


An Investigation of Focused Attention Skills in Karate Athletes

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Abstract

The universe and sample group of this study, which was carried out in order to examine the focused attention skills of karate athletes, consists of 35 participants who are over 18 years old and who are active karate athletes. Within the scope of the research, the Stroop attention test was used as a data collection tool. The analysis of the data obtained from the karate players was made in the SPSS 26 program. First, the distribution of the finishing time, the number of errors and the number of error corrections obtained from the karate athletes who were applied the Stroop test were examined descriptively by looking at the skewness and kurtosis values. It has been observed that the completion times of karate athletes are normally distributed, but the number of errors and the number of correcting errors is not normally distributed. The duration of completion of the Stroop test sections of karate athletes according to gender, age and education was compared with independent sample t-test and ANOVA analysis. As a result of this research, which was carried out to examine the focused attention skills of karate athletes; The focused attention skills of female karate athletes are at a better level compared to male athletes, the completion times of the 1st, 2nd, and 5th sections of the athletes in the 18-20 age group are at a higher level than the athletes in other age groups, as the education level increases. It was concluded that the focused attention skills of the athletes also increased.

Keywords: Karate, Stroop, Attention

Karate Sporcularının Odaklanmış Dikkat Becerilerinin İncelenmesi

Özet

Karate sporcularının odaklanmış dikkat becerilerinin incelenilmesi amacıyla gerçekleştirilen bu çalışmanın evren ve örneklem grubu 18 yaşın üzerinde olan ve aktif olarak karate sporcusu olan 35 katılımcıdan oluşmaktadır. Araştırma kapsamında veri toplanma aracı olarak stroop dikkat testinden yararlanılmıştır. Karateçilerden elde edilen verilerin analizi SPSS 26 programında yapılmıştır. Stroop testi uygulanan karate sporcularından elde edilen bitirme süresi, hata sayısı ve hata düzeltme sayılarının öncelikle dağılımları çarpıklık basıklık değerlerine bakılarak ve betimsel olarak incelenmiştir. Karate sporcularının bölümleri bitirme sürelerinin normal dağıldığı ancak hata sayısı ve hataları düzeltme sayılarının normal dağılmadığı gözlenmiştir. Cinsiyet, yaş ve eğitime göre karate sporcularının Stroop testi bölümlerini bitirme süreleri bağımsız örneklem t testi ve ANOVA analizi ile karşılaştırılmıştır. Karate sporcularının odaklanmış dikkat becerilerinin incelenmesi amacıyla gerçekleştirilen bu çalışmada sonuç olarak; kadın karate sporcularının odaklanmış dikkat becerilerinin erkek sporculara oranla daha iyi düzeyde olduğu, 18-20 yaş aralığında olan sporcuların 1. Bölüm, 2. İkinci bölüm ve 5. Bölüm bitirme sürelerinin diğer yaş gruplarında yer alan sporculara oranla daha yüksek düzeyde olduğu, eğitim durumunun arttıkça sporcuların odaklanmış dikkat becerilerinin de arttığı sonucuna ulaşılmıştır.

Anahtar Kelimeler: Karate, Stroop, Dikkat

Introduction

According to Mülhim (2022), karate, defined as a martial art in Japan, is an ancient combat art that incorporates both defensive and offensive movements using arms and legs. This sport discipline is categorized both as an individual sport and a combat sport. Keleş (2021) states that in combat sports, besides factors that affect motor skills, specific techniques, and tactics, it is necessary to identify the mental aspects that influence the sport discipline. It is well-known that attention plays a significant role in individual sports such as karate, taekwondo, and boxing. Especially, athletes need attention to be able to focus on the situation they are in during the competition. According to Yaycı (2013), athletes need to concentrate their attention to select and respond to a specific stimulus that is important to them among the stimuli present in their environment.

