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## The Relationship Between Attention And Decision-Making Skills In Athletes: A Cross-Sectional Analysis According To Demographic Variables

Sporcularda Dikkat ve Karar Verme Becerileri Arasındaki İlişki: Demografik Değişkenlere Göre Kesitsel Bir Analiz

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## Abstract

Sport is more than just a field where physical skills are displayed; it is also a field where attention and decision-making skills are critically tested. Therefore, these mental skills must be used skilfully to achieve success in every sport. Therefore, the aim of this study is to investigate the attention skills and decision-making levels of athletes. The study group consists of 121 athletes in sports clubs located within the borders of Rize province. Personal Information Form, Burdon Attention Test and Melbourne Decision Making Scale were used as data collection tools. In the analysis of the data; after descriptive statistics, Mann-Whitney U test was used according to gender and sport branch variables, and Kruskal-Wallis test was used according to age and years of doing licensed sport variables. Finally, Spearman correlation analysis was used to determine the relationship between attention skill levels and decision-making skill levels. According to the findings, there is a positive and weakly significant relationship between the self-esteem and attention skills of athletes in decision-making. In addition, the study analyzed whether there is a significant difference between demographic characteristics and dependent variables. In this context, the variables of gender, sport branch type, age, and years of sport did not show differences in athletes' attention levels and self-esteem in decision-making. According to the results obtained, it was seen that the relationship between the level of success in the attention test and the sub-dimensions of self-esteem in decision-making was statistically significant. More specifically, as the attention levels of the athletes increase, their self-confidence increases.

**Keywords:** *Athlete, attention, decision making, self-esteem*

## Özet

Spor sadece fiziksel becerilerin sergilendiği bir alan değildir; aynı zamanda dikkat ve karar verme becerilerinin de kritik bir şekilde sınındığı bir alandır. Dolayısıyla her spor dalında başarıya ulaşmak için bu zihinsel becerilerin ustalıkla kullanılması gerekir. Bu nedenle, bu çalışmanın amacı sporcuların dikkat becerilerini ve karar verme düzeylerini incelemektir. Çalışma grubunu Rize ili sınırları içerisinde yer alan spor kulüplerindeki 121 sporcu oluşturmaktadır. Veri toplama aracı olarak Kişisel Bilgi Formu, Burdon Dikkat Testi ve Melbourne Karar Verme Ölçeği kullanılmıştır. Verilerin analizinde; tanımlayıcı istatistiklerden sonra cinsiyet ve spor dalı değişkenlerine göre Mann-Whitney U testi, yaş ve lisanslı spor yapma yılı değişkenlerine göre ise Kruskal-Wallis testi kullanılmıştır. Son olarak, dikkat beceri düzeyleri ile karar verme beceri düzeyleri arasındaki ilişkiyi belirlemek için Spearman korelasyon analizi kullanılmıştır. Bulgulara göre, sporcuların benlik saygısı ile karar vermede dikkat becerileri arasında pozitif ve zayıf düzeyde anlamlı bir ilişki vardır. Ayrıca çalışmada demografik özellikler ile bağımlı değişkenler arasında anlamlı bir farklılık olup olmadığı da analiz edilmiştir. Bu bağlamda cinsiyet, spor branşı türü, yaş ve spor yılı değişkenleri sporcuların karar vermede dikkat düzeyleri ve öz saygıları üzerinde farklılık göstermemiştir. Elde edilen sonuçlara göre dikkat testindeki başarı düzeyi ile karar vermede özsaygı alt boyutları arasındaki ilişkinin istatistiksel olarak anlamlı olduğu görülmüştür. Daha açık bir ifadeyle, sporcuların dikkat düzeyleri arttıkça özgüvenleri de artmaktadır.

**Anahtar Kelimeler:** *Sporcu, dikkat, karar verme, özsaygı*

## 1. INTRODUCTION

In addition to basic motoric characteristics such as strength, speed, and endurance, sport is also very effective on memory, focus, and concentration (Duman, 2016). In sporting performance, athletes are exposed to a large amount of sensory information bombardment from their environment, teammates, opponents, and the game itself. Effective attentional control allows athletes to selectively process relevant information while filtering out irrelevant distractions. This skill is essential for making correct decisions and practicing skills efficiently (Memmert & Furley, 2007).

