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Does Emotional Intelligence Affect Mental Toughness in Physically Disabled Athletes?

Yunus Emre YARAYAN[1*], Ekrem Levent İLHAN[2], Oğuz Kaan ESENTÜRK[3], Çağrı ARI[4], Doğukan Batur Alp GÜLŞEN[5]

[1]Siirt University, School of Physical Education and Sports, Siirt.
[2]Gazi University, Faculty of Sport Sciences, Ankara.
[3]Erzincan Binali Yıldırım University, Faculty of Education, Erzincan.
[4]Muş Alparslan University, Faculty of Sport Sciences, Muş.
[5]Aydın Adnan Menderes University, Faculty of Sport Sciences, Antalya.

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Abstract

The aim of this research is to determine the determinative role of the emotional intelligence sub-dimensions (Assessing others emotions, evaluating their own emotions, regulating emotions, using social skills, use of emotion) in determining the levels of mental toughness of the athletes with disabilities. A total of 261 athletes from 165 disabled athletes (wheelchair basketball, amputee football, sitting volleyball, badminton), male (63.2%) (24.40±5.48 years old) and 96 female (36.0%) participated voluntarily. Within the scope of the research, information about socio-demographic variables was collected by the personal information form created by the researchers. To reach the purpose of the research; The Sport Mental Toughness Questionnaire made by Altıntaş and Bayar (2015) and the Emotional Intelligence Inventory in Sport adapted to Turkish by Adiloğulları and Görgülü (2015) were used. In the analysis of the data, firstly, when the skewness and kurtosis values for the normality assumptions were examined, it was determined that the distribution was normal. In this direction correlation analysis to determine the relationship between variables, stepwise regression analysis was used to determine the power of independent variables in predicting dependent variables. According to the findings obtained as a result of the research, it has been determined that the emotional intelligence levels of the athletes are important determinants of the mental toughness levels, and the analysis completed in three stages explains 56% of the variance.
Keywords: Physically disabled athletes, Mental toughness, Emotional intelligence

[*] **Corresponding Author:** Assist. Prof. Yunus Emre YARAYAN, **E-mail:** yunus.emre.yarayan@gmail.com

INTRODUCTION

In recent years, researchers have argued that athlete performance is not only influenced by factors such as physical fitness, technique, and tactics, but also mental and emotional characteristics can affect sports performance. In sports branches that require competition, the use of the right psychological strategy enables the athlete to perform at higher levels (García & Díaz-Morales, 2010; Nicholls & Polman, 2007; Olmedilla et al., 2010). Therefore, a large number of studies have focused on psychological factors that affect the athletic performance positively or negatively (Gimeno et al., 2001; Mahamud et al., 2007). Some studies that examined psychological factors affecting sport performance indicate that motivation, self-confidence, stress, anxiety, goal setting and concentration are important factors (Berengüí et al., 2013; Ruiz-Tendero & Salinero-Martin, 2012). It is thought that other psychological structures that have a say on athlete performance include the concepts of mental toughness and emotional intelligence.

Whereas McGeown et al., (2016) state that mental toughness is a feature that makes it easier to maintain the excellence of performance, there are some definitions about the concept of mental toughness associated with athlete performance in the literature, such as ability to cope with stress, difficult processes, oppression or coping skills (Gould et al., 1987; Williams, 1998), ability to fight without giving up against adverse situations (Dennis, 1981; Goldberg, 1998), to be unaffected from the adverse situations or flexible against them (Bull et al., 2005; Clough et al., 2002). In line with these definitions, it can be said that athletes with mental toughness are approaching the challenges they face in a more compatible manner in order to perform successful performances.

As a matter of fact, the effect of the emotional intelligence levels on the behavior of the athletes with mental toughness is also closely related to the sportive performance (Crombie et al., 2009; Parker et al., 2004). Researchers state that the competitive nature of sport involves a wide range of emotions such as anger, fear, hopelessness, anxiety, pride, sadness, and happiness that affect the performance of individuals (Botterill & Brown, 2002; Jones, 2002). In this context, emotional intelligence is defined by researchers as different ways, such as the being able to to monitor the emotions of oneself and others, distinguish between them and use the information they obtain from here to direct their thoughts and behaviors (Salovey & Mayer, 1990), being able to understand and express emotions correctly (Law et al., 2004), to be able to mobilize oneself, to moving on his/her way despite the obstacles, delaying satisfaction by controlling impulses, blocking thinking, putting yourself in someone's shoes, and fostering hope (Goleman, 1996).

