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Examining the effect of mental toughness and decision-making styles on the competition performances of footballer candidates receiving infrastructure training in professional football teams

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Abstract

Objective: the purpose of this study was to examine the effects of mental toughness and decision-making styles on the competition performances of footballer candidates who were receiving infrastructure training in professional football teams. **Method**: the population of the study consisted of a total of 48 footballer candidates playing in the U19 team of the Kayseri Sports Club. The sample group consisted of 24 volunteers, who were footballer candidates in the Kayserispor U19 team. To collect the information, a socio-demographic information form, a mental toughness scale and the Turkish validity and reliability study, and the Melbourne decision-making scale, adapted into Turkey, were used. The experimental group received mental toughness and decision-making styles training five times a day for four weeks. The daily training consisted of two 40 minutes sessions. For the analysis of the competition played by the athletes of the experimental group, a computer with MacOS and 5K screen support and the E Analysis Soccer Project football match analysis system were used. The obtained data were recorded with the IBM SPSS 20 package program. Independent Sample T-test was used to reveal the difference between the in-group pre-test, mid-test and post-test data of the scales and competition analyzes, and Repeated Measures ANOVA were used to determine the effect of the training provided. The one-way ANOVA test was used for the pre-test, mid-test and post-test comparisons of the results obtained from the competition analyzes, while LSD test was used to determine which tests showed significant differences. **Results**: as a result, it was concluded that the 4-week mental toughness and decision-making style training affected the performance of the football candidates, who were receiving infrastructure training in professional football teams and positively affected the competition performance of the players.

Keywords: football, competition performance, competition analysis, applied training, mental toughness, decision-making style.

Introduction

As a sports branch, the significance of football is undisputable when compared to other sports branches. It is known that millions of people in the world participate in this sport either as players or spectators regardless of age, gender, language, religion or race. This study is of great importance as it significantly contributed to the psychological and sociological development of players receiving infrastructure training in professional teams in the field of football and to improve their physical and biological performances within competitions.

This study aimed to examine the effects of mental toughness and decision-making styles on the competition performances of footballer candidates who were receiving infrastructure training from professional football teams.

Although people initially experience negative emotions when faced with negative situations, they can often adapt to stressful events and situations that can change their lives. The main factor in being able to adapt to such situations is the phenomenon of mental toughness, which is a continuous process and requires effort, time and individuals to take steps (Garmezy, 1991). Mental toughness, which is an issue that sports psychologists have been focusing on, has great significance for athletes and coaches, especially during competition periods (Crust,2004; Jones et al., 2007). Jones et al. (2007) defined mental toughness as "athletes coping with mental requirements better than their rivals during competitions, training, and in other certain conditions in general, and as a natural or developed psychological strength that ensures athletes are more task-oriented, more self-confidant and controlled under pressure". On the other hand, in their study conducted on the opinions of Olympic champions, Gould et al. (2002) defined mental toughness with comprehensive content that includes persistence, indomitableness and stubbornness. According to Loehr (2002), mentally strong athletes possess various reactions that enable them to remain emotionally comfortable, calm and strong. Accordingly, there are two skills that are developed: 1) the ability to increase their positive energy flow during a crisis and difficult situations (using energy in a positive way); 2) the ability to think in a certain way to have the right attitudes about problems, pressures, mistakes, and competition.

People who begin to perceive their environment, form their knowledge and opinions in accordance with their perceptions, shape their mental patterns to regulate their future behaviors and their knowledge according to the environmental changes and developments. Human beings are social entities that live within certain groups and since they are not entities that automatically adjust to their environment with instinctive reactions, they perform decision-making at almost every stage of their lives (Jones et al., 2007).

In the most general sense, decision-making is the process of individuals choosing one of many options that may lead to the goal they are trying to achieve. Decision-making has also been defined as the process of adequately reducing doubts and uncertainties while making the appropriate choice among certain options about an incident (Loehr, 2002). Decision-

making style is the pattern of reaction that is learned and turned into a habit when an individual encounter a decision-making situation (Ün, 2010). Decision-making and decision-making style are as effective in an individual's sports life as they are in their daily life. In sports, fit and proper decisions have a positive effect, while making the wrong decisions can not only affect the athlete in the game but also affect the outcome of the game. Elite athletes are required to make quick decisions by considering different sources of information (Leveaux, 2010).

This study is of great importance as it significantly contributed to the psychological and sociological development of players receiving infrastructure training in professional teams in the field of football and to improve their physical and biological performances within competitions. This study aimed to examine the effects of mental toughness and decision-making styles on the competition performances of footballer candidates who were receiving infrastructure training from professional football teams.

The main purpose of this study, which was proposed based on theoretical reasons, was to put forward a mental training and decision-making model to overcome the lack of understanding regarding mental training and decision-making in terms of football players in Turkey. The secondary aim of the study was to ensure that the value of psychological education was better understood by footballers and the sports people who are effective and have power over them. Thus, the aim was to reduce various misconceptions and prejudices related to psycho-social fields in sports, especially sports psychology. Practical trainings that show how to overcome the mental barriers that prevent athletes from displaying their full capacity by developing the mental abilities necessary for success in sports and are a part of sports psychology, and sports consultants who apply these trainings can uncover the main purpose of performance improvement and the ways to become successful in increasing stability in performance by focusing on mental strategies.

Material and method

1. Forming voluntary groups

The population of the study consisted of a total of 48 footballer candidates playing in the U19 team of Kayseri Sports Club. The sample group consisted of 24 volunteers, who were selected from the study population using the simple random method (Çıngı, 1994). The reason for selecting Kayserispor was that the applicability levels of the training were high for the team, the footballers within the U19 stay in the kayserispor building and compete among the top league in Turkey's football league.

