

The effect of athletic mental energy on wrestlers' sports courage and attitudes toward wrestling

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Authors' Contribution: A – Study design; B – Data collection; C – Statistical analysis; D – Manuscript Preparation; E – Funds Collection

Abstract

Background and Study Aim This study aimed to determine whether athletic mental energy played a mediating role between wrestlers' sports courage and attitudes toward wrestling.

Material and Methods The study developed an original theoretical model, which was tested using the Sobel test. The sample consisted of 247 wrestlers in the Freestyle and Greco-Roman Wrestling Leagues, U-23, 1. League, 2. League, and Stars Wrestling Leagues of the 2021-2022 Turkish Wrestling Federation. Participants were recruited using random sampling. Data were collected using a sociodemographic characteristics questionnaire, the Guttman Attitude Scale Towards Wrestling (GAS), the Sports Courage Scale-31 (SCS-31), and the Athletic Mental Energy Scale (AMES).

Results There was a positive correlation between attitudes toward wrestling and athletic mental energy. There was a positive correlation between athletic mental energy and sports courage. There was a positive correlation between attitudes toward wrestling and sports courage. Moreover, athletic mental energy played a fully mediating role between sports courage and attitudes toward wrestling.

Conclusions The results confirmed the theoretical model. Our results also point to the effects of athletic mental energy on sports performance. Athletic mental energy plays a fully mediating role between sports courage and attitudes toward wrestling. Authorities should inform wrestlers about the relationship between athletic mental energy, mental training, and sports courage. Wrestlers should practice developing positive attitudes toward wrestling and build up the courage to show high performance during competitions. Researchers should recruit different samples to investigate the mediating role of athletic mental energy between wrestling attitude and sports courage.

Keywords: sports courage, attitudes toward wrestling, athletic mental energy, wrestling.

Introduction

Wrestling is a symbol of the struggle put up by communities for survival. It is a part of human life. It takes place in parallel with the emergence and progress of civilization [1]. Wrestling is an ancient sport that dates back to Greco-Roman Times [2, 3]. It is a popular sport among Turks. It constitutes an undeniable part of the rich traditions that make up Turkish society [4]. Therefore, Turkish people call wrestling an "ancestral sport" [5]. Turks value wrestlers very much and view them as brave, strong, and gentlemanly athletes [6]. Wrestling is a high-contact sport in which two athletes compete against each other to secure an advantageous position over their opponents. It is a combination of strategic, technical, and tactical movements. The objective of wrestling is to win the match by pinning the opponent's back on the ground or getting more scores [7].

Sports courage is one of the most important topics in sports psychology [8]. Although it is regarded as an important virtue [9], sports psychology researchers have paid little scientific attention to it [10]. Sports psychology focuses on different psychological

variables to maximize performance [11]. Courage is a way to manage fear and stress while winning over internal and external resistances [10]. Sports courage is a dynamic process affected by numerous factors (fear, danger, risk, etc.) such as tasks, personal characteristics, and experiences [12]. We cannot give one answer to the change and development of sports courage because it has a complex structure [13]. In their moral courage model, Sekerka and Bagozzi [14] ask, "How can we develop self-regulation in sports courage and take action against threats?". This model focuses on internal influences, referred to as tools, for initiating bold action. Those tools are linked to internal processes and personal goals, such as expectations, feelings, and moral standards. Emotions evoked by experiences and how one thinks under pressure play an important role in these situations [15]. The model considers and identifies several self-regulation variables related to decisions to take action. Sekerka and Bagozzi's process model is akin to other self-regulation models, such as Heckhausen's Rubicon Model of Action Phases [16, 17]. The first step of the Rubicon Model of Action Phases focuses on motivation and willingness to act. The second step involves a firm commitment to take action. According to these models, a firm

commitment is essential to taking action against challenges [15, 18].

Although the concept of mental energy emerged in the nineteenth century, it has not been scientifically defined [19]. Mental energy is the main factor for high performance. It is defined as thinking hard about problems and insisting on solving them [20]. There is a small body of research on mental energy [21]. It is mostly associated with such factors as fatigue, alertness, etc. [22]. Athletic mental energy is defined as an athlete's energy status. It also involves cognitive, affective, and motivational components. Sports psychology experts focus on the sub-dimensions of tirelessness, vigor, and calmness. Motivation, concentration, and confidence are also important features for high performance [23]. Mental energy is an important factor that all athletes should take into account [20, 21, 23].