Attention, which covers the purposes of gathering the power of thought at a point, concentrating on a subject, and establishing a balance between different perceptions, also allows individuals to filter what they perceive and pass it through a certain filter (Karakulaklı, 2017). In other words, attention is to concentrate all the power of emotion and thought on a point or a subject (Brown, 2013). It is stated that attention is especially important for sportive performance; it has an important role in improving performance, and at the point of separation, the mind is directed to other subjects other than the individual's area of interest (Eynur et al., 2017). Moreover, attention is one of the cornerstones of sport. A basketball player's quick assessment of defensive tactics, a tennis player's tracking of his opponent's strokes, or a football goalkeeper's reading of a rapidly developing play require focused attention and instantaneous decision-making (Jin et al., 2023).

In other words, attention and decision-making strategies are seen as two elements that play an important role for athletes in achieving the best performance in sports. Both skills involve rapid processing of information. Therefore, attention and decision-making strategies are very important in the display of sportive skills (Çağlar & Koruç, 2006).

Another variable in our research is decision-making, which is defined as identifying the objectives to be met in order to satisfy a need, gathering the information required for this purpose, generating alternative options by assessing the information, and selecting the best option from these options (Güçray, 2001). Decision-making and decision-making styles are very effective in sports life as well as in the daily life of the individual. Decision-making skills play a decisive role in the success of athletes. Decisions made in place and appropriately affect the performance positively; however, wrong decisions may affect the performance negatively during the game, and the result of the competition may be affected. During competitions, it is extremely important for athletes to make fast and accurate decisions for their optimal performance (Ashford et al., 2021).

In most team and individual sports, high levels of decision-making are considered to be an important indicator. The ability to direct attention to the right stimulus and make decisions is an important factor for success in sport (Jin et al., 2023). Attention and decision-making skills help athletes maintain their focus even in stressful and intense situations. This can increase mental endurance and minimise performance decline (Donohue and Brooks, 2024). Therefore, both skills involve the rapid processing of information. It is critical for athletes to continuously improve their attention and decision-making skills in order to stand out in the highly competitive world of sports.

Today, sport offers a complex platform to test not only physical abilities but also mental skills. As mentioned above, attention is an important process that enables athletes to focus on important details in the game and facilitates them to make correct decisions. Therefore, it should be measured whether there are any problems in attention control and concentration of attention, and it is important to provide appropriate attention development training to the athlete in terms of performance (Renk et al., 2019). The ability of a football player to decide with which strategy to use the ball, a gymnast to decide when to perform the challenging movements in his routine, or a swimmer to decide at what pace to go in a race involves the ability to understand the dynamics of the sport and to determine strategy accordingly (Natsuhara et al., 2020; Yamakawa et al., 2024).

In light of this information, understanding the attention skills and decision-making levels of athletes in different sports can provide a comprehensive perspective on sport psychology and performance development. In this context, the present study was conducted to examine the relationship between athletes' attention levels and their self-esteem in decision-making. Another aim of this research is to determine whether some demographic variables make a difference in athletes' attention and self-esteem in decision-making.

Different researchers addressing the issue of attention in sports have stated that the current attention level of athletes is the most important factor affecting performance and maximizing performance (Pişkin & Alpay, 2019; Asan, 2011; Kartal et al., 2016). Research has shown that in sports, the ability to predict and make correct decisions on time is essential for high performance (Murray & Hunfalvay, 2017; Mann et al., 2019). These findings indicate that attention and self-confidence should be addressed comprehensively for athletes.

The hypothesis formed in light of these views is:

**H1:** Attention and decision-making (self-esteem) levels of athletes differ according to some variables.

**H1a:** The attention and decision-making (self-esteem) levels of athletes differ according to gender.

**H1b:** The attention and decision-making (self-esteem) levels of athletes differ according to age.

**H1c:** The attention and decision-making (self-esteem) levels of athletes differ according to the type of sport.

**H1d:** The levels of attention and decision-making (self-esteem) of athletes differ according to their year of doing licensed sports.

