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Burnout and Mental Well-Being in Sports: The Mediating Role of Athlete Engagement and Mental Toughness

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Abstract

The aim of this study is to examine mediating role of athlete engagement and mental toughness in the relationship between burnout and mental well-being. Our theoretical model was tested using data collected from 251 university students (103 females and 148 males) in sports departments aged between 18 and 33 (Mean = 21.73 years, SD = 2.23). Participants completed the Athlete Burnout Questionnaire (ABQ), the Warwick-Edinburgh Mental Well-being Scale (WEMWS), the Athlete Engagement Questionnaire (AEQ), and the Sports Mental Toughness Questionnaire (SMTQ). As a result of multiply mediation analyses showed that a significant total direct effect of burnout on mental well-being, significant direct effect; and a significant indirect effect via athlete engagement, but not a significant indirect effect via mental toughness. Athlete engagement and mental toughness, in combination, did not multiple mediate the association between burnout and mental wellbeing. The possible explanations and future directions are discussed in the light of relevant literature.

Keywords: Burnout, Mental well-being, Athlete engagement, Mental toughness

1. Introduction

Burnout has been one of the main themes investigated in sports literature for a long time, and the number of studies on burnout have been increasing recently (Gould et al., 1996). Since the publication of the first scientific articles on this subject in the mid-1970s (Freudenberger, 1974; Maslach, 1976), the number of scientific publications with burnout in the title has been approximately 1.310.000 in Google Scholar (2022), 32.565 in Web of Science (2022), and 41.084 in Scopus (2022). As a result of the interaction of multiple stress factors, athletes

experience disappointment due to disability problems, unmet expectations and inability to reach their goals, and they become vulnerable to burnout syndrome. Burnout has become a prominent problem of today's world (Isoard-Gautheur et al., 2016) and is estimated to severely affect approximately 6% to 11% of athletes (Eklund & Cresswell, 2007). It is stated that athletes with burnout feel depressed, anxious, disappointed and exhausted (Gustafsson et al., 2008).

The current understanding is that the athletes are vulnerable to the risk of experiencing burnout to the extent of the psychosocial stress they experience at a chronic level (Smith, 1986). Eades (1990) stated that burnout is a psychophysiological syndrome that can result in quitting participating in sports, which occurs as a reaction to chronic stress caused by training and competition, causes the athlete to experience emotional and physical exhaustion, inhuman attitude towards other individuals, feeling of being excluded by others, decrease in sportive success/performance, loss of meaning of sports for the individual, devaluation, role confusion and role ambiguity (cited in Raedeke & Smith, 2001).

Raedeke and Smith (2001) developed the Burnout Scale for Athletes based on the burnout scale of Maslach and Jackson (1981) in order to evaluate the concept of burnout, which has important physiological and psychological aspects for athletes to continue their profession. Raedeke and Smith (2001) state that the concept of burnout consists of three sub-dimensions. The first of these is the individual's negative attitude towards his/her ability to work effectively in relation to his/her job, which is characterized by a "reduced sense of accomplishment". The second is the stress-related variables defined as "emotional/physical burnout". The last one is "devaluation", which refers to the development of negative attitudes and feelings towards the one's work.

It is stated that many factors can cause burnout (Tenenbaum et al., 2003), and stress factors other than sports and secondary stress sources in daily life-such as not being able to meet external and environmental demands, not exhibiting the necessary physical performance for training and competition, difficulties in social life- are among the reasons that push the athlete to experience this process (Tenenbaum et al., 2003). Some previous studies showed that burnout is associated with negative health outcomes such as decreased or complete loss of motivation, increased anxiety and decreased self-confidence, perceived high stress, and despair (Cremades et al., 2011; Gustafsson et al., 2008, 2010; Tabei et al., 2012). In cases where the process is prolonged, the final solution for the athlete is generally to quit the sport altogether (Isoard-Gautheur et al., 2016). Due to the fact that athletes experiencing burnouts may withdraw mentally and physically from the sport they once enjoyed, it is important to better understand burnout and all the potential factors that lead to it.

