

Mental toughness comparison of sports science students

Levent Ceylan^{1*} and Hamza Küçük²

¹Faculty of Sport Sciences, Cumhuriyet University, Sivas, Türkiye.

²Yaşar Doğu Faculty of Sport Sciences, Ondokuz Mayıs University, Samsun, Türkiye.

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ABSTRACT

The research aims to compare the mental toughness skills of national and elite athletes who actively do sports. The study group consisted of 204 active sports students, 160 males and 44 females, studying in physical education and sports teaching, coaching education and sports management departments in sports sciences faculties. 130 elite athletes and 74 national athletes participated in the study. The Sport Mental Toughness Questionnaire (SMTQ-14), developed by Sheard et al. (2009) in order to determine the mental toughness levels of athletes, consists of 14 items. SPSS 25.0 program was used for the analysis and statistical operations of the data obtained from the students. Primarily, the kurtosis and skewness coefficients were examined to determine whether the parametric tests met the basic assumptions. It was observed that the obtained scores met the normality assumption. Then, the data were analyzed with descriptive statistics, T-test, ANOVA test. There was a significant difference in the "Confidence" sub-dimension of SMTQ-14 scores according to age groups ($t=-3.539$; $p<0.001$). No significant difference was found in all other variables ($p>0.05$). As a result of the study, there was a significant difference in favor of the athletes who are over 21 years old in the "Confidence" sub-dimension according to age groups. It can be said that athletes who are over 21 years old are better at believing in their abilities and thinking that they are better than their competitors in order to reach their goal in difficult situations that require struggle.

Keywords: Mental toughness, elite athletes, sports sciences faculties.

*Corresponding author. E-mail: leventceylan17@hotmail.com.

INTRODUCTION

Mental toughness, which is considered to increase the performance level of athletes, is one of the important subjects of sports psychology (Csikszentmihalyi, 1990; Nergiz et al., 2015). Sports scientists, sports managers, coaches and even the athletes themselves have now focused on mental toughness. However, they have begun to accept mental toughness as one of the most important psychological factors in terms of the continuity of sportive success (Jones et al., 2007; Sheard, 2012) and achieving the maximum performance level (Gould et al., 1987; Jones, 2002; Bull et al., 2005; Cox, 2012). The fitness level or skill of the athletes can significantly affect the outcome of the competition (Sarıakçalı et al., 2020; Sarıakçalı, 2021; Sarıakçalı et al., 2022). As a matter of fact, if the physical capacities of the athletes are similar to

their competitors, the winner is usually the party with better mental skills (Weinberg and Gould, 2015). In this context, mental and emotional elements in sports; biomechanics can take a more effective role than physiological, technical-tactical and physical elements. Technical-tactical, physiological and psychological skills can be effective in the formation of a good or bad sportive performance and the resulting success and failure (Konter, 1998).

Mental toughness refers to the qualities that enable an athlete to perform despite the difficult conditions that may occur during the competition (Loehr, 1986; Gulsen et al., 2019). It allows the athlete to control himself, to be determined to be successful, to control his emotions in difficult conditions and to recover after adverse conditions