2. Inclusion criteria

Athletes who have been undertaking infrastructure football training healthily for at least three years without any discrimination based on religion, language and race.

3. Exclusion Criteria

Athletes who have been undertaking training in Kayserispor for less than three years, newly dismissed or high-risk athletes.

4. Experimental Models

Studies with true experimental models have the highest scientific value. Common features of true experimental models are the use of multiple groups and the creation of groups by random method (sampling). Thus, at least one experimental and one control group is included in each study. These are considered to be "equalized" in terms of other control variables. There are a total of three true experimental models. These are as follows:"

- Pre-test - post-test control grouped model,
- Post-test control grouped model,
- Solomon four-group model.

Pre-test - post-test control grouped model: in this model there are two random groups. One is the experimental group and the other is the control group. Pre-experimental and post-experimental measurements are performed on both groups.

The symbolic view of the model is as given below:

G_1	R	$O_{1.1}$	X	$O_{1.2}$
G_2	R	$O_{2.1}$		$O_{2.2}$

The existence of pre-tests in the model supports the determination of the similarity degrees of the groups before the experiment and correct the post-test results accordingly.

To compare the average increases the percentage increases in the pre-test - post-test scores can be determined for each group, the pre-test scores can be used as covariate and covariance analysis can be performed with the post-test scores or the pre-test scores (O1.1, O2.1) can be compared and if there is no significant difference, differences between the averages can be tested using only the post-test (O1.2,O2.2) scores (Karasar, 2004).

5. Research Method

As the first step of the study, the personal information form, mental toughness scale and decision-making scale were applied to the athletes in the experimental group. After the application, the competitions the athletes played in on an home and an away matches field were recorded with a camera and the team coach filled in a scoring form for the athletes. As the second half of the first step of the study, the personal information form, mental toughness scale and decision-making scale were applied to the athletes in the control group. In the second step of the study, the participants in the experimental group were given mental toughness and decision-making training five times a day for four weeks, with daily training consisting of two 40 minutes sessions. During the training, home and an away matches field

of the athletes were recorded with a camera. At the end of the four-week period, the mental toughness and decision-making scales were applied to the athletes one more time and the scoring form was completed by the coach. As the second half of the second step of the study, the mental toughness and decision-making scales were applied to for the control group when the training of the experimental group was completed. As the third and final step of the study after the four-week training period, four more matches on in home and away matches fields were recorded with a camera. At the end of these competitions the mental toughness and decision-making scales were applied to the athletes in the experimental group for the last time and the scoring form was filled by the coach. In the second half of the third step of the study, the mental toughness and decision-making scales were applied to the athletes in the control group at the same time as the experimental group.

6. Demographic information form

The socio-demographic information form, which contained eight questions and was prepared by the researchers and experts, was applied in order to obtain the personal information of the athletes including age, sports age, position, education and familial status (Table 1).

Table 1. Socio-demographic features of the athletes.

	Variable	N	%
Age	18	24	100.0
Sports age	4-6	5	20.8
	7-9	5	20.8
	10-12	14	58.3
Position	Goalkeeper	2	8.3
	Defense	8	33.3
	Midfielder	10	41.7
	Striker	4	16.7
School studied at	Anatolian High-School	8	33.3
	Vocational High-School	14	58.3
	Private High-School	2	8.3
Mother's educational status	Primary School	4	16.7
	Middle School	10	41.7
	High School	9	37.5

	Variable	N	%
	Associate Degree	1	4.2
Father's educational status	Primary School	2	8.3
	Middle School	8	33.3
	High School	11	45.8
	Associate Degree	3	12.5
Family income status	Average	13	54.2
	High	10	41.7
	Very High	1	4.2
Type of area raised in	County	1	4.2
	Province	7	29.2
	Metropolis	16	66.7

Note: N= number of participants, %= percentage.

The applied curriculum

Week	Course	Monday	Tuesday	Wednesday	Thursday	Friday
1	1	Concept of mental toughness	Types of mental toughness	Use of mental toughness according to the position	Use of mental toughness according to the position	Use of mental toughness according to the position
1	2	Concept of decision	Concept of decision-making	Common features of decision-making	Models and theories about decision-making	Models and theories about decision-making
2	3	4c models of mental toughness	4c models of mental toughness	4c models of mental toughness	Mental toughness in sports	Structure of mental toughness
2	4	Decision-making process	Decision-making process	Decision-making in sports	Decision-making styles	Decision-making styles
3	5	Structure of mental toughness	Structure of mental toughness	Structure of mental toughness	Structure of mental toughness	Structure of mental toughness

Week	Course	Monday	Tuesday	Wednesday	Thursday	Friday
3	6	Decision-making styles	Decision-making styles	Decision-making styles	Decision-making styles	Importance of decision-making in sports
4	7	Structure of mental toughness	Structure of mental toughness	Structure of mental toughness	Structure of mental toughness	Studies on mental toughness
4	8	Factors that affect decision-making	Factors that get involved while decision-making	Common features of individuals using decision-making styles	Most efficient steps used in the decision-making process	Importance of decision-making styles in sports

7. Mental Toughness Scale

The Mental Toughness Scale was developed by Madrigal et al. (2013) and the the Turkish validity and reliability study was conducted to the scale by Erdoğan in (2016). The Mental Toughness Scale is a five-point Likert-type scale ranging from (5) strongly disagree to (9) strongly agree. The lowest score that can be obtained from the scale is 11, while the highest obtainable score is 44. A high score indicates a high level of mental toughness and a low score indicates a low level of mental toughness. The Cronbach Alpha internal consistency coefficient of the MTS is calculated as .87.