In addition, several studies show that well-being, athlete engagement, chronic stress and burnout are interrelated. Moreover, it has been found that burnout in athletes is positively correlated with negative emotional states. In parallel with this, Cremades et al. (2011) suggested that increased cognitive and physical anxiety may result in burnout. In addition, it has been stated in previous studies that daily stressful situations can accumulate and negatively affect adaptation to training, cause overtraining and eventually lead to burnout

(Rowbottom et al., 2000). Moreover, the prevalence percentage of burnout syndrome is also increasing due to the increase in overtraining (Lemyre et al., 2007), which results from obsessive passion (Gustafsson et al., 2011), team conflicts (Smith et al., 2010) and excessive physical and performance loss due to mental fatigue. On the other hand, positive emotional states such as self-confidence (Cremades et al., 2011) and feeling valued and loved in the team (DeFreese & Smith, 2013) were found to be negatively correlated with burnout.

Athletes, who act with the urge to be successful, are exposed to stress in case of not being able to meet expectations and cope with difficult situations in the process. This leads to physical and emotional fatigue, decreased sense of personal accomplishment, and a decrease in the value of participation in sports (Raedeke & Smith, 2001), it also negatively affects the well-being. This process, which can eventually lead to burnout (Gould & Whitley, 2009), appears to have unquestionable negative effects on the performance and health of athletes.

In recent years, many studies have suggested that burnout is negatively associated with mental well-being. Moen and Wells (2016) state that burnout can harm not only the performance of athletes but also their mental health. For example, DeFreese and Smith's (2014) study stated that burnout is associated with mood disorders, which can cause athletes to quit sports and experience deterioration in their performance, and with depression and anxiety, which negatively affect psychological well-being. The deterioration in mood caused by the relationships between temporary stress & burnout and burnout & well-being has been shown as evidence for this relationship. Similarly, as a result of cross-sectional regression and longitudinal analyzes, it was stated that stress-induced depression and burnout, which negatively affect mental well-being, cause each one another to a certain extent (Frank et al., 2017).

Although the negative effect between burnout and mental well-being has been demonstrated by several studies, there is a need to conduct more research for the purpose of enlightening the mechanisms around these two factors. One of the elements that can contribute to this relationship is the athlete engagement. The concept of the athlete engagement is defined by Loehr and Schwartz (2006) as "the skillful management of energy". It is also defined by some as the result of a persistent, relatively stable sporting experience that refers to generalized positive effects and cognitions about one's participation in a sporting activity (Lonsdale, Hodge, & Raedeke, 2007) and the same researchers state that engaging in sports is built on confidence, engagement and vigor. On the other hand, Schaufeli and Bakker (2004) express the concept of engagement as "the positive antipode (base) of burnout".

Athlete engagement is an enduring, relatively stable sporting experience that refers to generalized positive influence and cognitions about the sport in which athletes engage (Lonsdale, Hodge, & Jackson, 2007; Lonsdale, Hodge, & Raedeke, 2007). Athletes with high engagement have high levels of confidence, dedication, enthusiasm and vigor (Lonsdale, Hodge, & Raedeke, 2007). Within the framework of positive psychology, being healthy includes positive feelings and thoughts as well as the negative ones. In parallel with this, the results of previous studies suggest that positive psychological aspects should be examined as well as weaknesses when conducting a psychological evaluation (Diener, 2003). Therefore,

organizational psychologists who are experts in the negative effects of burnout have suggested that engagement is the positive conceptual opposite of burnout (Schaufeli et al., 2002) and they also suggested that the best way to prevent burnout is to increase one's engagement to the job (Schaufeli & Salanova, 2007). Athletes who suffer from any or multiple of the physical, emotional, mental, and spiritual dimensions of engagement due to overtraining or lack of training may face significant injuries and adverse performance consequences, including illness, anxiety, negative attitudes and anger, difficulty in concentration, and loss of passion, which are all symptoms of burnout (Loehr & Schwartz, 2006). On the other hand, Ryan and Deci (2002) argue that the basic psychological needs of people, such as autonomy, competence and engagement, must be satisfied in order to have optimal well-being. In addition, the extent to which these needs are met depends on the experience of positive psychological outcomes such as engagement and situational fluency, and conversely, the extent of frustration in achieving these needs has been reported to be associated with negative psychological outcomes such as burnout and anxiety.