(Bull, et al., 2005; Gulsen et al., 2019). Mentally tough athletes are defined as individuals who persevere until they reach their goals, make sacrifices, ignore injuries and play with pain and suppress negative effects (Tibbert et al., 2015; Gulsen et al., 2019). Mental toughness has been a concept that sports researchers, trainers, athletes and sports managers have emphasized recently, and it has been seen as an important prerequisite for continuous sportive success (Jones et al., 2007; Sheard, 2013; Tekkurşun-Demir and Türkeli, 2019). The sports environment can contain many difficulties, stress and even failures for athletes. For this reason, athletes need to keep their mental toughness levels as high as possible in the face of such negative situations in order to achieve success or recover quickly (Crust, 2008; Jones et al., 2007; Sheard, 2013). Athletes make an effort to make themselves psychologically and physically stronger as the competition in sports gains value and this situation increase. In such a case, it is seen that not only physical strength is sufficient in achieving success, but also psychological factors are an important factor (Moralı and Tiryaki, 1990). It is understood that mental toughness, which makes a significant psychological contribution to athletes, is effective in achieving a successful performance (Tekkurşun-Demir and Türkeli, 2019). In light of the literature, it can be said that mental toughness is very important for both athletes and students in sports sciences to be psychologically healthier. The sample group of this research continues both national and elite sportsmanship as well as student life. It can be stated that the responsibilities of the participants in this study are high due to both their studentship and sportsmanship. Therefore, we can say that mental toughness is important for students who are athletes. In line with this importance, the research aims to compare the mental toughness skills of national and elite athletes who actively do sports. In light of the literature, it can be said that mental resilience is very important for both athletes and students in sports sciences to be psychologically healthier. The sample group of this research continues both national and elite sportsmanship as well as student life. It can be stated that the responsibilities of the participants in this study are high due to both their studentship and sportsmanship. Therefore, we can say that mental toughness is important for students who are athletes. In line with this importance, the research aims to compare the mental toughness skills of national and elite athletes who actively do sports.

MATERIALS AND METHODS

Working group

The study group of the research consisted of 204 active sports students, 160 males and 44 females, studying in

physical education and sports teaching (PEST), coaching education (CE) and sports management (SM) departments in sports sciences faculties. 130 elite athletes and 74 national athletes participated in the study.

Data collection tool

The Sport Mental Toughness Questionnaire (SMTQ-14), developed by Sheard et al. (2009) in order to determine the mental toughness levels of athletes, consists of 14 items. The inventory, which consists of three sub-dimensions (confidence, continuity and control) as well as general mental toughness, is in a four-point Likert type. Cronbach Alpha values for the sub-dimensions of the inventory were, 81; for the confidence sub-dimension, 74; for the continuity sub-dimension, 71; for the control sub-dimension; the total internal consistency coefficient was found to be 81 (Sheard et al., 2009). Mental Toughness Inventory in Sport (MTIS), the Turkish adaptation study was carried out by Altıntaş (2015). The Cronbach's Alpha internal consistency reliability coefficient of the Sports Mental Toughness Inventory in this sample was determined as 70. Accordingly, the Mental Toughness Inventory in Sports has a reliability coefficient that can be used in this sample. When evaluated in terms of subscales, the Cronbach Alpha internal consistency reliability coefficient of the confidence subscale was 66; The Cronbach's Alpha internal consistency reliability coefficient of the continuance subscale was 56 and the Cronbach's Alpha internal consistency reliability coefficient of the control subscale was 60.

MTIS Confidence: Believing in abilities and thinking that you are better than your opponents to achieve the goal in difficult situations that require struggle (Items 1, 5, 6, 11, 13, 14).

Control: Maintaining composure, being in control and relaxed in the face of pressure or unexpected situations (Items 2, 4, 7, 9).

Continuity: Taking responsibility, concentrating and struggling in line with the determined goals (Items 3, 8, 10, 12).

The "Sport Mental Toughness Questionnaire-SMTQ-14" developed by Sheard et al. (2009) was used to determine the level of mental toughness in the sports environment. The scale consists of 14 items. The scale, which consists of three sub-dimensions (Confidence, Continuity and Control) in addition to general mental toughness, is in a 4-point Likert type. The explanation of the 3 sub-dimensions in the Mental Toughness Inventory in Sports is presented below (Sheard, 2013).

Data collection process

"Easy Sampling" method was used in the research. The

questionnaire method was used as a data collection technique in the research. Before each scale was filled by the athletes, it was voluntarily adhered to and the rules to be followed were specified in detail. Data collection tools were both transferred to the online environment and delivered to the participants via Google Form and applied in the classroom by the researcher by making an appointment with the instructor during the course hours.

Analysis of data

SPSS 25.0 program was used for the analysis and statistical operations of the data obtained from the students. Primarily, the kurtosis and skewness coefficients were examined to determine whether the parametric tests met the basic assumptions (Tabachnick and Fidell, 2007). It was observed that the obtained scores met the normality assumption. Then, the data were analyzed with descriptive statistics, T-test, and ANOVA test.