8. Melbourne Decision-Making Scale

In this study, the Melbourne Decision-Making Scale-II (MDMS), the Turkish validity and reliability study of which was conducted by Deniz (2004), was applied. The scale is a three-point Likert type scale ranging from 1=Correct to 3=Incorrect. It consists of 22 items and measures decision-making styles. A low score obtained from the scale indicates that the particular sub-dimension is preferred more, while a high score obtained from the scale indicates that the particular sub-dimension is used less. The scale has four sub-dimensions that evaluate different decision-making styles and the internal consistency coefficients of the scale's sub-dimensions vary between .65 and .80. The internal consistency coefficient for the whole scale was determined as .85 within the scope of this study (Deniz, 2004).

9. The procedure of the study

This study consisted of three stages. As the first stage of the study, the personal information form, mental toughness and decision-making style forms were used. Two matchess, one in home and one in the away matches held as part of the Academy League of Turkish Football

Federation (TFF) were analyzed. As the second stage of the study, the athletes were given mental toughness and decision-making styles training five times a day for four weeks, with the daily training consisting of two 40 minutes sessions. A total of four competitions, two home and two away field held by the Academy League of Turkish Football Federation (TFF), were analyzed during the application of the training.

As the third and final stage of the study, four more competitions, as two in internal and two in the external field, were analyzed after the 4-week training period. The mental toughness and decision-making styles forms were applied for the last time at the end of these competitions.

10. Analyses of the competitions

A computer with MacOS and 5K screen support and E Analysis Soccer Project football match analysis system were used for the instant analyses of the competitions (Espor, 2020).

11. Statistical evaluation

The obtained data were recorded with IBM SPSS 20 package program. Statisticians assisted in the statistical analysis of the obtained data. Independent Sample T-test was used to reveal the difference between the group and also pre-test, mid-test and post-test data of the scales and competition analyzes, and Repeated Measures ANOVA statistical analyses were used to determine the effect of the 4-week training program. The one-way ANOVA test was used for pre-test, mid-test and post-test comparisons of the results obtained from the competition analyses, while the LSD test was used to determine which tests showed significant differences.

13. Ethical aspects

Ethics committee approval of the study was obtained from Erciyes University Social and Humanities Ethics Committee numbered 027 and dated 16/05/2017. The study was conducted in accordance with the ethical standards of the American Psychological Association, and we received approval from a university institutional review board.

Findings

Table 2. Pre-test comparisons of the athletes in the control and experimental group.

	Group	N	Mean±SD	t	p
Mental Toughness	Control	24	46.88±5.61	-.570	.571
	Experimental	24	47.75 ±5.01		
Self-Respect	Control	24	10.08±1.61	-.674	.504
	Experimental	24	10.38 ±1.38		
Cautious	Control	24	9.88±1.90	-.928	.358
	Experimental	24	10.38 ±1.84		
Avoidant	Control	24	3.00±2.02	-1.151	.256
	Experimental	24	3.75 ±2.47		
Dilatory	Control	24	3.21±1.93	-.497	.622
	Experimental	24	3.46 ±1.53		
Panic	Control	24	3.00±1.84	-.482	.632
	Experimental	24	3.25 ±1.75		

Note: N= number of participants; SD= standard deviation; t= independent sample test score; p= significance level.

When Table 2 is examined, it can be seen that there were no significant differences between the mental toughness, self-respect, cautious, avoidant, dilatory, and panic decision-making styles of the athletes in the control and experimental groups ($p<0.05$) (Table 2).

Table 3. Mid-test comparisons of the athletes in the control and experimental groups.

	Group	N	Mean±SD	t	p
Mental Toughness	Control	24	46.42±4.62	-2.004	.049
	Experimental	24	50.13 ±7.80		
Self-Respect	Control	24	9.92±2.69	-3.801	.000
	Experimental	24	12.58 ±2.15		
Cautious	Control	24	8.33±1.52	-10.138	.000
	Experimental	24	14.71 ±2.68		
Avoidant	Control	24	3.17±2.20	.957	.344
	Experimental	24	2.67 ±1.31		
Dilatory	Control	24	3.79±1.79	2.424	.019
	Experimental	24	2.79 ±0.93		
Panic	Control	24	2.92±1.69	.841	.405
	Experimental	24	2.54 ±1.38		

Note: N= number of participants; SD= standard deviation; t= independent sample test score; p= significance level.

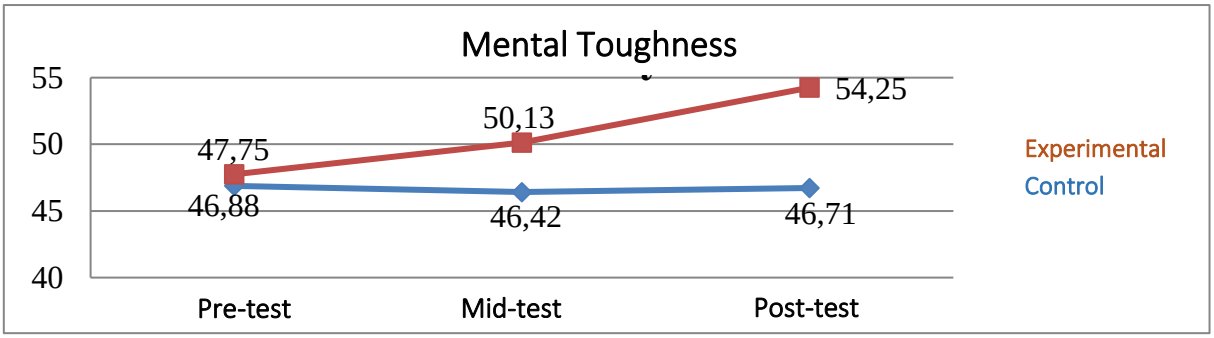
When Table 3 is examined, it can be observed that while there was a significant difference between the mental toughness, self-respect, cautious, and dilatory decision-making style scores of the athletes in the control and experimental groups, there were no significant differences between the avoidant and panic decision-making style scores of the athletes ($p<0.05$) (Table 3).

