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The Effect of Athletic Mental Energy on Psychological Skills and Attitudes toward Soccer

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Abstract

For optimal performance in soccer, high-level technical, tactical, and physical competencies are required, but they are not enough. Research shows that successful athletes apply psychological skills for high performance and need the presence of psychological aspects in sports. In this context, in addition to physical characteristics in soccer, psychological aspects should also be at a high level and in a solid structure. Therefore, the training of mental processes is very important in soccer. This paper explored whether soccer players' athletic mental energy (AME) mediated their psychological skills in soccer (PSIS) and attitudes toward soccer (ATS). It established a hypothetical model examined by means of the Sobel test. The sample was composed of 295 soccer players from the Turkish 2021-22 soccer leagues. Data were collected using a personal information form, the Soccer Psychological Skills Scale-16 (SPSIS-16), the Soccer Attitude Scale (SAS-26), and the Athletic Mental Energy Scale (AMES). Participants' ATS were positively correlated with their AME and PSIS. Their AME was positively correlated with their PSIS. Moreover, AME mediated PSIS and ATS. The findings verified the model. Trainers and coaches must brief soccer players about the relationship between AME, PSIS, and ATS. The theoretical model will bring innovation to the field of sports sciences, pave the way for further research, and will contribute to the literature.

Keywords: Soccer psychological skills, Athletic mental energy, Attitude, Mediating variable

1. Introduction

Turkish coaches and trainers rarely address psychological skills although soccer players cannot develop physical and technical skills without working on psychological skills, which are as important as other factors affecting performance (Biçer, 2017). Research shows that cognitive training leads to the development of psychological skills such as

imagery-motivational abilities, and imagery-cognitive skills, and their relationship with cognitive skills in a positive way. These skills lead to a decrease in discipline-specific stress responses (increased perceptual abilities and decreased muscle tension) and an increase in self-confidence. Combining these cognitive training elements (goal-setting, imagery, imagery, music, and self-talk) with physical training further enhances the resulting positive effects. According to Konter, inadequate psychological preparation can have much more significant consequences than inadequate physical elements (technical-physical-tactical) and can lead to decreased performance (Konter, 2006a). developed psychological skills are closely related to the development of motor skill performance. In team sports (*e.g.*, soccer), the goals set by the team are very important. Coaches can discuss and set goals for the new season with athletes and managers. In team sports such as soccer, setting group goals to reveal team spirit is crucial for performance because common goals encourage a "sense of us" (Konter et al., 2019). As soccer develops, it is an undeniable fact that training in soccer plays an important role because soccer is a complex game that combines intelligence and tactics with skill (Konter, 2002). Slimania et al. (2016) found that amateur athletes combined psychological and cognitive training strategies in the periods before competition in order to develop complex and specific soccer skills. Therefore, it is understood that the training of mental processes in soccer has become very important. However, despite this, there seems to be resistance to the systematic integration of psychological skills into soccer. It can be said that this resistance arises from the fact that coaches, athletes, and officials are seen as problematic and weak by other people, and that they lack knowledge about training (Weinberg & Gould, 2015). Olympic medal-winning athletes attribute their top performance to their psychological readiness (Konter, 1998). Therefore, athletes can develop psychological skills like all other skills (Arslanoğlu, 2005). In this context, mental training falls within this specialization of sport psychology (Konter, 1998). Attitudes are states that guide behavior through experiences and arise due to objectivity in decision-making (Tavşancıl, 2002). Attitudes have three components: affect, thought (cognitive), and behavior (Kaya et al., 2014). For example, a woman may have a positive attitude toward soccer. In this case, she may like watching soccer on TV (affect). She may think that playing soccer is good for her health (cognitive). She may also play soccer (behavior) (İnceoğlu, 2010).