Evidence from previous studies supports that burnout and mental well-being are related to athlete engagement as well as mental toughness (Golby & Wood, 2016; Miçooğulları et al., 2017). Mental toughness in general is defined as "the athletes being able to cope with their mental needs better than their competitors in a competition, training, and under some other conditions", and it is defined in particular as "the natural or developed psychological power that enables the athletes to be more task-oriented, to feel safe and controlled under pressure, and to maintain these skills better than their competitors" (Jones et al., 2007). Mentally strong athletes are those who can show their potential performance even in adverse conditions. However, some athletes cannot demonstrate their training performance level in competitions. The underlying reason for this performance deterioration is that the athlete cannot control their emotions as a result of not meeting some of the increased emotional and physiological needs. However, mentally strong athletes can control their emotions by preventing negative factors from causing them distress, and can show high performance by displaying a positive attitude in adverse conditions (Jones & Moorhouse, 2008). It is stated that athletes who do not have mental toughness remain mentally weak during the competition and cannot show a high performance (Goldberg, 1992). Mental toughness is a phenomenon that enables athletes to cope with negative conditions better than their competitors, and shows that they have a more natural or developed psychological superiority than their competitors in being determined, focused, confident and in control under pressure (Jones et al., 2002).

Individuals with mental toughness are considered to be emotionally resistant, self-confident, goal-focused, and to have the ability to cope with pressure (Jones & Moorhouse, 2008). Previous experimental studies show that mental toughness is directly related to burnout and the mental toughness has a protective effect during burnout process (Madigan & Nicholls, 2017). It is stated in the literature that one out of every eight young athletes is likely to show clinically significant burnout or depressive symptoms. Moreover, while perceived high stress is associated with increased complaints regarding mental health, it has been emphasized that mental toughness can eliminate some negative consequences of high stress (Gerber et al., 2018). Similarly, Gerber et al. (2013) showed that young athletes with high mental toughness

scores are less likely to report mental health problems when exposed to stressful life situations. In another cross-sectional study conducted with cricket players, it was found that mental toughness has a negative relationship with burnout (Gucciardi & Gordon, 2009).

Mental toughness is negatively correlated with burnout (Gucciardi & Gordon, 2009; Kurtulget et al., 2018), while there is a positive correlation between mental well-being and mental toughness (Dienstbier, 2015). It was stated by a study conducted with professional football players that mental toughness positively affects psychological well-being and this process can positively predict the general well-being of individuals (Miçooğullari & Ekmekçi, 2017). Additionally, an examination of structural modeling showed that mental toughness has a significant positive effect on mental well-being (Chen & Feeley, 2014; Hombrados-Mendieta et al., 2013). Therefore, the fact that stressful events faced by athletes have harmful effects on their mental and physical health (Crocker et al., 2015) suggests that mental toughness is important for athletes to successfully cope with difficulties, avoid the effects of stress, and maintain their performance development (Fletcher & Sarkar, 2012). In accordance with this, many studies have shown that mental toughness predicts indicators of mental well-being that provide optimum performance, such as individuals seeing problems as natural challenges without personalizing them, seeing themselves as capable and effective as a result of a positive sense of identity, and having lower levels of negative emotional states (Gerber et al., 2013). Finally, Haghighi and Gerber (2019) explained the relationship between mental toughness and mental well-being by reporting that mental toughness mediates the relationship between perceived stress, depression, burnout, anxiety and sleep. Based on the theoretical framework presented above, the present study aims to investigate the mediating effect of athlete engagement and mental toughness on mental well-being. In other words, the present study hypothesizes that burnout will negatively affect mental toughness, which will lead to a decrease in individuals' subjective well-being. It was also predicted that having increased burnout symptoms will weaken mental toughness and therefore reduce overall mental well-being.