Table 4. Post-test comparisons of the athletes in the control and experimental group.

	Group	N	Mean ± SD	t	p
Mental Toughness	Control	24	46.71±8.54	-3.939	.000
	Experimental	24	54.25 ±3.88		
Self-Respect	Control	24	9.96±1.63	-6.762	.000
	Experimental	24	12.79 ±1.25		
Cautious	Control	24	9.88±1.92	-15.357	.000
	Experimental	24	16.67 ±1.01		
Avoidant	Control	24	2.42±1.32	.938	.353
	Experimental	24	2.08 ±1.14		
Dilatory	Control	24	3.33±2.35	2.389	.021
	Experimental	24	2.08 ±1.02		
Panic	Control	24	3.58±2.55	2.855	.006
	Experimental	24	2.00 ±0.93		

Note: N= number of participants; SD= standard deviation; t= independent sample test score; p= significance level.

When Table 4 is examined, it can be seen that while there were significant differences between the mental toughness, self-respect, cautious, dilatory, and panic decision-making style scores of the athletes in the control and experimental groups, there were no significant differences between the avoidant decision-making style scores of the athletes ($p<0.05$) (Table 4).



Graph 1. Mental toughness scores of the control and experimental groups.
Note: Pre-test =previous test; Mid-test= middle test; Post-test= posterior test.

Table 5. Comparison of mental toughness pre-test, mid-test and post-test scores of the athletes in the control and experimental groups.

Skill	Groups	Repeated Measures	Benferroni
Mental Toughness	Control Group	F (2,46) = .033, p= .968, np^2= .001	-
	Experimental Group	F (2,46) = 8.206, p= .001, np^2= .263	1-3

Note: F= variance; p= significance level; np2= eta squared; Bonferroni= significant difference between two measurements.

When the mental toughness pre-mid-post-test scores of the athletes in the control group were examined, it was determine that while there were no statistically significant differences between the scores, there were statistically significant differences between the mental toughness pre-test and post-test scores of the athletes in the experimental group. Accordingly, 26.3% of this difference was explained by time (Table 5).

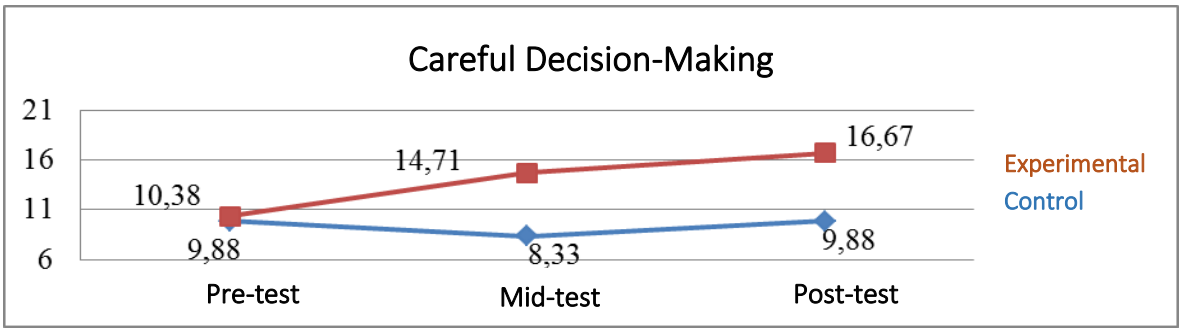
Graph 2. Self-Respective Decision-Making Scores of the Control and Experimental Groups.
Note: Pre-test =previous test; Mid-test= middle test; Post-test= posterior test.

Table 6. Comparison of self-respective decision-making pre-mid-post-test scores of the athletes in the control and experimental groups.

Skill	Groups	Repeated Measures	Benforroni
Self-Respect	Control Group	F (2,46) = .039, p= .962, np^2= .002	-
	Experimental Group	F (2, 46) = 14.218, p= .000, np^2= .382	1-2/1-3

Note: F= variance; p= significance level; np2= eta squared; Bonferroni= significant difference between two measurements.

When the self-respective decision-making pre-mid-post-test scores of the athletes were examined, it was observed that there were no statistically significant differences between the scores of the athletes in the control group, while there were statistically significant differences between the self-respective decision-making pre-test and mid-test scores and between the pre-test and post-test scores of the athletes in the experimental group. It was determined that 38.2% of this difference was due to time (Table 6).