In the literature, there are different studies addressing decision-making skills in sport: Abernethy (1991) in visual search strategies, Memmert and Roth (2007) in tactical decision-making, Vine et al. (2011) in decision-making for best performance under pressure and decision-making styles of athletes and various perspectives on the decision-making process in athletes (Raab & Gigerenzer, 2015; Demir-Tekkurşun et al., 2018). The main focus of these studies is that decision-making is the basic cognitive ability that significantly affects an athlete's performance. Moreover, there are also studies in the literature that address attention and decision-making variables together: In these studies, it has been found that elite athletes engaged in sports requiring high levels of strength and coordination exhibit superior performance in tasks requiring decision-making and attention skills (Rahimi et al., 2022).

The hypothesis formed in light of these views is:

**H2:** Attention levels of athletes and self-esteem levels in decision-making are related.

## 2. METHOD

### Research Model

In this study, general survey and relational survey models were used. When two or more variables are in question, the relational survey model is used in research aimed at determining the existence, direction and severity of the relationship between variables (İslamoğlu & Alınacı, 2019). Most of the survey researches, which are non-experimental quantitative research, examine the questions of description, relationship and difference in integrity (Gliner et al., 2015).

### Study Group

The study group of the research consists of licensed athletes. The population of the study consists of athletes in sports clubs within the borders of Rize province. The sample of the study consists of 121 female and male athletes, determined by the convenience sampling method on a voluntary basis.

Data Collection Tool: The athletes' demographic data was obtained via the researchers' Personal Information Form; their attention skill levels were ascertained using the Bourdon Attention Test; and their decision-making abilities were ascertained using the Melbourne Decision Making Scale. Bourdon Attention Test; The Bourdon attention test was proposed by B. Bourdon in 1955 and has been widely used since then. To perform the test, you need a special form that contains a certain number of columns and rows but no random letters or numbers. This test is performed by finding and marking the desired letters among letters arranged in a mixed manner. The test consists of 220 letter groups divided into three groups and a total of 660 letter groups. Within these groups, there are 118 letters that need to be marked, including 30 letters (a), 30 letters (b), 29 letters (d) and 29 letters (g). In this context, if all letters are marked correctly in the test, 118 full points are determined. A total of 5 minutes were given for the test. The Bourdon Attention test can be adapted in different formats for people of almost all ages and education levels. Melbourne Decision Making Scale; Deniz (2004) adapted validity and reliability research after translating the Mann et al. (1998) Melbourne Decision Making Questionnaire into Turkish. The Melbourne Decision Making Questionnaire is divided into two parts. First part of the scale: It seeks to ascertain decision-making self-esteem (confidence). There are six things total, with three receiving a straight score and the remaining three receiving a reversal score. Two points are awarded for "correct," one point is awarded for "sometimes correct," and no points are awarded for "not correct." Twelve is the highest possible score on the scale. High scores are a sign of self-worth when making decisions. The Melbourne Decision Making Scale II (MKV II), which has 22 questions, is the second portion of the scale that assesses decision-making styles. The role of self-esteem in making decisions was included in the study's purview.

### Data Analysis

The data obtained were transferred to the computer environment, and normality assumptions were examined using the SPSS 27.0 program. Descriptive statistics of 121 students' mean scores of their responses to the scales were calculated, and then a normality test was applied to evaluate the distribution

of the data (Tabachnick, 2023). The analyses revealed that the data did not exhibit a normal distribution. Therefore, non-parametric tests were preferred instead of parametric tests in the analyses. The Mann-Whitney U test was used for gender and sport branch variables, and the Kruskal-Wallis test was used for age and years of doing licensed sport variables. Finally, Spearman correlation analysis was used to determine the relationship between attention skill levels and decision-making skill levels. The data were tested according to the  $\alpha = 0.05$  significance level.

### 3. FINDINGS

Some demographic information of the athletes are shown in Table 1.