2. Method

The Method section describes in detail how the study was conducted, including conceptual and operational definitions of the variables used in the study, Different types of studies will rely on different methodologies; however, a complete description of the methods used enables the reader to evaluate the appropriateness of your methods and the reliability and the validity of your results, It also permits experienced investigators to replicate the study, If your manuscript is an update of an ongoing or earlier study and the method has been published in detail elsewhere, you may refer the reader to that source and simply give a brief synopsis of the method in this section.

2.1 Participants and Procedure

The present study is a cross-sectional study and was conducted with a sample of students in sports departments of three universities in the Central and Eastern parts of Turkey in November 2021. The sample consisted of 251 university students in sports departments aged between 18 and 33 (Mean = 21.73 years, SD = 2.23). The sample of participants included 103

females (41%) and 148 (59%) males, 47 freshmen, 59 sophomores, 78 juniors and 67 seniors. 154 (61%) of the participants did team sports, while 97 (39%) were involved in individual sports.

The data collection process of the study was performed online due to COVID-19. Participants were provided with an online link, delivered both through social media and by university lecturers. Data were collected anonymously and participants were asked to sign an informed consent form before participating in data collection. It was emphasized that the participation was voluntary and the participants were told that they could withdraw at any time. The time duration for filling the questionnaires was less than 8-10 minutes.

2.2 Measures

Athlete Burnout Questionnaire: The scale, which was developed by Raedeke and Smith (2001) with the aim of determining the burnout levels of athletes, was adapted to Turkish by Kelecek et al. (2016). The scale consists of thirteen 5-point Likert-type items and 3 sub-dimensions as "emotional/physical exhaustion", "reduced sense of accomplishment" and "devaluation". The Cronbach's alpha (α) values of the "Athlete Burnout Questionnaire" were found to be 0.87 for the emotional/physical burnout sub-dimension, 0.75 for the diminished sense of accomplishment sub-dimension, and .83 for the devaluation sub-dimension (Kelecek et al. 2016). In the Turkish adaptation study of the scale, the same factor structure was determined as of the original scale. However, 2 items were removed from the scale as a result of the performed analyzes.

The Warwick-Edinburgh Mental Well-being Scale: The WEMWBS Scale that is used in the present study was originally developed by Tennant et al. (2007) to assess the mental well-being levels of individuals in the UK, and the validity and reliability study of the Turkish form of the scale was performed by Keldal (2015). The scale is used to assess "psychological well-being" and "subjective well-being" and it consists of 14 positive items. The items in the scale are 5-point Likert type. The minimum score that can be obtained from the scale is 14 and the maximum score is 70, where high scores refer to high mental well-being. The reliability of the scale in terms of internal consistency was calculated using the data obtained from 348 individuals and the Cronbach Alpha coefficient of the scale was found to be 0.89. On the other hand, the test reliability of the scale was calculated with 124 people and the correlation coefficient was found to be 0.83.

Athlete Engagement Questionnaire: This scale was developed by Lonsdale, Hodge, and Jackson (2007) and aims to measure athletes' engagement to sports. The validity and reliability study of the Turkish version of the scale was performed by Kelecek et al. (2018). The Athlete Engagement Questionnaire was developed based on qualitative and quantitative studies conducted on different athlete samples. The scale consists of four sub-dimensions and 16 items and has a 5-point Likert format (1 = almost never, 2 = rarely, 3 = sometimes, 4 = frequently, 5 = almost always). Each of the sub-dimensions consists of four items. The sub-dimensions are named as follows: "Confidence: "I believe I am capable of accomplishing my goals in sport", "Dedication: "I am determined to achieve my goals in sport", "Vigor: I feel really alive when I participate in my sport" and "Enthusiasm: *e.g.*, I feel excited about

my sport" (Lonsdale, Hodge, & Jackson, 2007). Cronbach's alpha (α) values for the Athlete Engagement Scale were found as 0.92 for the confidence sub-dimension, 0.75 for the engagement sub-dimension, 0.83 for the vigor sub-dimension, and 0.90 for the enthusiasm sub-dimension (Kelecek et al., 2018).