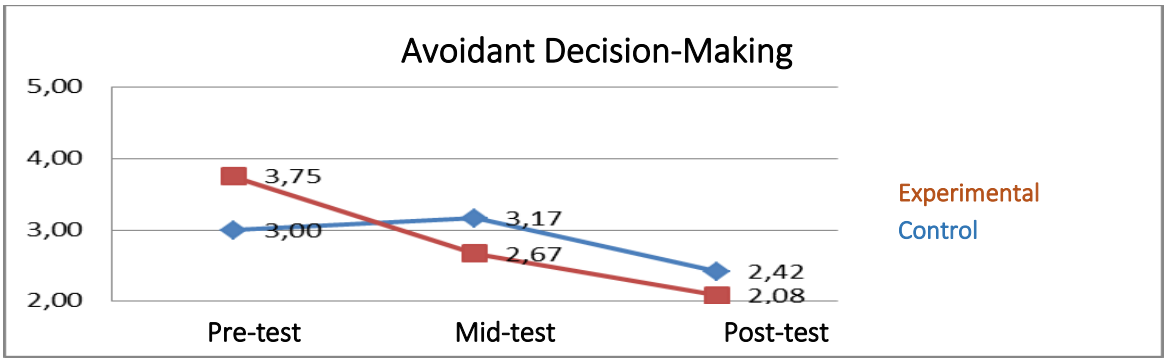
Graph 3. Careful decision-making scores of the control and experimental groups.
Note: Pre-test=previous test; Mid-test= middle test; Post-test= posterior test.

Table 7. Comparison of the careful decision-making pre-mid-post-test scores of the athletes in the control and experimental groups.

Skill	Groups	Repeated Measures	Benforroni
Self-Respect	Control Group	F (2,46) = 7.171, p= .002, np^2= .238	2-1/3-2
	Experimental Group	F (2, 46) = 52.238, p= .000, np^2= .694	1-2/1-3/2-3

Note: F= variance; p= significance level; np2= eta squared; Bonferroni= significant difference between two measurements.

When the careful decision-making pre-mid-post-test scores of the athletes in the control group were examined, it was determined that there were significant differences between the mid-test and pre-test scores and between the post-test and mid-test scores. Additionally, 23.8% of this difference was explained by time. When the careful decision-making pre-mid-post-test scores of the athletes in the control group were examined, it was determined that there were significant differences between the pre-test and mid-test and post-test scores and between the mid-test and post-test. It was determined that 69.4% of this difference was due to time (Table 7).



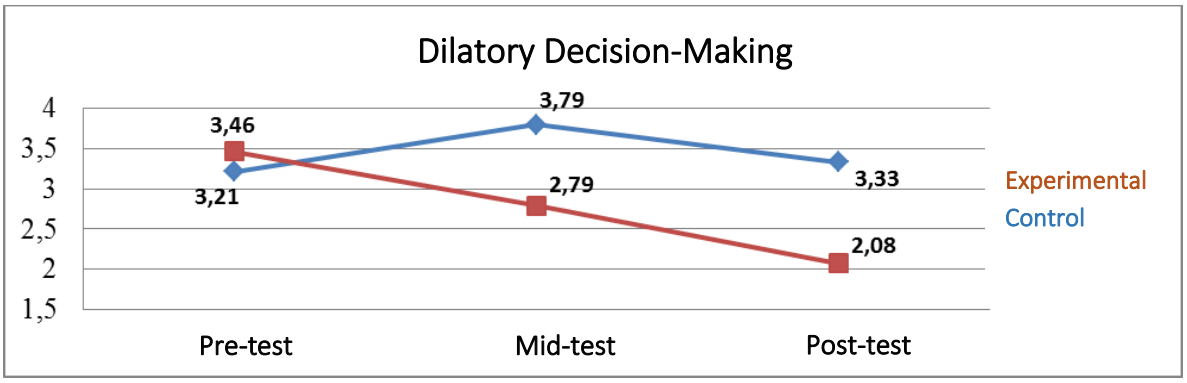
Graph 4. Avoidant decision-making scores of the control and experimental groups.
Note: Pre-test=previous test; Mid-test= middle test; Post-test= posterior test.

Table 8. Comparison of the avoidant decision-making pre-mid-post-test scores of athletes in the control and experimental group.

Skill	Groups	Repeated Measures	Bonferroni
Avoidant	Control Group	F (2,46) = 1.024, p= .367, np^2= .043	-
	Experimental Group	F (2, 46) = 5.073, p= .010, np^2= .181	1-3

Note: F= variance; p= significance level; np2= eta squared; Bonferroni= significant difference between two measurements.

When the avoidant decision-making pre-mid-post-test scores of the athletes were examined it was found that while there were no statistically significant differences between the scores of the athletes in the control group, there were statistically significant differences between the avoidant decision-making pre-test and post-test scores of the athletes in the experimental group. In addition, 18.1% of this difference was explained by time (Table 8).



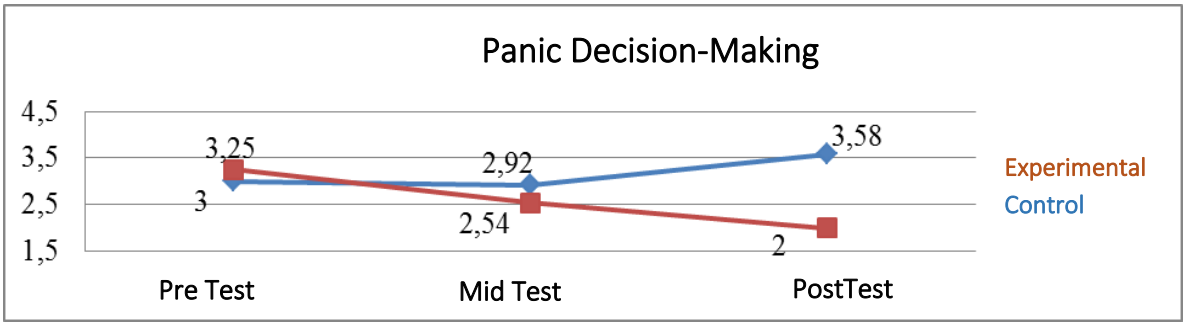
Graph 5. Dilatory decision-making scores of the control and experimental groups.
Note: Pre-test =previous test; Mid-test= middle test; Post-test= posterior test.