Although athletic mental energy (AME) does not yet have a clear definition, it is an interesting concept (Lieberman, 2007), which has, however, been understudied (Cook & Davis, 2006). Research shows that it has been used together with such factors as fatigue, alertness, etc. (Lieberman, 2007). Defined as "an athlete's perception of his/her energy state," AME has cognitive, affective, and motivational components. Affective components are tirelessness, vigor, and calmness, which are frequently used in sport psychology studies. Confidence and concentration are critical features of top performance. Motivation is also included in the basic components of performance (Lu et al. 2018). AME is critical for top performance (Lykken, 2005; Lu et al. 2018; Cook & Davis, 2006; Loehr, 2005).

Researchers have focused on psychological skills in soccer (PSIS) (Konter, 2002, 2004, 2005a, 2005b, 2006b, 2009, 2017; Konter et al., 2019; Sivrikaya & Ozan, 2020; Islam et al., 2021) and attitudes towards soccer (ATS) (Ünlü, 2011; Li et al., 2012; Öncü et al., 2012; Önal

et al., 2017; Görgüt & Güllü, 2017; Islam & Imamoğlu, 2019; Böke & Güllü, 2020). These researchers have helped us better understand PSIS and ATS. However, there is only a handful of studies on AME (Yıldız, 2021; Lu et al., 2018; Yıldız et al., 2020; Chiou et al., 2020). This is the first study to investigate the relationship between AME, PSIS, and ATS. This paper is substantiated by the following notions: First, only a few researchers have studied PSIS and AME. Second, we do not know the relationship between PSIS and AME very well. Third, there are very few studies on the effectiveness of psychological training in soccer (Konter et al., 2019). Fourth, we should recommend PSIS and AME as desirable psychological traits. Research shows that PSIS, AME, and ATS are important variables that affect the psychological structure of soccer players. Evaluating soccer players' PSIS and ATS will contribute to the literature and help us understand their developmental processes. Therefore, the following are the research hypotheses:

1.1. Hypotheses

H_1: Soccer players' ATS positively affect their AME.

H_2: Soccer players' AME positively affects their PSIS.

H_3: Soccer players' ATS positively affect their PSIS.

H_4: AME mediates soccer players' PSIS and ATS.

2. Method

2.1 Research Type

This paper employed a cross-sectional and correlational survey method to construct a descriptive survey model to reveal an existing situation. A survey aims to describe a situation as it is or was (Karasar, 2005). In the model, PSIS was the dependent variable (DV), ATS was the independent variable (IV), and AME was the mediating variable. Mediation analyses aiming to add new information to the literature are theoretical studies (Karasar, 2008). The test we created for the model was carried out using Sobel test modeling (Sobel, 1982). The model is as follows,