Considering that the psychological factors in the sport environment are among the determinants of the difference between the professionals who are at the same levels in terms of the physiological, technical and tactical structures, the athletes with physical disabilities must provide control with their mental and emotional aspects in order to keep their performances at the optimal level. Although physically disabled athletes are physically incapable in different ways, they are affected by the dynamics of the sports branch and the qualities of the athletics like other athletes. According to Ilhan & Suveren (2010), people with disabilities nowadays successfully perform most of the sports branches of individuals with normal development. The

sport of disabled people today have a position that interests wide audiences at national and international level the broad masses at the national and international level with its competitive dimension. For this reason, it is important to determine the factors that may have the potential to affect the performance of athletes with physical disabilities and to reveal the relationships between these factors although it is seen that most of the studies are concentrated on the athletes with normal development (Gomez-Marcos & Sanchez-Sanchez, 2019). However, today, the increase in interest and investments in paralympic games has an impact on the factors that will increase the performance of disabled athletes (Jefferies et al., 2012).

Studies on the psychological characteristics of paralympic athletes, including physically disabled athletes, have gained importance since the 90's and the main research area has been the comparison of various psychological parameters between athletes with normal development and paralympic athletes (Blumenstein & Orbach, 2015). Research (Torralba et al., 2017) suggests that paralympic athletes may have developed a series of psychological strategies that support sports performance depending on depending on their disability. As a matter of fact, some studies comparing athletes with normal development and paralympic athletes show that there is not a big difference in psychological variables of sports performance of both groups (Martin, 1999, Sherrill, 1999). However, unlike athletes with normal development, it can be thought that physical, social and economic barriers in paralympic athletes can create some psychological differences (Iezzoni, 2009; Martin et al., 2011).

Emotional intelligence and mental toughness were investigated in various sports branches in various contexts. However, it is thought that the absence of a study in the literature on the relationship between emotional intelligence and mental toughness of physically disabled athletes will dd a unique dimension to this research. In this context, considering the theory that both mental toughness and emotional intelligence are related to psychological control and successful performance, the findings and results to be achieved are considered to have the potential to contribute to sports psychology literature in terms of practice and theory. The aim of this study is to determine the determinative role of emotional intelligence sub-dimensions (evaluating emotions of others, evaluating their own emotions, regulating emotions, social skills, use of emotions) in determining the level of mental toughness of athletes.

METHODS

Research Model

In this study, relational screening model was used. The relational screening model is a type of research model that aims to determine whether or not there is a relationship between two and more variables and/or the degree of relationship (Fraenkel & Wallen, 2011).

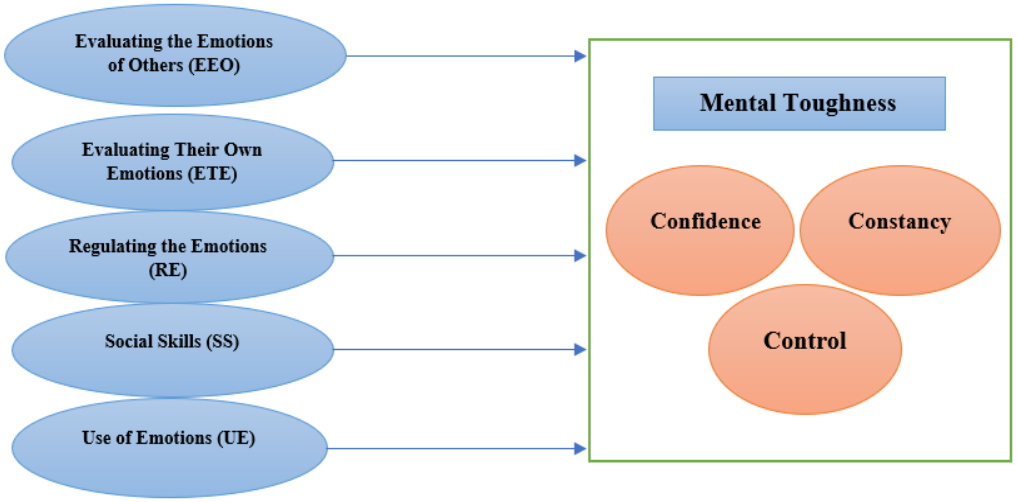

Figure 1. Research model

Research Group

A total of 261 athletes from the physically disabled athletes (wheelchair basketball, amputee football, sitting volleyball, badminton), 165 male (%63,2), ($\overline{X}_{age}$24.40±5.48), 96 female (%36,8) ($\overline{X}_{age}$22.88±5.28), participated in the research voluntarily. The average sports experience of the participants was found to be 10.06±4.69 years for male athletes and 7.75±3.99 years for female athletes.