Table 9. Comparison of the dilatory decision-making pre-mid-post-test scores of the athletes in the control and experimental groups.

Skill	Groups	Repeated Measures	Bonferroni
Dilatory	Control Group	F (2,46) = .582, p= .563, np^2= .025	-
	Experimental Group	F (2, 46) = 8.245, p= .001, np^2= .264	1-3

Note: F= variance; p= significance level; np2= eta squared; Bonferroni= significant difference between two measurements.

When the dilatory decision-making pre-mid-post-test scores of the athletes were examined, it was determined that while there were no statistically significant differences between the scores of the athletes in the control group, there were statistically significant differences between the dilatory decision-making pre-test and post-test scores of the athletes in the experimental group. It was determined that 18.1% of this difference was due to time (Table 9).



Graph 6. Panic decision-making scores of the control and experimental groups.
Note: Pre Test=previous test; Mid Test= middle test; Post-test= posterior test.

Table 10. Comparison of the panic decision-making pre-mid-post-test scores of the athletes in the control and experimental groups.

Skill	Groups	Repeated Measures	Bonferroni
Panic	Control Group	F (2,46) = .808, p= .452, np^2= .034	-
	Experimental Group	F (2, 46) = 5.346, p= .008, np^2= .189	1-3

Note: F= variance; p= significance level; np2= eta squared; Bonferroni= significant difference between two measurements.

When the panic decision-making pre-mid-post-test scores of the athletes were examined, it was found that while there were no statistically significant differences between the scores of the athletes the control group, there were statistically significant differences between the scores of the athletes in the experimental group. It was determined that 18.1% of this difference was due to time (Table 10).

Table 11. Comparison of the competition analysis positive moves pre-test, mid-test and post-test results of the athletes.

	Tests	n	Mean	SD	f	p	LSD
Short Pass	Pre-test[1]	2	129.50	2.12	33.258	.000	1-3 2-3
	Mid-test[2]	4	134.75	4.27			
	Post-test[3]	4	154.00	4.32			
	Total	10	141.40	11.60			
Long Pass	Pre-test[1]	2	20.50	0.71	10.299	.008	1-3 2-3
	Mid-test[2]	4	22.25	2.87			
	Post-test[3]	4	29.00	2.58			
	Total	10	24.60	4.45			
Retrieving the Ball	Pre-test[1]	2	33.50	2.12	.861	.463	-
	Mid-test[2]	4	36.25	5.97			
	Post-test[3]	4	38.25	2.06			
	Total	10	36.50	4.14			
Dribbling	Pre-test[1]	2	10.50	0.71	50.762	.000	1-2 1-3 2-3
	Mid-test[2]	4	14.25	0.96			
	Post-test[3]	4	19.00	1.15			
	Total	10	15.40	3.53			
Shoot	Pre-test[1]	2	5.00	0.00	14.400	.003	1-3 2-3
	Mid-test[2]	4	7.00	1.15			
	Post-test[3]	4	11.00	1.83			
	Total	10	8.20	2.82			
Goal Kick-Off	Pre-test[1]	2	5.00	0.00	30.300	.000	1-2 1-3 2-3
	Mid-test[2]	4	6.50	0.58			
	Post-test[3]	4	8.25	0.50			
	Total	10	6.90	1.37			

Note: Pre-test =previous test; Mid-test = middle test; SD= standard deviation; f= variance; p= significance level; LSD= significant difference between two measurements.

When the competition analysis positive moves scores of the athletes were examined, it was determined that there was a statistically significant difference between the pre-test and post-test and between the mid-test and post-test scores for the short pass, long pass and shoot parameters. Furthermore, while there were significant differences between the pre-test and mid-test scores, between the pre-test and post-test and between the mid-test and

post-test scores in dribbling and goal kick-off scores ($p<0.05$), there were no statistically significant differences in the retrieving the ball parameter ($p>0.05$) (Table 11).

Table 12. Comparison of the competition analysis negative moves pre-test, mid-test and post-test results of the athletes.

	Tests	n	Mean	SS	f	p	LSD
Short Pass	Pre-test[1]	2	27.00	2.83	6.829	.023	1-3
	Mid-test[2]	4	21.75	4.03			
	Post-test[3]	4	17.75	0.96			
	Total	10	21.20	4.42			
Long Pass	Pre-test[1]	2	21.00	1.41	38.460	.000	1-2 1-3 2-3
	Mid-test[2]	4	17.00	1.15			
	Post-test[3]	4	12.75	0.96			
	Total	10	16.10	3.41			
Losing the Ball	Pre-test[1]	2	38.50	0.71	14.484	.003	1-3
	Mid-test[2]	4	32.50	2.08			
	Post-test[3]	4	26.00	3.65			
	Total	10	31.10	5.53			
Dribbling	Pre-test[1]	2	7.50	2.12	9.906	.009	1-3
	Mid-test[2]	4	5.75	0.96			
	Post-test[3]	4	3.50	0.58			
	Total	10	5.20	1.87			
Shoot	Pre-test[1]	2	6.50	2.12	7.747	.017	1-3
	Mid-test[2]	4	4.50	1.00			
	Post-test[3]	4	3.00	0.00			
	Total	10	4.30	1.64			
Goal Kick-Off	Pre-test[1]	2	3.50	0.71	6.456	.026	1-3
	Mid-test[2]	4	2.50	0.58			
	Post-test[3]	4	1.75	0.50			
	Total	10	2.40	0.84			

Note: Pre-test=previous test; Mid-test= middle test; SD= standard deviation; f= variance; p= significance level; LSD= significant difference between two measurements.