Sports Mental Toughness Questionnaire: This scale was developed by Sheard et al. (2009) using raw data and excerpts from previous studies. The scale consists of 3 sub-dimensions, which are Confidence, Constancy and Control. The study for the Turkish adaptation of the scale was performed by Pehlivan (2014). The scale consists of 13 items in total, and is a 4-point Likert-type scale as 1 (definitely true), 2 (usually true), 3 (rarely true), 4 (never true). The total Cronbach Alpha value of the scale was calculated to be 0.77.

2.3 Statistical Analyses

Pearson correlations, means, and standard deviations were calculated as preliminary analyses for all study variables. PROCESS Macro-Model 4, which is developed by Hayes (2017), was used for the purpose of testing whether athlete engagement and mental toughness are mediators in the relationship between burnout and mental wellbeing. This macro is a regression-based bootstrapping analysis, in which 10.00 resampling was performed to create the coefficient and confidence intervals. The indirect effect is considered significant due to the fact that the resulting confidence intervals do not include 0 (zero) values (Hayes, 2017).

2.4 Ethics

Written informed consent was obtained from the volunteering participants prior to their participation in the study. The present study was approved by Scientific Research and Ethical Review Board of Artvin Coruh University (document number: E-18457941-050.99-45559).

3. Results

3.1 Descriptive statistics

An examination of Bivariate Pearson correlations among study variables (see Table 1) showed that there are positive correlations with mental well-being, mental toughness and athlete engagement and negative correlations with burnout, as expected. On the other hand, it was found that burnout is negatively correlated with both mental toughness and athlete engagement.

Table 1. Descriptive statistics and correlation results

	1	2	3	M	SD	Skewness	Kurtosis	α
1.Mental well-being	-			55.74	9.25	-0.658	.133	0.92
2. Burnout	-.319**	-		32.96	9.78	-.118	-.997	0.87
3. Engagement	.509**	-.403**	-	61.81	11.88	-.262	-.839	0.94
4. Mental toughness	.273**	-.436**	.469**	37.47	7.22	.747	-.022	0.83

3.2 Statistical Assumption Tests

The assumptions were evaluated prior to the mediation analysis. The Skewness and kurtosis values (> ±2; George & Mallery, 2010) were calculated to test the normality assumption. All reliability coefficients were found to be above Nunnally and Bernstein's (1994) criterion value of 0.70. The presence of multicollinearity was analyzed with variance inflated factor (VIF), tolerance, and Durbin-Watson (DW) value. The results showed that VIF ranged from 1.31 to 1.41 and tolerance ranged from .70 to .73. These findings suggested that there was no multiple linearity problem, in line with Field's (2013) recommendation. In addition, DW value was found to be 2.15, indicating no significant correlations between the residuals.

3.3 Mediation Analyses

The analysis assessed whether athlete engagement and mental toughness mediated the relationship between burnout and mental well-being by applying PROCESS model 4 (see Table 2; Fig. 1). The results indicated a significant total direct effect (path c) of burnout on mental well-being (B = -0.302, t(251) = -5.31, p = 0.001, 95% CI = -0.41, -0.19), significant direct effect (path c') (B = -0.13, t(251) = -2.18, p = 0.03, 95% CI = -0.24, -0.02); and a significant indirect effect via athlete engagement (B = -.172, 95% CI = -.24, -.11), but not a significant indirect effect via mental toughness (B = -0.001, 95% CI = -0.05, 0.04).

Table 2. Path coefficients of the model

Model		Estimate	*SE*	*t*	*p*	95% CI	
						Lower	Upper
Model without mediator							
Path *c*	BR → MW	-0.301	0.06	-5.31	< .001	-.413	-.190
Model with psychological distress as mediator							
Path a_1	BR → EN	-0.489	0.07	-6.94	< .001	-.627	-.350
Path a_2	BR → MT	-0.321	0.04	-7.63	< .001	-.404	-.238
Path b_1	EN → MW	0.353	0.05	7.15	< .001	.256	.450
Path b_2	MT → MW	0.002	0.08	0.03	.977	-.160	.164
Path *c'*	BR → MW	-0.128	0.06	-2.18	.029	-.244	-.013
*a*b*	Total indirect effect	-0.173	0.04			-.248	-.106
	Indirect effect of EN	-0.172	0.04			-.246	-.109
	Indirect effect of TH	-0.001	0.02			-.053	.048

Note. BR: burnout (independent variable); MW: mental wellbeing (dependent variable); EN: engagement (mediator); MT: mental toughness (mediator).