According to Yıldırım (2023), focusing on the motor skills necessary for athletes to perform their mental activities and execute the required skills in sports is among the most important factors in sports. The ability of athletes to perform the necessary skills primarily depends on their attention and concentration. Ekmekçi (2022) suggests that attention and motor skills can be developed through athletes' focus on movement.

Daniyar (2023) states that in order to demonstrate good performance in a sporting context, athletes need to consider appropriate stimuli and be cautious against stimuli that may negatively affect their performance at that moment. Maintaining adaptation to adverse factors that occur before and during competition will elevate athletic success (Daniyar, 2023).

According to Uluç and Akçakoyun (2022), athletes need to concentrate on the goal to be successful in a sporting activity. In this regard, athletes need to focus on relevant stimuli. Göktepe, Akalın, and Göktepe (2016) suggest that athletes maintaining their concentration during competition positively impacts their performance.

Attention is related to the organism's ability to adapt to specific stimuli. According to Duman (2016), sports contribute not only to the individual's basic motor skills but also to mental skills such as memory, cognition, and attention. Karakulaklı (2017) states that attention, which involves the concentration of thought power at a specific point, allows individuals to filter out certain perceived stimuli. According to Güven (2014), combat sports require a high level of attention skills. Additionally, Uluç and Akçakoyun (2022) suggest that athletes with high levels of focused attention skills also have high performance in sports. Based on these points, it is assumed that karate athletes will have high levels of focused attention skills.

Method

Research Model/Design

The study examining the focused attention skills of karate athletes was conducted using a survey model. This research design, which allows the depiction of a situation as it existed in the past, is referred to as a survey model according to Karasar (2012).

Study Group

This study was conducted with karate athletes residing in Çanakkale province. The population and sample group of the study consisted of 35 participants who were above 18 years old and actively engaged in karate. The relevant data for the research were collected by the researcher from karate athletes training in karate dojos in the city center of Çanakkale.

Data Collection Instruments

In this research aimed at examining the focused attention skills of karate athletes, in addition to variables such as gender, age, and educational background, the Stroop attention test was used as the data collection tool. The Stroop Test is a test that measures an individual's ability to manage attention and demonstrates the difference between automatic and controlled responses. It provides information about cognitive processes such as selective attention, focused attention, response inhibition, impulse control, and information processing speed (Golden, 2002; Şahin, 2023). The Turkish validity and reliability studies of the Stroop Test, introduced by Stroop (1935), were conducted by Karakaş et al. (1999).

1. The Stroop attention test, consisting of 5 cards and 5 sections, includes the following:
2. The first section involves reading the names of colors printed in black.
3. The second section involves reading the names of colors printed in colored ink.
4. The third section involves naming the shapes on the paper.
5. The fourth section involves naming the colors of words printed in colored ink.
6. The fifth section involves naming the colors of words printed in colored ink.

Data Analysis

The analysis of the research data was conducted using the SPSS 26 program. The distributions of completion time, error count, and error correction count obtained from the karate athletes who underwent the Stroop test were examined initially in terms of skewness and kurtosis values and descriptively. It was observed that the completion times of the karate athletes in

the Stroop test sections were normally distributed, but the error counts and error correction counts were not normally distributed.

The completion times of the Stroop test sections for karate athletes were compared based on gender, age, and education using independent samples t-test and ANOVA analysis. The error counts and error correction counts were compared using the Mann-Whitney U test and Kruskal-Wallis's test. The comparisons for error counts and error correction counts were not presented in table format, but the results were included in the findings.

Results

Table 1. The demographic information of Karate athletes

		f	%
Gender	Male	20	57,1
	Female	15	42,9
Age	18-20 years	6	17,1
	21-24 years	13	37,1
	25 years and over	16	45,7
Education	High School	7	20,0
	Associate Degree	6	17,1
	Undergraduate	22	62,9
	Total	35	100,0

In Çanakkale province, a total of 20 (57.1%) male and 15 (42.9%) female athletes from karate dojos participated in the research. Among these athletes, 45.7% were aged 25 and above, 37.1% were in the age range of 21-24, and 17.1% were in the age range of 18-20. Regarding their educational background, 62.9% of the athletes had a bachelor's degree, 20% had a high school diploma, and 17.1% had an associate degree.