RESULTS

As shown in Table 1, the sub-dimensions did not show a

significant difference in terms of the gender variable of the participants' SMTQ-14 scores ($p > 0.05$). Considering the averages, male participants in the "Confidence" sub-dimension have higher scores in the "Control" and "Continuity" sub-dimensions of the female participants.

As shown in Table 2, there was a significant difference in the "Confidence" sub-dimension according to the status of the participants as elite and national athletes ($t = 2.240$; $p < 0.05$). The difference in the "Confidence" sub-dimension was found to be in favor of national athletes. There was no significant difference in the sub-dimensions of "Control" and "Continuity" ($p > 0.05$). Looking at the averages, elite athletes in the "Control" sub-dimension have higher scores in the "Continuity" sub-dimension, and national athletes have higher scores.

As shown in Table 3, there was a significant difference in the "Confidence" sub-dimension of SMTQ-14 scores according to age groups ($t = -3.539$; $p < 0.001$). A significant difference in the "Confidence" sub-dimension was found to be in favor of the athlete students who are over 21 years old. There was no significant difference in the sub-dimensions of "Control" and "Continuity" according to age groups ($p > 0.05$). When the averages are considered, the scores of the athletes who are between 18-21 years old in the "Control" sub-dimension and the athletes who are over 21 years old in the "Continuity" sub-dimension are higher.

Table 1. Comparison of mental toughness questionnaire by gender.

Sub-dimension	Gender	n	\bar{x}	SD	t	p
Confidence	Male	160	3.08	0.45	0.929	0.354
	Female	44	3.01	0.40		
Control	Male	160	2.75	0.58	-1.537	0.126
	Female	44	2.90	0.37		
Continuity	Male	160	2.66	0.40	-0.550	0.583
	Female	44	2.69	0.29		

Table 2. Comparison of mental toughness questionnaire by athlete level.

Sub-dimension	Level	n	\bar{x}	SD	t	p
Confidence	National Athlete	74	3.15	0.44	2.140	0.034
	Elite Athlete	130	3.02	0.44		
Control	National Athlete	74	2.78	0.58	-0.167	0.868
	Elite Athlete	130	2.79	0.53		
Continuity	National Athlete	74	2.73	0.41	1.848	0.066
	Elite Athlete	130	2.63	0.35		

Table 3. Comparison of mental toughness questionnaire by age groups.

Sub-Dimension	Age	n	\bar{x}	SD	t	p
Confidence	18-21 years	90	2.95	0.49	-3.539	0.001
	Over 21 years	114	3.16	0.37		
Control	18-21 years	90	2.85	0.51	1.431	0.154
	Over 21 years	114	2.74	0.57		
Continuity	18-21 years	90	2.66	0.39	-0.052	0.958
	Over 21 years	114	2.67	0.37		

Table 4. Comparison of the mental toughness questionnaire according to the departments that the athletes study.

Sub-Dimension	Department	n	\bar{x}	SD	F	p
Confidence	PEST	76	3.07	0.52	2.735	0.067
	CE	61	3.16	0.43		
	PEST	67	2.98	0.33		
Control	CE	76	2.75	0.63	2.489	0.086
	PEST	61	2.91	0.54		
	CE	67	2.71	0.43		
Continuity	PEST	76	2.68	0.35	1.303	0.274
	CE	61	2.71	0.48		
	PEST	67	2.61	0.29		

As shown in Table 4, there was no significant difference in the sub-dimensions of the participants' SMTQ-14 scores according to the department they read ($p > 0.05$). When the averages are considered, the scores of the students studying in the CE department were found to be higher in the sub-dimensions of "Confidence", "Control" and "Continuity".

