.

Cratty, B. J. (1984). *Psychological preparation and athletic excellence*, Mourvement Publications.

Çağlar, E. B. (2011). D2 dikkat testinin çocuk sporcularda ölçüt geçerliliğinin test edilmesi: pilot çalışma. *Gazi Beden Eğitimi ve Spor Bilimleri Dergisi, 16*(4), 19-29.

Çağlar, E., & Koruç, Z. (2006). D2 dikkat testinin sporcularda güvenirliği ve geçerliği. *Spor Bilimleri Dergisi*, *17*(2), 58-80.

Eysenck, M. W. (2000). *Psychology: A student's handbook*. Taylor & Francis.

Fries, P., Womelsdorf, T., Oostenveld, R., & Desimone, R. (2008). The effects of visual stimulation and selective visual attention on rhythmic neuronal synchronization in macaque area V4. *Journal of Neuroscience*, *28*(18), 4823-4835.

Güneş, F. (2008). *Hızlı okuma ve anlamı yapılandırma*, Nobel yayınları.

Güneş, F. (2016). Kâğıttan ekrana okuma alanındaki gelişmeler (from paer to screen developments in the field of reading. *Bartın University Journal of Faculty of Education*, *5*(1), 264-299.

Gür, Y. (2016). *İşitme engelli sporcuların sürekli dikkat becerilerinin sporcu olmayanlarla karşılaştırılması.* [Yüksek lisans tezi, Kahramanmaraş Sütçü İmam Üniversitesi]. YÖK Tez Merkezi.

Güven, Ş. (2014). *Duygusal zekâ ve kişilik özelliklerinin elit atletlerde dikkat ve performans üzerine etkisi* [Yüksek Lisans Tezi, Ege Üniversitesi]. YÖK Tez Merkezi.

Harris, D. H. (1984). *Sports psychology: Mental skills for physical people*, Leisure Press.

İbiş, S. A. (2021). Çocuklarda fiziksel aktivite seviyesi motor beceri ve dikkat düzeylerinin incelenmesine yönelik bir araştırma. *Akdeniz Spor Bilimleri Dergisi*, *4*(2), 210-2020.

Kadesjo, C., Kadesjo, B., Hagglof, B., & Gillberg, C. (2001). ADHD in Swedish 3- to 7-year- old children. *Journal of the American Academy of Child & Adolescent Psychiatry*, *40*(9), 1021–1028.

Kornhuber, H. H. (1984). Attention, readiness for action, and the stages of voluntary decision—Some electrophysiological correlates in man. *Experimental Brain Research*, 420-429.

Lai, S. A., George Benjamin, R., Schwanenflugel, P. J., & Kuhn, M. R. (2014). The longitudinal relationship between reading fluency and reading comprehension skills in second-grade children. *Reading & Writing Quarterly*, *30*(2), 116-138.

Maine, F., & Waller, A. (2011). Swallows and amazons forever: How adults and children engage in reading a classic text. *Children's Literature in Education*, *42*(2), 354-371.

Mathôt, S., Schreij, D., & Theeuwes, J. (2021). OpenSesame: An open-source, graphical experiment builder for the social sciences. *Behavior Research Methods*, *44*(2), 314-324.

Meng, F. W., Yao, Z. F., Chang, E. C., & Chen, Y. L. (2019). Team sport expertise shows superior stimulus-driven visual attention and motor inhibition. *Plos One, 14*(5), e0217056.

Öztürk, E. A. (2013.). Başlangıç düzeyi okuyucularının okuma motivasyonlarının, günlük kitap okuma süreleri ve ailenin okuma sürelerine göre değerlendirilmesi. *Kastamonu Eğitim Dergisi, 21*(3), 1105-1116.

Phomsoupha, M. L. (2015). The science of badminton: game characteristics, anthropometry, physiology, visual fitness and biomechanics. *Sports Medicine*, *45*(1), 473-49.

Rahimi, A., Roberts, S. D., Baker, J. R., & Wojtowicz, M. (2022). Attention and executive control in varsity athletes engaging in strategic and static sports. *Plos One*, *17*(4); e0266933.