Data Collection Tools

Personal Information Form: This section includes the questions on the demographic information of the athletes, who are included in the study, about gender, age, sport branch and sports experience.

Sport Mental Toughness Questionnaire: "Sport Mental Toughness Questionnaire, developed by Sheard et al., (2009) to determine the level of mental toughness in the sport environment, consists of 14 items and 3 sub-dimensions. In addition to the general mental toughness, the scale consisting of three sub-dimensions (Confidence, Constancy and Control) has a 4-point Likert structure (1 = completely wrong; 4 = very accurate). Mental Toughness Questionairre (MTQ) was adapted into Turkish by Altıntaş & Bayar Koruç, (2015). The Cronbach Alpha values for the submensionsid of the questionairre were 0.84 for the Confidence sub-dimension, 0.51 for the constancy sub-dimension and 0.79 for the Control sub-dimension. According to these results, the scale is considered as a reliable scale (Altıntaş & Bayar Koruç, 2015)." In this study, Cronbach Alpha value was determined as .62 for the general questionairre.

***Emotional Intelligence Scale*:** "Based on the Emotional Intelligence Scale developed by Shutte et al., (1998), it was adapted for the athletes' population by Lane et al., (2009) in order to measure the emotional intelligence of athletes. In addition, the scale is evaluated in 5 sub-dimensions (evaluating the emotions of others, evaluating their own emotions, regulating emotions, social skills, use of emotions), consisting of 18 items and has a 5-point likert type (1=strongly disagree; 5=strongly agree). It was adapted for Turkish sports population by Adiloğulları & Görgülü (2015). The internal consistency coefficient of the Emotional Intelligence Scale sub-dimensions was determined as 0.69 for evaluating the emotions of others, 0.85 for evaluating their own emotions, 0.67 for regulating emotions, 0.61 for social skills and 0.85 for use of emotions, and EIS was recognized as a valid tool (Adiloğulları & Görgülü, 2015)." In this study, the Cronbach Alpha value was determined as .83 for the general scale.

Ethic Approval

Before the inventories were distributed to athletes, they were first informed about the purpose of the study. In this direction, the necessary approvals were obtained from the trainers before the training and the implementations were performed. There was no time limitation for data collection. In addition, Siirt University Ethics Committee was applied to and Ethics Committee Approval was obtained in order to evaluate the ethical suitability of the research (17.06.2022-2959).

Data Analysis and Interpretation

For the statistical analysis of the data obtained from the inventories, SPSS 22.0 (Statistical Package for Social Sciences, Chicago, Illinois, United States) computer program was used. Within the scope of the research, G*Power multiple regression analysis was used to determine the power of the sample size. In this direction, 1-β power is 95% It was determined that 138 participants would be needed to determine an effect size of alpha = 0.05, f^2=0.15. Suresh & Chandrashekara, (2012) recommend increasing the sample size by approximately 10% due to the possibility of withdrawal or missing data. In this direction, 272 athletes participated in the research.

In the study, firstly, the extreme value analysis was evaluated by considering the free data and Mahalanobis distance for the suitability of the analyzes and the control of the assumptions. As a result of these processes, the data of the remaining 261 people were analyzed by excluding the data of 12 people who filled out faulty and incomplete. Researchers (Carpita & Manisera, 2011; Downey & King, 1998) state that there are techniques such as assigning a value or excluding it from analysis. In this context, it was decided to exclude these data, taking into account the number of the research group and the lack of answers to the scale items in these 12 data.

After the data set was ready, it was checked with the Kolmogorov-Smirnov test for normality assumptions, and it was found that it did not meet the normality assumptions. In the literature, Tabachnick & Fidell, (2013) and Hair et al., (2013) state that these tests are not sufficient when they are used in Likert type measurements. Therefore, detection of skewness kurtosis values for normality estimates. Tabachnick & Fidell, (2013) do not recommend that these values be between -1.5 + 1.5. The values of the scales within the scope of the research were examined

and it was determined that the distribution was normal (Table 1). After this stage, measurement analysis was used to determine the relationships between the variables. Stepwise regression analysis was used to determine the effect of changing variables (emotional intelligence sub-variables) on the variable (mental toughness level).