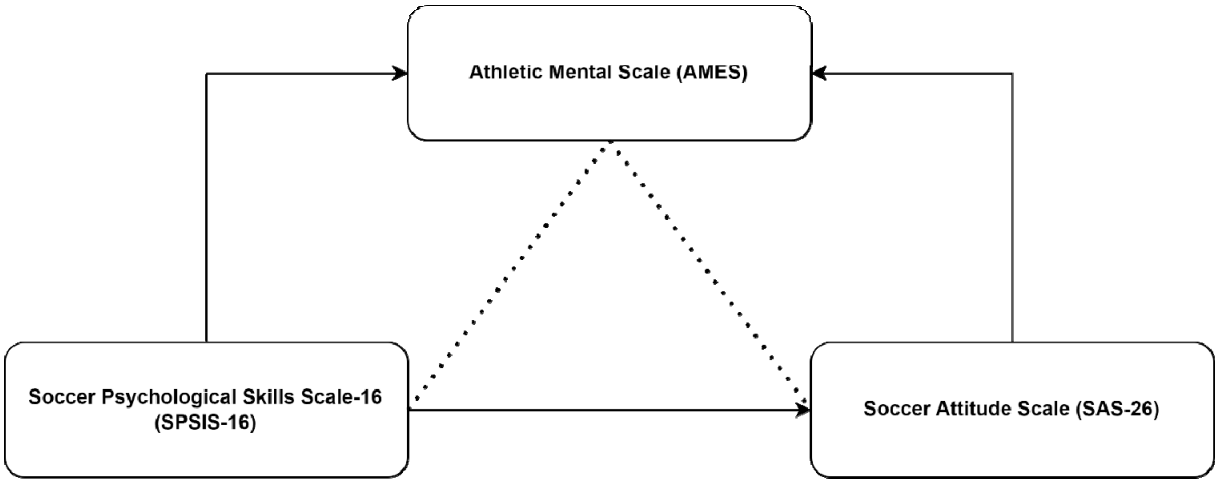

Figure 1. Sobel test model

2.2 Objective

This paper investigated whether AME mediated PSIS and ATS in soccer players playing in the Turkish Football Federation's (TFF) amateur and professional soccer leagues in the 2021-22 season.

2.3 Sampling

The research population included all soccer players playing in the 2nd League, 3rd League, and Amateur and Regional Amateur Leagues in 14 regions (TFF, 2021) determined by the TFF. Participants were randomly recruited using disproportionate sampling. The sample consisted of 295 male soccer players from *Esnafspor*, *Saraycıkspor*, *Yıldızlıspor*, *Akçakale, Saruhan Spor*, *Çayeli Spor*, *Rize Belediye Spor*, *Akçaabat Sebatspor*, *Orduspor 1967*, and *Bayburt Belediye Spor*.

2.4 Data Collection Tools

Informed consent was obtained from all participants. The data were collected using a personal information form, the Soccer Psychological Skills Scale-16 (SPSIS-16), the Soccer Attitude Scale (SAS-26), and the "Athletic Mental Energy Scale (AMES)".

2.4.1 Personal Information Form

Developed by the researcher, the form elicited information on sociodemographic characteristics, such as age, gender, position, etc.

2.4.2 Athletic Mental Energy Scale

The scale was created by Lu et al. (2018) and adjusted to Turkish by Yıldız et al. (2020). It has eighteen items and six subscales with a reliability coefficient (α) of 0.75 to 0.90 (Lu et al., 2018). The Turkish version has a reliability coefficient of 0.78 to 0.91.

2.4.3 Soccer Psychological Skills Scale-16

The scale was created by Konter (2009). It has 16 items ("1 = Strongly Agree" to "5 = Strongly Disagree") and 5 subscales: imagery (α = 0.66), performing under pressure (α = 0.73), commitment (α = 0.62), coping with stress (α = 0.68), and competitive anxiety (α = 0.63).

2.4.4 Soccer Attitude Scale

The scale was developed by Çelik Kayapınar and Combul (2018). It consists of 26 items and four subscales: individual effects (11 items), social interaction (eight items), performance (four items), and psychological effects (three items). It has factor loadings of 0.453 to 0.741. The total scale has a reliability coefficient of 73.8. The total score ranges from 46 to 110.

2.5 Data Analysis

Frequency (n), percent (%), Mean ($\bar{x}$), and standard deviation (SD) were presented for categorical data. Reliability was assessed. Normality was examined by means of the Shapiro-Wilk test. Pearson's correlation coefficient was employed for analysis. Researchers employ the Sobel test to check the meaning of the impact of a mediator (Sobel, 1982, 1986; MacKinnon et al., 2002). Simple linear regression models were established to assess the postulations. In Model 1, AME was the DV, while ATS was the IV. In Model 2, PSIS was the DV, while AME was the IV. In Model 3, PSIS was the DV, while ATS was the IV. The requisites for examining the arbitrating influence of AME were satisfied. Model 4 was constructed in which PSIS was the DV, while ATS and AME were the IVs. Model 4 signified that AME partially mediated PSIS and ATS. The meaning of the modification in Beta values was verified to establish the validity of the partial mediation of AME (Hayes, 2013). In Monte Carlo simulations, "Sobel and Aroian tests produce optimum results for samples > 49" (MacKinnon et al., 1995). "Sobel, Aroian, and Goodman's" test statistics were employed to assess the significance of the change in beta scores. Analyses were performed by means of the "R-Project program (R Core Team, 2020)" and the "bda (Wang, 2015)" package at a significance level of 0.05.