Attitude cannot be observed directly. There should be a behavior for us to evaluate the presence or absence of an attitude [24]. Attitude is a state of readiness for people to accept or reject people, opinions, attitudes, or objects. Therefore, readiness is also affected by perceptual differences and changes [25]. Attitude is a personality trait learned through conditioning, imitation, and observation [26]. Attitudes can be positive or negative [27].

There is a small body of research on athletic mental energy [23, 28]. Researchers in different fields focus on courage: football, [15, 29, 30] wrestling, [31], students [32, 33, 34], skiing [35] etc. which helps us better understand sports courage. There is a growing body of research on attitudes [25, 36, 37]. However, there is limited research on sports courage. Although researchers address different branches of wrestling, there are no studies investigating athletic mental energy, courage, and attitude in wrestling. Therefore, this is the first study in that regard. This study investigated whether athletic mental energy played a mediating role between sports courage and attitudes toward wrestling. Research shows that athletic mental energy, sports courage, and attitudes toward wrestling affect wrestlers' psychological status. The following are the research hypotheses:

Research Hypotheses

H₁: Wrestlers' attitudes toward wrestling positively affect their athletic mental energy.

H₂: Wrestlers' athletic mental energy positively affects their sports courage

H₃: Wrestlers' attitudes toward wrestling positively affect their sports courage.

H₄: Wrestlers' athletic mental energy plays a mediating role between their sports courage and attitudes toward wrestling

Materials and Methods

Research Model and Type

This study adopted a cross-sectional and correlational research design to develop an original theoretical model. It employed the model to determine the mediating role of athletic mental energy between sports courage and attitudes toward wrestling. In the model, sports courage (SCS-31) was the dependent variable, wrestling attitude (GAS) was the independent variable, and athletic mental energy (AMES) was the mediating variable. Mediation analyses that add new information to the literature are theoretical studies [38]. The model was assessed using the Sobel test [39]. The model in question is as follows.

This cross-sectional and descriptive study adopted a survey model to reveal a situation as it is. The survey method aims to describe a situation as it is or as it was in the past [38, 40].

Research Purpose

This study aimed to determine whether wrestlers' athletic mental energy mediated between their attitudes toward wrestling and sports courage.

Participants.

The study population consisted of all wrestlers from the Freestyle and Greco-Roman Wrestling Leagues, U-23, 1. League, 2. League, and Stars Wrestling Leagues of the 2021-2022 Turkish Wrestling Federation [41]. Participants were recruited from Ordu and Trabzon Metropolitan Municipalities Wrestling Training Centers, Amasya, Kavak, and Korkuteli Wrestling Training

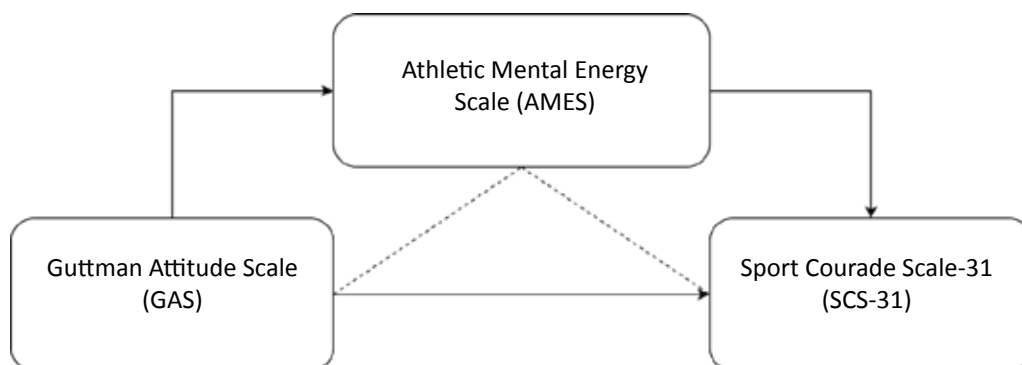


Figure 1. Sobel Test Model

Centers, Vezirköprü and Muğla Youth and Sports, Ladik Municipality Sports, Ankara ASKI, Istanbul Metropolitan Municipality, and Pendik Wrestling Specialized Clubs. A common rule of thumb for scale studies is to have a sample size five times the number of items on the scale [42]. The sample consisted of 247 active wrestlers (≥ 17 years of age). Participants were randomly recruited using disproportionate element sampling.