Renk, M. İ. (2020). 10-13 yaş grubu çocuklarda oyunsal etkinliklerin dikkat gelişimine etkisi. *Gaziantep Üniversitesi Spor Bilimleri Dergisi*, *5*(2), 181-193.

Savage, R., Cornish, K., Manly, T., & Hollis, C. (2006). Cognitive processes in children's reading and attention: The role of working memory, divided attention, and response inhibition. *British Journal of Psychology*, *97*(3), 365-385.

Sesma, H. W., Mahone, E. M., Levine, T., Eason, S. H., & Cutting, L. E. (2009). The contribution of executive skills to reading comprehension. *Child Neuropsychology*, *15*(3), 232-246.

St Clair-Thompson, H. L., & Gathercole, S. E. (2006). Executive functions and achievements in school: Shifting, updating, inhibition, and working memory. *Quarterly Journal Of Experimental Psychology*, *59*(4), 745-759.

Torun, N. Y., Özşahin, A., & Sütçigil, L. (2009). Dikkat eksikliği hiperaktivite bozukluğunun yetişkinlikteki yansımaları. *Klinik Psikiyatri Dergisi*, *12*(1), 43-50.

Türkeri, C., Öztürk, B., Büyüktas, B., & Öztürk, D. (2019). Comparison of balance, reaction time, attention and BMI values in ındividual and team sports. *Journal of Education and Learning*, *8*(6), 119-128.

Vogel, E. K., & Machizawa, M. G. (2004). Neural activity predicts individual differences in visual working memory capacity. *Nature*, *428*(6984), 748-751.

Wei, C. C. (2017). Influences of visual attention and reading time on children and adults. *Reading & Writing Quarterly*, *33*(2), 97-108.

Yaycı, L. (2013). D2 dikkat testinin geçerlik ve güvenirlik çalışması. *Kalem Uluslararası Eğitim ve İnsan Bilimleri Dergisi*, *3*(1), 43-80.

Yıldırım Araz, G. (2021). *Sporda uzmanlaşmanın algısal ve bilişsel süreçlere etkisi* [Doktora tezi, Fırat Üniversitesi]. YÖK Tez Merkezi.

Zekeriya, B. G. (2010). Öğretmen adaylarının okuma alışkanlıkları üzerine bir araştırma: Uşak Eğitim Fakültesi örneği. *Uşak Üniversitesi Sosyal Bilimler Dergisi, 3*(1), 32-49.

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*	Nuray SATILMIŞ Akan BAYRAKDAR Işık BAYRAKTAR
Tasarım *Design*	Yöntem ve araştırma desenini tasarlamak *To design the method and research design.*	Akan BAYRAKDAR Pelin AVCI
Literatür Tarama *Literature Review*	Çalışma için gerekli literatürü taramak *Review the literature required for the study*	Nuray SATILMIŞ Işık BAYRAKTAR Pelin AVCI
Veri Toplama ve İşleme *Data Collecting and Processing*	Verileri toplamak, düzenlemek ve raporlaştırmak *Collecting, organizing and reporting data*	Akan BAYRAKDAR Gökmen KILINÇARSLAN
Tartışma ve Yorum *Discussion and Commentary*	Elde edilen bulguların değerlendirilmesi *Evaluation of the obtained finding*	Gökmen KILINÇARSLAN Pelin AVCI

Destek ve Teşekkür Beyanı/ *Statement of Support and Acknowledgment*

Bu çalışmanın yazım sürecinde katkı ve/veya destek alınmamıştır.

No contribution and/or support was received during the writing process of this study.

Çatışma Beyanı/ *Statement of Conflict*

Araştırmacıların araştırma ile ilgili diğer kişi ve kurumlarla herhangi bir kişisel ve finansal çıkar çatışması yoktur.

Researchers do not have any personal or financial conflicts of interest with other people and institutions related to the research.

Etik Kurul Beyanı/ *Statement of Ethics Committee*

Bu araştırma, Bingöl Üniversitesi Etik Kurulunun E-22315946-604.01.01-100301 sayılı kararı ile yürütülmüştür.

This research was conducted with the decision of Bingöl University Ethics Committee numbered E-22315946-604.01.01-100301.