Table 2. Comparison of completion times for test sections based on gender among Karate athletes

Completion Times for Test Sections (seconds)	Gender	N	Mean	Sd	t	p
Section 1	Male	20	8,10	1,47	1,75	0,08
	Female	15	7,25	1,31		
Section 2	Male	20	8,68	1,97	2,71	0,01
	Female	15	7,12	1,18		
Section 3	Male	20	11,39	1,93	3,05	0,00
	Female	15	9,44	1,77		
Section 4	Male	20	13,16	1,88	1,88	0,06
	Female	15	11,92	2,01		
Section 5	Male	20	22,69	3,88	7,83	0,00
	Female	15	15,34	1,38		

Table 2 presents the comparison of completion times for test sections based on gender among karate athletes. Independent samples t-test was conducted to examine the differences in completion times for Stroop test sections by gender. The results of this test indicated no

significant difference in completion times for the 1st and 4th sections of the Stroop test based on gender ($p>0.05$). However, there were significant differences in completion times for the 2nd, 3rd, and 5th sections of the Stroop test based on gender ($p<0.05$). Further analysis revealed that female karate athletes had shorter completion times in the 2nd section (7.12 seconds) compared to male karate athletes (8.68 seconds). Similarly, female karate athletes had shorter completion times in the 3rd section (9.44 seconds) compared to male karate athletes (11.39 seconds). Moreover, female karate athletes had shorter completion times in the 5th section (22.69 seconds) compared to male karate athletes (15.34 seconds).

The Mann-Whitney U test was performed to examine the differences in error and error correction counts across sections by gender. The results showed no significant differences in error and error correction counts for the 1st to 4th sections ($p>0.05$). However, there was a significant difference in the 5th section ($p<0.05$). Female karate athletes had lower error counts (1.07) in the 5th section compared to males (2.45). Additionally, female karate athletes had lower error correction counts (1.07) in the 5th section compared to males (2.30).

Table 3. Comparison of completion times for test sections based on the ages of Karate athletes

Completion Times for Test Sections (seconds)	Age	N	Mean	SD	F	p	Diff.
Section 1	18-20 years ¹	6	9,44	1,57	9,43	0,00	1>2,3
	21-24 years ²	13	6,90	0,97			
	25 years and over ³	16	7,78	1,19			
Section 2	18-20 years ¹	6	10,06	2,21	7,53	0,00	1>2,3
	21-24 years ²	13	7,08	1,42			
	25 years and over ³	16	8,00	1,38			
Section 3	18-20 years ¹	6	12,25	1,42	2,70	0,08	-
	21-24 years ²	13	10,36	2,08			
	25 years and over ³	16	10,07	2,07			
Section 4	18-20 years ¹	6	14,34	0,75	2,97	0,06	-
	21-24 years ²	13	12,17	2,33			
	25 years and over ³	16	12,37	1,78			
Section 5	18-20 years ¹	6	24,19	5,62	4,11	0,02	1>2,3
	21-24 years ²	13	18,89	4,88			
	25 years and over ³	16	18,32	3,40			

In Table 3, the completion times of the Stroop test sections were compared using ANOVA based on the ages of the karate athletes. According to the results of this test, no significant difference was found in the completion times of the 3rd and 4th sections of the Stroop test based on the ages of the karate athletes ($p>0.05$). However, differences were observed in the completion times of the 1st, 2nd, and 5th sections of the Stroop test based on age ($p<0.05$). According to the multiple comparisons conducted using the Bonferroni test, the completion times of the 1st, 2nd, and 5th sections were found to be higher for athletes aged 18-20 compared

to athletes in other age groups. When the number of errors and error corrections made by the athletes in the sections were examined according to their ages using the Kruskal-Wallis test, no significant difference was found ($p>0.05$).