FINDINGS

Table 1. Mean, standard deviation, skewness and kurtosis values of dependent and independent variables included in the research

Scales	Variables	N	$\overline{X}$	SD	Skewness	Kurtosis
Mental Toughness	MT-Total	261	40,44	4,68	,907	1,245
Emotional Intelligence	Evaluating the Emotions of Others (EEO)	261	15,18	2,87	-,376	,304
	Evaluating Their Own Emotions (ETE)	261	12,52	1,85	-,512	,244
	Regulating the Emotions (RE)	261	5,16	1,38	-,090	-,462
	Social Skills (SS)	261	11,38	2,08	-,324	-,348
	Use of Emotions (UE)	261	24,03	3,31	-,284	,096

Table 1 shows that the skewness values are between -,512 and ,907, and the kurtosis values are between -,462 and 1,245. When the -1,5 +1,5 skewness and kurtosis values suggested by Tabachnick & Fidell, (2013 are taken into account, it was determined that the distribution was normal. After this stage, the relationships between dependent and independent variables were examined and the results were presented in the next section.

Relationships Between Variables in Regression Analysis

The results of Pearson-Correlation analysis regarding the relationship between emotional intelligence and mental toughness included in the research process are presented in Table 2.

Table 2. Pearson-correlation analysis results among the variables included in the study

Emotional Intelligence Sub-Dimensions		Mental Toughness
Evaluating the Emotions of Others (EEO)	r	,179**
	p	,004
Evaluating Their Own Emotions (ETE)	r	,116
	p	,061
Regulating the Emotions (RE)	r	,692**
	p	,000
Social Skills (SS)	r	,261**
	p	,000
Use of Emotions (UE)	r	,359**
	p	,000

Table 3. Stepwise regression analysis results regarding the prediction of mental toughness scores

Model	B	Std. Error	Beta	t	R	R^2	Adjusted R^2	F	p
1.Constant	28,391	,808		35,117					
UE	2,335	,151	,692	15,442	,692	,479	477	238,448	**,000***
2. Constant	19,602	1,528		12,826					
UE	2,218	,141	,658	15,707	,745	,555	,551	160,570	**,000***
RE	,391	,059	,276	6,598					
3. Constant	18,211	1,579		11,530					
UE	2,224	,139	,660	15,979	,754	,569	,564	113,054	**,004***
RE	,304	,065	,215	4,637					
SS	,303	,103	,135	2,930					
Durbin Watson=1,645; p<,000									

As shown in Table 3, UE (p=,00), RE (p=,00), SS (p=,00) variables were included in the progressive regression analysis process.

The analysis was completed in three stages. In the first stage of the analysis, UE variable, one of the sub-dimensions of emotional intelligence, was introduced. It was observed that UE predicted the mental toughness significantly (p=,00) and explained only 47% of the total variance of the mental toughness alone (R=,692, R^2=,419). The standardized regression coefficient (β) of UE was found to be ,692.

In the second stage of the analysis, the RE variable, one of the emotional intelligence sub-dimensions, was introduced. The RE variable predicted the mental toughness significantly (p=,00) and explained the 55% of the total variance of the mental toughness together with the UE (R=,745, R^2 =,555). The standardized regression coefficient (β) of RE was found to be ,276.

In the third stage of the analysis, the SS variable, one of the emotional intelligence sub-dimensions, was introduced. It is observed that the SS variable predicted the mental toughness significantly (p=,00) and explained the 56% of the total variance of the mental toughness together with the UE and RE (R=,754 R^2 =,569). The standardized regression coefficient (β) of SS was found to be ,135.

DISCUSSION AND CONCLUSION

In recent years, research on the relationship between performance and psychological skills in the field of sports psychology in the literature is increasing day by day. Considering that they have some strategies for the performances of the athletes, it cannot be denied that the right strategies are the factors that will make them successful. For this reason, it is thought that examination of the effect of emotional intelligence sub-dimensions on mental toughness in the scope of research will contribute to sports psychology field in both practice and theory.

Firstly, it was investigated whether there was a significant relationship between emotional intelligence and mental toughness. Then, in the light of the main purpose of the research, the sub-dimensions of emotional intelligence were examined as determinants of mental toughness.