When the competition analysis negative moves scores of athletes were examined, it was determined that there were statistically significant differences between the pre-test and post-test scores for the short pass, losing the ball, dribbling, shoot and goal kick-off parameters, and between the pre-test and mid-test, between the pre-test and post-test, and between the mid-test and post-test scores for the long pass parameter ($p<0.05$) (Table 12).

Discussion and conclusion

Football, referred to as the game of the age, is an interesting sports branch since it includes the unpredictable and exciting movements of players. It is not exactly known where and by whom it was first played, however today, it is played by both men and women in almost every country in the world.

The fact that football is not just a game but a profession and the results of football matches gain importance in terms of both finance and prestige has caused football matches to create a stress factor for a player. In addition, the characteristics of footballers or many other reasons caused by the management or coaches can affect the performance of the players (Başer, 1994). The concept of performance is defined as the highest level of success that a person can achieve in a sports branch (İnal, 1998). Indisputably, athletic success factors must involve the development of physical, mental and psychological performance.

The factors that contribute to this development are the quality of the game, training environment, mental, physical and technical capacity, which is directly proportional to the performance limits of the athletes. Physical training should include flexibility, correct warm-up and stretching, agility, aerobic and anaerobic endurance, strength, balance and stability. Mental training should include elements such as concentration, responsibility, discipline, self-confidence, personal motivation, setting up a goal position, dealing with winning and losing, mental toughness and understanding of play (Özkan, 2016).

In light of this information obtained in the literature review, when the mental toughness and decision-making style scores are examined:

It can be seen from Table 2 that there were no significant differences between the mental toughness, self-respect, cautious, avoidant, dilatory and panic decision-making styles of the athletes in the control and experimental groups ($p<0.05$).

It can be seen from Table 3 that while there were significant differences between the mental toughness, self-respect, cautious and dilatory decision-making style scores of the athletes in the control and experimental groups, there were no significant differences between the avoidant and panic decision-making style scores of the athletes ($p<0.05$).

It can be seen from Table 4 that while there were significant differences between the mental toughness, self-respect, cautious, dilatory and panic decision-making style scores of the

athletes in the control and experimental groups, there were no significant differences between the avoidant decision-making style scores of the athletes ($p<0.05$).

When the mental toughness pre-mid-post-test scores of the athletes were examined, it was observed that there were no statistically significant difference between the scores of the athletes in the control group, while there were statistically significant differences between the mental toughness pre-test and post-test scores of the athletes in the experimental group. It was determined that 26.3% of this difference was due to by time (Table 5).

When the self-respective decision-making pre-mid-post-test scores of the athletes were examined, it was observed that there were no statistically significant differences between the scores of the athletes in the control group, while there were statistically significant differences between the self-respective decision-making pre-test and mid-test scores and between the pre-test and post-test scores of the athletes in the experimental group. It was determined that 38.2% of this difference was due to time (Table 6).

When the careful decision-making pre-mid-post-test scores of the athletes in the control group were examined, it was determined that there were significant differences between the mid-test and pre-test scores and between the post-test and mid-test scores. Additionally, 23.8% of this difference was explained by time. When the careful decision-making pre-mid-post-test scores of the athletes in the control group were examined, it was determined that there were significant differences between the pre-test and mid-test and post-test scores and between the mid-test and post-test. It was determined that 69.4% of this difference was due to time (Table 7).

When the avoidant decision-making pre-mid-post-test scores of the athletes were examined it was found that while there were no statistically significant differences between the scores of the athletes in the control group, there were statistically significant differences between the avoidant decision-making pre-test and post-test scores of the athletes in the experimental group. In addition, 18.1% of this difference was explained by time (Table 8).

When the dilatory decision-making pre-mid-post-test scores of the athletes were examined, it was determined that while there were no statistically significant differences between the scores of the athletes in the control group, there were statistically significant differences between the dilatory decision-making pre-test and post-test scores of the athletes in the experimental group. It was determined that 18.1% of this difference was due to time (Table 9).

When the panic decision-making pre-mid-post-test scores of the athletes were examined, it was found that while there were no statistically significant differences between the scores of the athletes the control group, there were statistically significant differences between the scores of the athletes in the experimental group. It was determined that 18.1% of this difference was due to time (Table 10).

When the competition analysis positive moves scores of the athletes were examined, it was determined that there was a statistically significant difference between the pre-test and post-test and between the mid-test and post-test scores for the short pass, long pass and shoot parameters. Furthermore, while there were significant differences between the pre-test and mid-test scores, between the pre-test and post-test and between the mid-test and post-test scores in dribbling and goal kick-off scores ($p<0.05$), there were no statistically significant differences in the retrieving the ball parameter ($p>0.05$).

When the competition analysis negative moves scores of athletes were examined, it was determined that there were statistically significant differences between the pre-test and post-test scores for the short pass, losing the ball, dribbling, shoot and goal kick-off parameters, and between the pre-test and mid-test, between the pre-test and post-test, and between the mid-test and post-test scores for the long pass parameter ($p<0.05$).