3. Results

Table 1. Descriptive data

	n	%
Age (years)		
≤ 18	81	27.5
19-24	145	49.2
25-29	42	14.2
30-35	17	5.8
≥ 35	10	3.4
Professional experience (year)		
0-2	10	3.4
3-5	42	14.2
6-8	104	35.3
9-11	68	23.1
≥ 11	71	24.1
Position		
Goalkeeper	42	14.2
Defender	91	30.8
Midfielder	89	30.2
Striker	73	24.7
Category		
Amateur/Regional League	253	85.8
3rd League	16	5.4
2nd League	22	7.5
1st League	3	1.0
Super League	1	0.3
Being a national athlete		
Yes	47	15.9
No	248	84.1

Half of the participants were 19 to 24 years old (49.2%). Two-thirds had 6-8 years of professional experience (35.3%). More than a quarter of the participants were defenders (30.8%). Most participants played in the amateur/regional league (85.8%). Only forty-seven were national athletes (15.9%).

Table 2. Reliability

Scales	**Number of items**	**Cronbach's Alpha**
SPSIS-16	16	0.910
AMES	18	0.928
SAS-26	26	0.890

Note. SPSIS-16: Soccer Psychological Skills Scale-16, AMES: Athletic Mental Energy Scale, SAS-26: Soccer Attitude Scale.

Table 2 shows the reliability analysis results. The SPSIS-16, AMES, and SAS-26 had reliability coefficients of .910, .928, and .890, respectively (Table 2).

Table 3. Correlations

Variable	**Mean**	**SD**	**1**	**2**	**3**
1. SPSIS-16	65.712	10.702	1	0.666*	0.558*
2. AMES	88.512	14.442		1	0.531*
3. SAS-26	110.675	13.247			1

Note. SD: Standard Deviation, SPSIS-16: Soccer Psychological Skills Scale-16, AMES: Athletic Mental Energy Scale, SAS-26: Soccer Attitude Scale.

Table 3 shows Pearson's correlation test results and descriptive statistics. Participants had mean SPSIS-16, AMES, and SAS-26 scores of 65.712, 88.512, and 110.675, respectively. Their mean SPSIS-16 score was positively correlated with their mean AMES and SAS-26 scores ($r = 0.666$, $p < 0.05$; $r = 0.558$, $p < 0.05$). Their mean AMES score was positively correlated with their mean SAS-26 score ($r = 0.531$, $p < 0.0$).

Table 4. Simple linear regression analysis (Model 1)

	B	**SE**	**t**	**p**
Constant	24.496	6.017	4.071	< 0.001
SAS-26	0.578	0.054	10.714	< 0.001
R	0.531			
R^2	0.281			

Note. B: Beta coefficient, SE: Standard error, SAS-26: Soccer Attitude Scale.

AME significantly affected ATS ($p < 0.05$).

Table 5. Simple linear regression analysis (Model 2)

	B	**SE**	**t**	**p**
Constant	22.008	2.895	7.603	< 0.001
AMES	0.494	0.032	15.297	< 0.001
R	0.666			
R^2	0.444			

AME significantly affected PSIS ($p < 0.05$).

Table 6. Simple linear regression analysis (Model 3)

	B	**SE**	**t**	**p**
Constant	15.789	4.364	3.618	< 0.001
SAS-26	0.451	0.039	11.521	< 0.001
R	0.558			
R^2	0.312			

ATS significantly affected PSIS ($p < 0.05$).

Table 7. Simple linear regression analysis (Model 4)

	B	SE	t	p
Constant	6.439	3.821	1.685	0.093
SAS-26	0.230	0.039	5.854	< 0.001
AMES	0.382	0.036	10.577	< 0.001
R	0.709			
R^2	0.502			

ATS significantly affected PSIS ($p < 0.05$). Moreover, AME significantly affected PSIS ($p < 0.05$), suggesting that AME partially mediated PSIS and ATS.