**Table 1.** Descriptive characteristics of the athletes

Variables		Frequency (f)	Percentage (%)
Gender	Male	64	52,9
	Female	57	47,1
Age	14 Age	44	36,4
	15 Age	37	30,6
	16 Age	22	18,2
	17 Age	18	14,9
Sport Branch Type	Individual Sports	30	24,8
	Team Sports	91	75,2
Year of Licenced Sports	1 Years and Less	45	37,2
	2-4 Year	48	39,7
	5 Years and More	28	23,1

According to Table 1, 52,90% (n = 64) were male, 47,10% (n = 57) were female, 36,40% (n = 44) were 14 age, 30,60% (n = 37) were 15 age, 18,20% (n = 22) were 16 age, 14,90% (n = 18) were 17 age. While 24,80% (n = 30) of the athletes were involved in individual sports, 75,20% (n = 91) were involved in team sports, 37,20% (n = 45) were licensed for 1 year or less, 39,70% (n = 48) for 2-4 years, and 23,10% (n = 28) for 5 years or more.

At a significance threshold of 0.05, the Spearman brown rank differences correlation coefficient was employed to determine if the sub-dimensions of self-esteem in athletes' attention and decision-making are significantly correlated. Normality and linearity assumptions were checked through preliminary analyses. The results obtained are presented in Table 2.

**Table 2.** Spearman test results of self-esteem scale sub-dimension in attention test and decision-making

Variables	Attention	Self-Esteem in Decision-Making
Attention	1,000	,285**
Self-Esteem in Decision-Making	,285**	1,000

When the results are analysed, it is seen that there is a positive and weakly significant relationship between the attention test and the sub-dimension of self-esteem in decision-making ( $r = .285^{**}$ ;  $p < 0.01$ ).

In order to determine whether there is a difference between the levels of self-esteem in attention and decision-making depending on the gender and sport branch type of the athletes, Mann-Whitney U test was applied for independent groups at a significance level of 0.05, and the results are shown in Table 3.

**Table 3.** Independent group Mann-Whitney U test results of athletes' attention test and self-esteem levels in decision-making according to gender and sport branch type

Variables	Group	n	Mean Rank	U	Z	p
Attention	Male	64	58,008	1632,500	-0,996	0,319
	Female	57	64,360			
Self-Esteem in Decision-Making	Male	64	63,656	1654,500	-0,895	0,371
	Female	57	58,018			
Attention	Individual Sports	30	54,667	1175,500	-1,142	0,254
	Team Sports	91	63,088			
Self-Esteem in Decision-Making	Individual Sports	30	57,267	1253,500	-0,681	0,496
	Team Sports	91	62,231			

\*p<0,05

The test results showed that the difference between athletes' self-esteem scores in attention and decision-making according to gender variable was not significant (U = 0.05; 1632,500; 1654,500; p > 0.05). Similarly, the test results showed that the difference between athletes' self-esteem scores in attention and decision-making according to the type of sport was not significant (U = 0.05; 117,500; 123,500; p > 0.05).

In order to determine whether there is a difference between the levels of self-esteem in attention and decision-making depending on the age and years of doing licensed sports, the Kruskal-Wallis test was applied at the  $\alpha = 0.05$  significance level and the results are shown in Table 4.

**Table 4.** Independent group Kruskal-Wallis test results of athletes' attention test and self-esteem levels in decision-making according to age and years of doing licensed sports

Variables	Group	n	Mean Rank	X <sup>2</sup>	sd	p
Attention	14 Age	44	57,909	0,998	3	0,802
	15 Age	37	65,284			
	16 Age	22	61,955			
	17 Age	18	58,583			
Self-Esteem in Decision-Making	14 Age	44	61,102	4,793	3	0,188
	15 Age	37	51,986			
	16 Age	22	70,000			
	17 Age	18	68,278			
Attention	1 Year and Less	44	57,909	1,036	2	5,268
	2-4 Yıl	22	61,955			
	5 Yıl ve Üzeri	18	58,583			
Self-Esteem in Decision-Making	1 Year and Less	44	61,102	0,596	2	0,072
	2-4 Year	37	51,986			
	5 Years and More	18	68,278			

\*p<0,05

The test results showed that the difference between athletes' self-esteem scores in attention and decision-making according to age variable was not significant (X<sup>2</sup> (3), n = 121, 0,998; 4,793; p > 0.05). Similarly, the difference between the self-esteem scores of the athletes in attention and decision-making according to the year of doing sport variable was not significant (X<sup>2</sup> (2), n = 121, 1,036; 0,596; p > 0.05).