The results also showed that burnout was associated with lower athlete engagement scores (path a1; B =- 0.489, p = 0.001) and mental toughness scores (path a2; B = -.32, p = 0.001). Moreover, athlete engagement had a positive relation with mental well-being (path b1; B = 0.35, p = 0.001), while the relation between toughness and mental well-being was not significant (path b2; B = 0.002, p = .97).

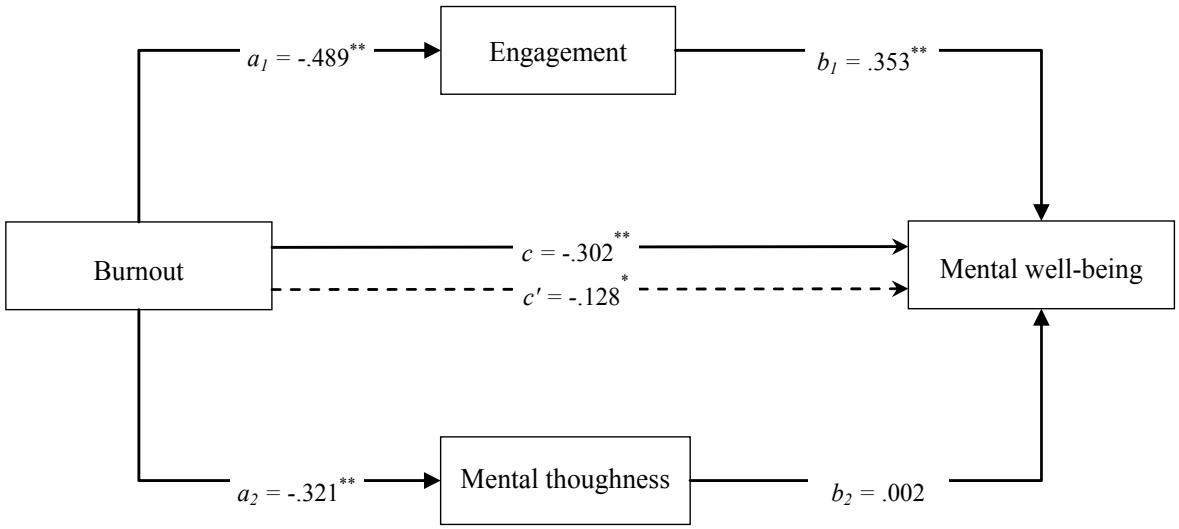

Figure 1. The mediation model

Note. * $p < .05$; ** $p < .001$.

4. Discussion

Athlete engagement and mental toughness, which are positive psychological elements that affect the sportive process, are frequently addressed by many studies (Jones et al., 2007; Lonsdale, Hodge, & Jackson, 2007). Being able to perform at a high level usually requires more training. Therefore, especially for young athletes, weak athlete engagement and mental toughness may cause social isolation, poor academic performance, increased anxiety, enhanced stress, insufficient sleep, and reduced time spent with family. In addition to all these, the said weakness can lead to multiple stressors that may increase the risk of burnout (Brenner et al., 2019), which would consequently affect the mental well-being of athletes adversely. Thus, the main purpose of the present study was to investigate the mediating effect of the athlete engagement and mental toughness on mental well-being. The data obtained in the present study shows that the athlete engagement mediates the relationship between burnout and mental well-being. However, it was observed that mental toughness does not play a mediating role between these two variables. The findings of the present study are discussed in more detail below.