Table 8. Sobel test

Test	Test statistics	p
Sobel	7.527	< 0.001
Aroian	7.510	< 0.001
Goodman	7.544	< 0.001

The results revealed that AME partially mediated PSIS and ATS.

4. Discussion

This study investigated whether AME mediated PSIS and ATS in soccer players. Researchers have recently focused on AME. Moreover, there is limited research on PSIS.

PSIS was correlated with AME and ATS ($r = 0.666$, $p < 0.05$; $r = 0.558$, $p < 0.05$). Moreover, AME was correlated with ATS ($r = 0.531$, $p < 0.0$). The result indicated that soccer players' PSIS and ATS significantly affected their AME. Therefore, the more positive attitudes soccer players have, the better they are at setting goals, using imagery, and performing under stress because more positive attitudes make them more concentrated and motivated. Research also shows a positive correlation (Konter, 2021a, 2021d; Islam, 2022b). On the other hand, Islam (2022c) detected a negative correlation.

ATS significantly affected AME. This result indicates that soccer players' ATS predicts their AME, confirming Hypothesis I. This finding agrees with earlier research (Yildiz, 2021; Islam & Imamoglu, 2019; Islam, 2022a, 2022c).

AME significantly affected PSIS. This result suggests that confident and concentrated soccer players are more likely to set goals, use imagery, and exhibit top performance. This result

confirms Hypothesis II. Soccer players' motivation, confidence, and concentration positively affect their psychological skills. Therefore, soccer players playing in different positions have to develop different psychological skills (Konter et al., 2019). However, we need more studies on this topic.

ATS significantly affected PSIS. This result indicates that soccer players' individual influences, psychological factors, and performance positively affect their psychological skills. This result confirms Hypothesis III. Although teams recognize that elite athletes need to develop psychological skills, only very few coaches or trainers systematically integrate psychological skills training into training and exercises (Konter et al., 2019). However, psychological skills training is essential in today's modern soccer. Islam (2022a, 2022b, 2022c) also reported a positive correlation, which is consistent with our result.

AME mediated PSIS and ATS, confirming Hypotheses IV. We need to promote team spirit to ensure that athletes exhibit top performance. To achieve that, we need to set shared goals because doing so instills the sense of "us" in athletes (Burton, 1993). Advanced technical and tactical competence is no longer enough for soccer players. Athletes who can put advanced psychological skills into practice under adverse conditions are more likely to exhibit top performance (Konter et al., 2019). Islam (2022c, 2022b) reported a full mediation and a positive relationship, which is consistent with our result.

5. Conclusion and Recommendaiton

The results show that AME mediates PSIS and ATS. These components are critical for soccer players to exhibit top performance under adverse conditions. The theoretical model was evaluated with three different models and confirmed with hypotheses. Therefore, our results show that soccer players' PSIS and ATS affect their AME. Trainers and coaches should inform soccer players about PSIS, AME, and ATS. They should also provide them with the opportunity to develop those skills.

Although there is a large body of research on the effectiveness of psychological education, there is little research on the effectiveness of psychological education in soccer (Yıldız, 2021; Nesti, 2010; Konter et al., 2019). Looking at the field of sport psychology, this structure contributes to the field and the original theoretical model in the statistical analysis part of the research will bring innovation in the field of sports sciences as an intermediary variable because studies on the intermediary variable are limited in the field of sports sciences. Researchers can focus on the coaches of soccer teams because the psychological structure is particularly important in cases of defeat in competitions or relegation of the team (Apitzsch, 2006). Psychological skills training and athletic mental training in football and attitudes towards football should be implemented in the programs of football academies and leagues in lower age groups. The research should be repeated on different sample groups from different cultures.

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Ethical Considerations

Ethical approval was granted by the Ethics Committee of Ordu University (27.12.2021: 2021/238; 06.09.2022: 2022/162).

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