#### 4.DISCUSSION

Attention and decision-making strategies are two important elements for athletes in order for individuals to display their performance in sports at the best level; quick and fast processing of information is involved in both skills. For this reason, attention and decision-making strategies are very important in revealing sportive skills (Yönel, 2019). In this context, the main purpose of our research is to examine the relationship between athletes' attention skill levels and decision-making. Another aim is to reveal whether there is a difference in the attention and decision-making levels of athletes according to some demographic variables. According to the finding obtained for the main purpose of the research, there is a positive, weakly significant relationship between self-esteem and attention skills in decision-making. According to the results obtained, the **H2 hypothesis** is supported. More specifically, it was determined that as the performance in the attention test increases, the self-esteem sub-dimensions of the athletes may develop positively. This shows

that attentional skills may have a positive effect on self-esteem. On the other hand, the weak level of this relationship indicates that the effect of attention test performance on self-esteem sub-dimensions is limited. Certel, Bahadır, and Sönmez (2013) found a significant relationship between reaction time and the decision-making style of elite-level kickboxing athletes. Kösem (2019) determined that there was a moderately significant relationship between self-esteem in decision-making and visual reaction ( $r = .379, p < 0.05$ ). These findings are consistent with the findings obtained in the study.

In the study, the problematic question of whether demographic characteristics make a difference on dependent variables was also addressed. According to the findings, the variables of gender, type of sport branch, age, and years of doing sport did not show differences in athletes' attention levels and self-esteem levels in decision-making. According to the results obtained, hypothesis **H1 (a-b-c-d)** was not supported. The results indicate that demographic variables are not an effective factor in athletes' levels of attention and self-esteem in decision-making. In other words, in order to understand the attention and self-esteem of athletes, more comprehensive studies that take into account the differences between athletes are needed. When the literature was examined, it was revealed that there was no significant difference in attention skills and self-esteem levels in decision-making according to gender, sport branch type, age, and years of sport (Memmert, Simons, & Grimme, 2009; Sevil Serrano et al., 2017; Bennett et al., 2019; Karaduman, 2004; Keleş, Altıntaş, & Aşçı, 2013; Ulaş et al., 2015; Göktepe, Akalın, & Göktepe, 2016; Uğur, 2017; Orhan, 2018). The results of these studies are in parallel with the findings of the present study. However, there are also studies that show results contrary to our study (Vaeyens et al., 2007; del Campo et al., 2011; Woods et al., 2016; Musculus et al., 2018; Dilmaç & Bozgeyikli, 2009; Adsız, 2010; Özer, 2018; Altıncit, 2019). These findings indicate that the self-esteem levels of athletes in attention and decision-making vary according to demographic variables, so there is no common consensus.

## 5. CONCLUSIONS AND RECOMMENDATIONS

In conclusion, it should be kept in mind that attention skills should be taken into consideration to understand and improve athletes' self-esteem in decision-making. In addition, these results reveal the importance of further research on self-esteem and attention in decision-making and the diversification of studies in this field. In future studies, studies on a larger number of athletes can be conducted to increase the generalizability of research findings. Future studies may focus on how more specific attention strategies and decision-making processes contribute to sport performance. The cross-sectional nature of the study is a limitation in terms of the generalizability of the data. It should also be noted that the convenience sampling method preferred in this study has some drawbacks. It is recommended that probabilistic sampling methods be preferred in future studies.

There is no personal or financial conflict of interest between the authors of the article within the scope of the study.

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**Conflict of interest:** *There isn't conflict of interest among the authors.*

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**Ethics Approval:** *The authors declare that the article complies with national and international research and publication ethics. In case of a contrary situation, the **Journal of Sport and Recreation Research** has no responsibility, and all responsibility belongs to the authors of the article.*

**Ethics Committee Approval:** *This study was prepared with the approval of Recep Tayyip Erdoğan University Ethics Committee (Decision number: 2022/259).*

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