Research Design.

Data were collected using a survey method. Participants were briefed about the research purpose, confidentiality, and procedure. The data were collected between December 2021 and January 2022. The data were collected using a sociodemographic characteristics questionnaire, the Athletic Mental Energy Scale (AMES), the Sports Courage Scale-31 (SCS-31), and the Guttman Attitude Scale (GAS).

Sociodemographic Characteristics Questionnaire

The sociodemographic characteristics questionnaire was based on a literature review conducted by the researcher. The questionnaire consisted of five items on age, gender, professional experience, category, and the status of being a national athlete.

Guttman Attitude Scale Toward Wrestling

The Guttman Attitude Scale Toward Wrestling (GAS) was developed by Bardakçı and Caz [43]. The instrument consists of five items rated on a two-point Likert-type scale (Agree = 1 and Disagree = 0). Three items are positive, while two items are negative statements regarding attitudes toward wrestling. The scale has a coefficient of reproducibility of 0.937 and a coefficient of scalability of 0.64 [43].

Athletic Mental Energy Scale

The Athletic Mental Energy Scale (AMES) was developed by Lu et al. [23] and adapted to Turkish by Yıldız et al. [28]. The instrument consists of 18 items rated on a six-point Likert-type scale. The instrument consists of six subscales: vigor (Items 1, 12, and 15), confidence (Items 3, 9, and 13), motivation (Items 4, 8, and 16), tireless (Items 7, 11, and 12), concentration (Items 2, 5, and 10), and composed (Items 14, 17, and 19). The subscales of the original scale “vigor,” “confidence,” “motivation,” “tireless,” “concentration,” and “composed” have a Cronbach’s alpha (α) of 0.75, 0.82, 0.86, 0.89, 0.87, and 0.90, respectively (23). The subscales of the Turkish version of the scale have a Cronbach’s alpha of 0.78 to 0.91 [28].

Sports Courage Scale-31

The Sports Courage Scale-31 (SCS-31) was developed by Konter and Ng [44]. The instrument consists of 31 items rated on a five-point Likert-type scale (“1= Strongly Agree” to “5= Strongly Disagree”). The instrument has five subscales: mastery ($\alpha = .82$; Items 1, 6, 11, 16, 21, 24, and 27), determination ($\alpha = .82$; Items 2, 7, 12, 17, 20, 22, 25,

28, and 30), venturesome ($\alpha = 0.72$; Items 3, 8, 13, 18, 23, 26, and 29), assertiveness ($\alpha = 0.72$; Items 4, 9, 14, and 19), and self-sacrifice behavior ($\alpha = 0.61$; Items 5, 10, 15, and 31) [44].

Statistical Analysis.

Participants’ sociodemographic characteristics were presented using frequency (n) and percentage (%). The reliability of the SCS-31, GAS, and AMES was analyzed. The relationship between scale scores was analyzed using correlation tests. Mean ($\bar{x}$) and standard deviation (SD) were used for descriptive statistics. Analysis was performed to determine whether athletic mental energy (AMES) played a mediating role between sports courage (SCS-31) and wrestling attitude (GAS). Based on the work of Michael Sobel, a professor of statistics at Columbia University in New York, the Sobel test is used to test the significance of the effect of a mediator [39, 45]. A mediation model examines whether the relationship between independent and dependent variables occurs through a third variable. The Sobel test examines and interprets the relationship between dependent and independent variables by including a mediating variable in the model [39, 45, 46]. Three simple linear regression models were developed to test the assumptions. In the first model, athletic mental energy (AMES) was the dependent variable, while wrestling attitude (GAS) was the independent variable. In the second model, sports courage (SCS-31) was the dependent variable, while athletic mental energy (AMES) was the independent variable. In the third model, sports courage (SCS-31) was the dependent variable, while wrestling attitude (GAS) was the independent variable. The results of the models showed that the conditions for investigating the mediating effect of athletic mental energy (AMES) were met. In the last stage, a fourth model was developed. In the model, attitudes toward wrestling (GAS) and athletic mental energy (AMES) were the independent variables, while sports courage (SCS-31) was the dependent variable. The fourth model showed that athletic mental energy (AMES) fully mediated between attitudes toward wrestling (GAS) and sports courage (SCS-31). The significance of the change in Beta values was tested to determine the validity of the full mediation effect of athletic mental energy (AMES) [47]. In Monte Carlo simulations, the Sobel and Aroian tests yield the best results for samples larger than 49 [48]. Sobel, Aroian, and Goodman’s test statistics evaluated the significance of the change in beta values. The margin of error in the statistical analyses was 5%. All analyses were carried out using the R-Project program [49] and the bda [50] package.