DISCUSSION

According to the results of the study, sub-dimensions did not show a significant difference in terms of the gender variable of SMTQ-14 scores ($p > 0.05$). Considering the averages, male participants in the "Confidence" sub-dimension had higher scores in the "Control" and "Continuity" sub-dimensions, and female participants had higher scores (Table 1). With this result, it can be said that the mental toughness of male and female athlete students is similar to each other. Considering that individuals' ability to achieve success or recover quickly is related to a high level of mental toughness (Jones et al., 2007; Crust, 2008; Sheard, 2013) If we consider that the highest score that can be obtained in the sub-dimensions

of Confidence, "Control" and "Continuity" is 4. It can be said that the scores of the participants in this study are high. Analyzing the literature, Tekkurşun-Demir and Türkeli (2019) found no significant difference in the sub-dimensions of "Confidence", "Control" and "Continuity" according to the gender of the participants in their study on the mental resilience levels of the students of the faculty of sports sciences ($p > 0.05$). Looking at the averages, male participants in the "Confidence" and "Control" sub-dimensions had higher scores in the "Continuity" sub-dimension of the female participants. According to Yarayan et al. (2018), no significant difference was found between mental toughness and gender. In the literature, there are studies that detect a significant difference between the level of mental toughness in sports by gender (Orhan, 2018; Farrokhi et al., 2011).

There was a significant difference in the "Confidence" sub-dimension according to the status of the participants as elite and national athletes ($t = 2.240$; $p < 0.05$). The difference in the "Confidence" sub-dimension was found to be in favor of national athletes. There was no significant difference in the sub-dimensions of "Control" and "Continuity" ($p > 0.05$). When the averages are

considered, the scores of elite athletes in the "Control" sub-dimension and the national athletes in the "Continuity" sub-dimension are higher (Table 2). When the literature on the subject is examined, Sarı et al. (2020) did not find a significant difference between the mental toughness scores of national and non-national athletes in their study on national and non-national taekwondo players. Considering the averages, it was found that national athletes had higher mental toughness scores. In his study on wrestlers, Dede (2019) found that the mental toughness of elite wrestlers did not differ significantly according to their sports experiences. Gölge (2019), on the other hand, determined that the total mental toughness score did not differ significantly in terms of nationality. Nicholls et al. (2009) and Connaughton et al. (2008), it was determined that mental toughness differs significantly in terms of sports experience. When we look at the literature, it is seen that different findings have been reached. This may be due to the different study groups.

There was a significant difference in the "Confidence" sub-dimension of SMTQ-14 scores according to age groups ($t = -3.539$; $p < 0.001$). A significant difference in the "Confidence" sub-dimension was found to be in favor of the athlete students who are over 21 years old. There was no significant difference in the sub-dimensions of "Control" and "Continuity" according to age groups ($p > 0.05$). When the averages are considered, the scores of the athletes who are between 18-21 years old in the "Control" sub-dimension and the athletes who are over 21 years old in the "Continuity" sub-dimension are higher. Depending on the increase in age, the biological changes of individuals (Crust, 2008; Horsburgh et al., 2009), changes in self-perceptions, social effects and emotional reactions (Weiss and Readeke, 2004) Along with this, it can be predicted that the level of mental toughness will increase (Sarı et al., 2020).

There was no significant difference in the sub-dimensions of the participants' SMTQ-14 scores according to the department they read ($p > 0.05$). When the averages are considered, the scores of the students studying in the CE department were found to be higher in the sub-dimensions of "Confidence", "Control" and "Continuity". When the literature was examined, Tekkurşun-Demir and Türkeli (2019) examined the mental toughness levels of the students of the faculty of sports sciences.

As a result of the study, there was a significant difference in favor of the athletes who are over 21 years old in the "Confidence" sub-dimension according to age groups. It can be said that athletes who are over 21 years old are better at believing in their abilities and thinking that they are better than their competitors in order to reach their goal in difficult situations that require struggle. In the study, there was no difference according to gender, nationality and the department the students studied.

However, it was revealed that the mental toughness scores of the participants in the study were high in all variables. As a result of the study, it can be said that the participants in the study are sufficient to believe in their abilities to reach the goal in difficult situations that require struggle, to think that they are better than their competitors, to keep their coolness under pressure or unexpected situations, to be in control and comfortable, and to take responsibility, concentrate and struggle in line with the determined goals.

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