The Results of the Levels of Relationship between the Variables in the Research

A positive relationship was found between the mental toughness, one of the dependent variables of the research, and EEO, ETE, RE, SS and UE. In his research on the sample of male athletes, Cowden, (2016) found that there is a moderate positive correlation between emotional intelligence and mental toughness. In a study by Tavrah et al., (2016), on athletes, a significant positive relationship was determined between the sub-dimensions of emotional intelligence and mental toughness. In addition, in the study conducted by Yazıcı, (2016) on professional basketball players, a positive significant correlation was found between the EI social skills sub-dimension and the MT constancy sub-dimension. The results of these studies show parallels in the sub-dimension of confidence and constancy and differ in the control sub-dimension. However, findings of the study by Nicholls et al., (2015) investigating the mediator role of mental toughness on athletes show that mental toughness has a high positive correlation with both emotional intelligence and psychological toughness.

Progressive Multiple Regression Analysis Results Where the Mental Toughness Were Handled as dependent Variable

The analysis was completed in three stages. In the first stage of the analysis, UE variable, one of the sub-dimensions of emotional intelligence, was introduced. It was observed that UE predicted the mental toughness significantly (p=,00) and explained only 47% of the total variance of the mental toughness alone. In the second stage of the analysis, the RE variable, one of the emotional intelligence sub-dimensions, was introduced. The RE variable predicted the mental toughness significantly (p=,00) and explained the 55% of the total variance of the mental toughness together with the UE. In the third stage of the analysis, the SS variable, one of the emotional intelligence sub-dimensions, was introduced. It is observed that the SS variable predicted the mental toughness significantly (p=,00) and explained the 56% of the total variance of the mental toughness together with the UE and RE. When the standardized regression coefficients (β) were analyzed in the final stage of the analysis, the relative importance order of the predictive variables on the mental toughness confidence sub-dimension was found as follows; UE, RE and SS.

Findings on the determination of mental toughness status of athletes by emotional intelligence levels show that UE, RE and SS statuses of the athletes play a role in determining the mental toughness. As a result, it can be said that the athletes' levels of confidence regarding the mental toughness will increase as their levels of use of emotions, regulating the emotions and social skills increase. In recent years, mental toughness and emotional intelligence are of great importance for athletes and coaches, which are among the subjects that researchers emphasize in order to optimize athlete performance (Crombie et al., 2009; Jones et al., 2007; Jones & Parker, 2013).

In this context, the results of the research show that emotional intelligence plays an important role in the mental toughness levels of athletes. Part of the unexplained variance of mental toughness shows that there are a few additional factors which take into account the variance of mental toughness and perhaps revealling the multidimensionality of MT. As a matter of fact,

the general view reached by the researchers is that mental toughness consists of a multi-faceted structure (Crust, 2008; Jones et al., 2007).

Salovey and Mayer (1990), Perez-Gonzalez and Sanchez-Ruiz, (2014) stated that emotional intelligence represents the qualities and arrangements that affect the perception, use and management of emotions. Laborde et al., (2011) state that pressures, stresses and emotions experienced by athletes are more intense when it comes to important goals. In this context, it can be said that emotional intelligence can increase team interactions within the game and contribute to team performance. It can also contribute to the ways in which athletes with mental toughness examine and influence their opponents' emotions and can be said to facilitate mentally more harsh reactions through strategic, technical and behavioral decisions based on the assessment of the type and intensity of emotions of their competitors. With reference to the definition of control of the cognitive-emotional experiences by the person in the literature of mental toughness (Guillen & Laborde, 2014; Jones & et al., 2007), as a result of the research, it can be said that emotional intelligence can represent the leading mechanism underlying the emotional control skills characterizing the athletes with high mental toughness.

Emotions are one of the psychological factors that can affect an athlete's behavior and skills either positively or negatively. In this context, the current research is important in terms of revealing the effect of emotional intelligence levels of physically disabled athletes on their mental toughness and showing how psychological factors such as emotional intelligence and mental toughness are effective on athlete performance. In addition, it is thought that increasing the diversity and number of studies that reveal the relationship between emotional intelligence and mental toughness in disabled athletes will contribute to the field.

Recommendations

Considering that mental toughness may be related to different psychological mechanisms, it can be suggested that the programs to be developed in order to improve the mental toughness of the physical disable athletes in the field of application may be reviewed in the light of the information contained in our research findings.

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Authors' Contribution:
Research Design: Ekrem Levent İLHAN, Yunus Emre YARAYAN
Data Collection Process: Yunus Emre YARAYAN, Doğukan Batur Alp GÜLŞEN
Data Analysis and Interpretation: Yunus Emre YARAYAN, Çağrı ARI
Preparation of the Article: Oğuz Kaan ESENTÜRK

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