Table 4. Comparison of completion times of sections based on the educational backgrounds of Karate athletes

Completion Times for Test Sections (seconds)	Education	N	Mean	Sd	F	p	Diff.
Section 1	High School ¹	7	8,89	1,74	3,55	0,04	1>2
	Associate Degree ²	6	7,01	0,85			
	Undergraduate ³	22	7,56	1,32			
Section 2	High School ¹	7	9,65	2,30	5,51	0,00	1>2,3
	Associate Degree ²	6	6,70	0,64			
	Undergraduate ³	22	7,85	1,55			
Section 3	High School ¹	7	11,81	1,31	1,71	0,19	-
	Associate Degree ²	6	10,51	2,37			
	Undergraduate ³	22	10,16	2,31			
Section 4	High School ¹	7	14,53	0,67	5,00	0,01	1>2,3
	Associate Degree ²	6	11,79	1,04			
	Undergraduate ³	22	12,26	2,14			
Section 5	High School ¹	7	22,57	3,19	1,94	0,15	-
	Associate Degree ²	6	19,49	5,45			
	Undergraduate ³	22	18,59	4,79			

The completion times of the Stroop test sections were compared using ANOVA based on the educational backgrounds of karate athletes in Table 4. According to the results of this test, no significant difference was found in the completion times of the 3rd and 5th sections of the Stroop test based on the athletes' educational backgrounds ($p>0.05$). However, differences were observed in the completion times of the 1st, 2nd, and 4th sections of the Stroop test based on their educational backgrounds ($p<0.05$). According to the multiple comparisons conducted using the Bonferroni test, the completion times of the 1st section were higher for karate athletes with a high school education (8.89) compared to those with an associate degree (7.01). The completion times of the 2nd and 5th sections were higher for karate athletes with a high school education compared to those with an associate or bachelor's degree.

When the number of errors and error corrections made by the athletes in the sections were examined based on their educational backgrounds using the Kruskal-Wallis test, no significant difference was found ($p>0.05$).

Discussion

Attention includes the processes of filtering what we perceive, balancing our various perceptions and adding emotional importance to these perceptions (Daniyar, 2023). The ability

to control thought processes and concentrate on a task is a key element for effective performance in sport (Nideffer 1993). When the related literature is examined, the effect of sports on attention has been revealed in studies conducted in many different sports branches (Yolgözteren, 2006). When the literature on attention was examined, it was seen that the sample groups of the studies consisted of child participants. In this context, it is thought that this research will contribute to the field of sports sciences.

Karate is among the defense sports in which punching, kicking and knocking the opponent down techniques are applied. In this sport branch, especially during the competition, the athlete should select and react to the relevant stimulus at the right time. The reaction given at the right time and in the right place will allow the athlete to be successful during the struggle. In this context, it is thought that attention has a very important place in combat sports such as karate.

The population and sample group of this study, which was conducted with karate athletes residing in Çanakkale province, consisted of 35 participants who were over the age of 18 and actively participated in karate. Stroop attention test was used to examine the focused attention skills of the karate athletes in the study. This test was developed by Stroop (1935) and Turkish validity and reliability studies were conducted by Karakaş et al. In this study conducted with karate athletes, the focused attention skills of the athletes were examined according to the gender variable, and it was found that the second and third section completion times of female athletes in the stroop attention test were lower than male athletes. Keleş (2021), who examined the attention skills of taekwondo athletes, found that the attention scores of taekwondo athletes did not differ according to gender variable. Similar to the result obtained by Keleş (2021), in the study conducted by Çağlar and Koruç (2006), the attention levels of the participants were examined according to the gender variable and no significant difference was found between these two variables. Üngür (2013) did not find statistically significant differences between female athletes and male athletes when the number of correct answers given at the stage of color-word mismatch in the Stroop Test and the average answering speed were compared according to gender. The results obtained by the researchers are not similar to the findings of the present study.