In conclusion, it can be said that the aims of this study were reached, as the athletes participated in the training without missing any sessions and their mental toughness and decision-making style skills increased, which in turn increased their successful short pass, successful long pass, retrieving the ball, successful shoots, dribbling and successful kick-off from the goal actions, which affect their performance on the field and the results of the competitions, and their unsuccessful short pass, unsuccessful long pass, losing the ball, unsuccessful shoots, unsuccessful dribbling and unsuccessful kick-off from the goal actions decreased. When the literature is examined, Güleroğlu (2017) reported that mental training or imagery training applied to athletes may enable a significant increase in their mental toughness levels. In a study, in which mental training was performed in order to increase the technical performance of children between the ages of seven and 10, it was reported that after the training, the children applied the technical practices better and more accurately (Li-Wei et al., 1999). Crust and Azadi (2010) determined the relationship between the mental toughness and psychological strategies used during training or competition with 107 female and male athletes and found that while there was a positive relationship between the mental toughness and self-talk, emotion control and the use of relaxation exercises, there was a negative relationship between mental toughness and negative thinking. They stated that this condition originated from the relationship of mental toughness with the structures of positive psychology. In a study conducted with nine children, who were elite tennis players with an average age of 14.1 ± 1.57 years, the effect of a mental training program on pre-competition anxiety, self-confidence and tennis performance was examined. For tennis performance, players were asked to evaluate themselves (how do they feel physically, technical quality, concentration, the interval of the effort, mental behavior and toughness, self-confidence level during the competition, their expectations from themselves) and the total of these elements were scored as tennis performance, which were found to be (34) for pre-test and (40) for post-test (Mamassis & Doganis, 2004).

A total of 43 children (25 males and 18 females) with an average age of 13.6 ± 2.4 years participated in a study conducted to examine the relationship between the match performance and mental toughness tennis players. A performance index was formed from the scores obtained during the tennis match for each player and its relationship with mental toughness was examined. The results of the study showed that mental toughness was associated with several performance indexes (Cowden, 2016).

On the other hand, Shanteau et al. (1991) prepared a program to improve the decision-making skills of students who were studying to become nurses. Within the scope of their study, a total of 115 3rd grade students of seven different nursing faculties participated in the one-year research project conducted in the Faculty of Nursing of the University of Illinois Medical Center. There were both an experimental and a control group in the study. A special measurement tool was developed in order to measure the decision-making and problem-solving skills of the students. As a result of the study, it was observed that student nurses required the given training and improved themselves in this field with it.

Taal and De Carvalho (1997) conducted a study in order to examine the relationship between adolescents' decision-making and their desire to control the future, and to increase their knowledge regarding decision-making. In accordance with this purpose, a total of 186 volunteers, 91 of which were male and 95 females, between the ages of 11 and 14, were included in the training program. The content of the program included topics such as taking responsibility, the importance of planning and the importance of choices and alternatives. The students in the experimental group were compared with high-school students who did not participate in the program. As a result of the study, it was determined that while the students' knowledge about decision making increased, their levels of controlling their success, understanding their emotions, recognizing the importance of school life and understanding their place in their future careers also increased.

Mann et al. (1989) conducted a study on the development and evaluation of the training programs they prepared in order to help people make conscious and effective decisions. A total of 76 individuals, 34 of which were male and 42 females, participated in the study. The ages of the participants varied between 19 and 65 and their occupations consisted of businessperson, skilled worker, office worker, housewife, unemployed and student. As a result, it was determined that the decision-making training program provided increased confidence in decision-making and the use of decision-making stages without a decrease in adaptation. Şeyhun (2000) examined the effect of a decision-making skills training program on the decision-making skills of final year primary school students. Initially, the Decision Strategies Scale was applied to 430 students and an experimental group and a control group, both with 40 individuals each, were created based on the results of the students. The results of the study determined that the decision-making program, which was applied to the experimental group, increased the logical decision-making skills of the students.

According to the study conducted by Afacan (2019), a 6-week mental endurance training program given to 30 football referees improved their self-confidence levels. It was also found that the psychological skill training reduced the anxiety levels of the referees.

Fallby (2000) conducted a study with 121 Swedish Olympic athletes who participated in the 2000 Sydney Olympics and revealed that the performances of the athletes, who carried out systematic mental skills training, improved positively with these trainings. It was also determined that the systematic mental skills training positively affected the mood of the athletes and facilitated them to set effective goals.

In their study conducted on tennis, Kalkavan et al. (1988) observed that the athletes who did the practice and mental training work together were more successful in learning and using their sports skills compared to the athletes who did practice alone.

The studies in the literature support the present study. It was observed that the training programs applied to the athletes psychologically supported them, increased their motivation to exhibit their new skills and motorize these behaviors.

It was determined that the applied training programs filled in a great gap in this field, which is theoretically lacking in the literature, as much as they had an impact on the athletes

As a result, it was concluded that the 4-week mental toughness and decision-making style training affected the performance of the footballer candidates who were receiving infrastructure training in professional football teams and positively affected the competition performance of the players.

Suggestions

1. The duration of the training program applied to the candidate footballers who were receiving infrastructure training in professional football teams can be extended and the changes that may occur in the mental toughness and decision-making levels of the athletes can be examined.
2. This study can be conducted on groups with a larger number of footballers who are receive infrastructure training in professional football teams.
3. As this study was conducted on a specific age group, different results could be examined by applying the same training on different age groups.
4. (Within the framework of fair-play) Such training can be given in order to increase the physical, mental and psychological performance of the athletes who play football as a profession.
5. As football is played by both men and women around the world, similar training can be applied to female footballer candidates receiving infrastructure training in Turkey and the changes that may occur as a result of this training can be examined.
6. The training can be applied to individual sports branches and can be compared with athletes in team sports.

7. Similar training programs can be applied to team sports other than football and the changes that may occur as a result of the training can be examined.

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