First, the results provided evidence that support that the athlete's engagement mediates the relationship between burnout and mental well-being. Burnout, as a mediator, has had a

negative indirect effect on mental well-being through the athlete engagement. To the best of our knowledge, the present study is the first empirical study that investigates the mediating role of athlete engagement in the relationship between burnout and mental well-being in Turkish university students. Previous studies have reported that committed athletes are characterized by feeling energetic and having effective psychological relations with the sport they are engaged in, unlike athletes who experience burnouts (Schaufeli et al., 2006). Accordingly, athletes with higher burnout levels may experience a decrease in their engagement, which can negatively affect their mental well-being; in other words, excessive engagement can be a factor that causes burnout in sports, as it does in work life (Nerstad et al., 2019). In addition, the athlete engagement has been described as a relatively stable experience consisting of confidence, dedication, vigor, and enthusiasm (Lonsdale, Hodge, & Raedeke, 2007). In addition, the athlete engagement is one of the components of mental toughness and is therefore both a form of well-being that has an effect on performance and an optimal state in sports (Crust, 2007). In line with these explanations and the data of the present study, it can be said that the engagement reflects an adaptive model of cognition and affect expressing the well-being (Hodge et al., 2009).

Second, a linear relationship between burnout and mental toughness has been shown by previous studies (Buhrow et al., 2017; Madigan & Nicholls, 2017). However, no result showing that mental toughness mediates the relationship between burnout and mental well-being was found, contrary to the hypothesis of the present study. This means that our study is not subsidiary in terms of explaining why mental toughness, burnout and mental well-being are related. In addition, the present study is the first known attempt to investigate the hypothesis that mental toughness may play a mediating role in the relationship between burnout and mental well-being with a sample of Turkish university students. Mental toughness represents a multiple of positive psychological variables that help prevent the harmful effects of stress and enable individuals to perform consistently well, regardless of factors that occur under certain circumstances (Clough et al., 2002). In addition, several previous qualitative studies suggest that mentally strong athletes cope with adverse situations more effectively in comparison to less mentally strong athletes (Jones et al., 2007; Thelwell et al., 2005). In other words, it can be said that it reduces the risk of athletes getting burnout syndrome and naturally affects their mental well-being in a positive manner. The fact that it does not predict the relationship between mental toughness and mental well-being in the present study may be due to other structures such as toughness, emotional intelligence, motivation and/or self-efficacy, which enable individuals to be successful under different adverse conditions. Because although mental toughness is thought to mediate the process with these structures by different studies, it may be associated with individuals who experience less stress (Nicholls et al., 2015). In addition, COVID-19 does not only cause disruption of training and competition programs, but can also result in significant health problems for athletes (Chen et al., 2020; Zheng et al., 2020). Considering the negative aspects of the ongoing pandemic process, it is clear that the athletes will be adversely affected by the pandemic, despite that the athletes are not considered as a risk group. Therefore, we claim that it was not possible to obtain results in the present study that confirm our hypothesis because of the adverse conditions due to COVID-19.

5. Limitations and Suggestions

The present study provided empirical data regarding the mediating role of athlete engagement and mental toughness in the relationship between burnout and mental well-being among Turkish university students. Nonetheless, the present study has some limitations as well. The first limitation was sample characteristics and sample size. The results of the present study are not generalizable because the study addresses only Turkish university students. Therefore, future studies to be conducted using different populations or larger samples are important in terms of reaching a more general conclusion. The second limitation is the variables accepted as mediators in the study. Future studies may investigate other meditation models in which different variables are accepted as mediators instead of engagement and mental toughness in the connection between burnout and mental well-being. The third limitation is the data collection process. In the present study, self-report assessment was used for data collection. Therefore, future studies can use different methods to collect data. A final limitation is the cross-sectional design of the study, which does not support causal inferences. Future studies can help clarify causal aspects using different designs, such as a longitudinal design.

6. Conclusion

In conclusion, the present study empirically showed whether athlete engagement and mental toughness mediated the relationship between burnout and mental well-being. The present study holds importance since it is the first attempt to present a quantitative model describing the association between athletic burnout, athlete engagement, mental toughness, and mental well-being among Turkish university students in sports departments. We suggest that conducting more studies on the relationship between both variables in different contexts and situations would contribute to the sports science by making is possible to reach greater conclusions.

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