In 2021, in another study involving fencing, handball and volleyball athletes, it was observed that female athletes had better attention test values than male athletes (Sürek, 2021). Similarly, in this study conducted with karate athletes, it was found that the attention levels of female athletes were better than male athletes. Akbaş (2021), who examined the focused attention skills of female soccer players with the stroop attention test, found that the section completion times

of female soccer players increased from Section 1 to Section 5. The current research finding reached by Akbaş (2021) is in parallel with this study conducted with karate athletes.

In this study, in which the focused attention skills of karate athletes were examined according to the age variable; it was found that the completion times of Section 1, Section 2 and Section 5 of the athletes in the 18-20 age range were higher than the other age groups. The current research finding shows that as the age of karate athletes increases, their attention skills improve accordingly. Uluç and Akçakoyun (2022), who examined the focused attention skills of elite level bocce and darts athletes according to the age variable, could not detect a significant difference between these two variables. The results of Uluç and Akçakoyun (2022) are not similar to the findings of the current study. The main reason for this situation is thought to be the difference in the population and sample groups of the studies.

Akın (2016), who examined the focused attention skills of basketball players with the stroop attention test, found that the number of errors and the number of error corrections in the stroop attention test of basketball players increased from Section 1 to Section 5. The number of errors and error corrections of karate athletes who participated in the current study were examined according to gender, age and educational status and it was determined that there was no significant difference between these variables. In this context, the current research finding is not in line with the results obtained by Akın (2016).

Within the scope of the study, the focused attention skills of karate athletes were examined according to the educational status variable, and it was found that the time to finish the first section of the athletes with high school education was higher than the karate athletes with associate degree education. This finding obtained from the current research indicates that as the education level of karate athletes increases, their focused attention skills increase accordingly.

In this research, which was carried out in order to examine the focused attention skills of karate athletes; In this research, which was carried out in order to examine the focused attention skills of karate athletes; it was found that the focused attention skills of female karate athletes were at a better level compared to male athletes, and that the completion times of the 1st section, 2nd second section and 5th section of the athletes in the 18-20 age range were higher than the athletes in other age groups.

Akın (2016), who examined the focused attention skills of basketball players with the stroop attention test, found that the number of errors and error correction numbers in the stroop attention test of basketball players increased from Section 1 to Section 5. The number of errors

and error corrections of karate athletes who participated in the current study were examined according to gender, age and educational status and it was determined that there was no significant difference between these variables. In this context, the current research finding is not in line with the results obtained by Akin (2016).

Within the scope of the study, the focused attention skills of karate athletes were examined according to the educational status variable, and it was found that the time to finish the first section of the athletes with high school education was higher than the karate athletes with associate degree education. This finding obtained from the current research indicates that as the education level of karate athletes increases, their focused attention skills increase accordingly.

Conclusion

In this research, which was carried out in order to examine the focused attention skills of karate athletes; In this research, which was carried out in order to examine the focused attention skills of karate athletes; It was concluded that the focused attention skills of female karate athletes were at a better level compared to male athletes, the completion times of the 1st section, 2nd second section and 5th section of the athletes in the 18-20 age range were at a higher level compared to the athletes in other age groups, and the focused attention skills of the athletes increased as the educational level increased.

Suggestions

When the literature on the Stroop attention test was examined, it was seen that the population and sample groups of the studies using the Stroop attention test consisted mostly of child participants. In this context, it is suggested that especially academicians who conduct research in the field of sports sciences should examine the focused attention skills of athletes competing in different sports branches.

Author Contribution

Aksoy, S. (Conceptual framework, Data Collection), Özdayı, N (Conceptual framework, Data Analysis).

Conflict of Interest

All authors must declare that there is no conflict of interest.

Ethical Statement

Ethical review was provided by the institutional review board.

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