Results

Table 1 shows the participants’ sociodemographic characteristics. Most participants were men (79.8%).

More than half the participants were 17 to 19 years of age (54.3%). More than a quarter of the participants were 20 to 25 years of age (27.1%). Less than a quarter of the participants were 26 years of age or older (18.6%). Half the participants had 0 to 5 years of professional experience (49.4%). Less than half the participants had 6 to 11 years of professional experience (44.2%). Sixteen participants had more than 11 years of professional experience (6.5%). Half the participants were Greco-Roman wrestlers (51.8%), while the other half were freestyle wrestlers (48.2%). Most participants were not national athletes (76.1%).

Table 2 shows the Cronbach's alpha of the scales. Item 2 was removed from the analysis because there was a significant increase in the reliability coefficient when it was deleted. Reliability analysis was performed again for the remaining items. The results showed that the AMES, SCS-31, and GAS had a Cronbach's alpha of 0.919, 0.865, and 0.655, respectively.

Table 3 shows the descriptive statistics and

correlation test results. Participants had a total mean AMES, SCS-31, and GAS score of 64.506, 81.377, and 3.802, respectively. The AMES total score was negatively correlated with the SCS-31 total score ($r=-0.375$, $p<0.05$) and positively correlated with the GAS total score ($r=0.149$, $p<0.05$). The SCS-31 total score was also negatively correlated with the GAS total score ($r=-0.179$, $p<0.05$).

Table 4 shows the simple linear regression analysis where athletic mental energy (AMES) was the dependent variable, while wrestling attitude (GAS) was the independent variable. The results showed that wrestling attitude significantly affected athletic mental energy ($p<0.05$).

Table 5 shows the simple linear regression analysis where sports courage (SCS-31) was the dependent variable, while athletic mental energy (AMES) was the independent variable. The results showed that athletic mental energy significantly affected sports courage ($p<0.05$).

Table 6 shows the simple linear regression analysis where sports courage (SCS-31) was the

Table 1. Sociodemographic Characteristics

Variable	n	%
Gender		
Woman	50	20.2
Man	197	79.8
Age (years)		
17-19	134	54.3
20-25	67	27.1
26	46	18.6
Professional experience (year)		
0-2	26	10.5
3-5	96	38.9
6-8	77	31.2
9-11	32	13.0
>12	16	6.5
Style		
Greco-Roman	128	51.8
Freestyle	119	48.2
Being a national athlete		
Yes	59	23.9
No	188	76.1

Table 2. Reliability Test Results

Scales	Item No	Cronbach's Alpha
AMES	18	0.919
SCS-31	31	0.865
GAS	4	0.655

AMES: Athletic Mental Energy Scale, SCS-31: Sports Courage Scale-31, GAS: Guttman Attitude Scale

Table 3. Descriptive Statistics and Correlation Test Results

Variable	$\bar{x}$	SD	1	2	3
1. AMES	64.506	17.437	1	-0.375*	0.149*
2. SCS-31	81.377	15.764		1	-0.179*
3. GAS	3.802	0.609			1

$\bar{x}$: Mean, SD: Standard Deviation, AMES: Athletic Mental Energy Scale, SCS-31: Sports Courage Scale-31, GAS: Guttman Attitude Scale, * $p < 0.05$

Table 4. Simple Linear Regression Analysis (Model 1)

Variable	Beta	Std. Error	t	p
Constant	46.147	8.810	5.238	<0.001
GAS	4.793	2.271	2.111	0.036
R	0.145			
R ²	0.021			

Beta: Coefficient, Std. Error: Standard Error, GAS: Guttman Attitude Scale

Table 5. Simple Linear Regression Analysis (Model 2)

Variable	Beta	Std. Error	t	p
Constant	103.266	3.577	28.872	<0.001
AMES	-0.339	0.054	-6.339	<0.001
R	0.375			
R ²	0.141			

Beta: Coefficient, Std. Error: Standard Error, AMES: Athletic Mental Energy Scale

Table 6. Simple Linear Regression Analysis (Model 3)

Variable	Beta	Std. Error	t	p
Constant	93.626	6.174	15.165	<0.001
GAS	-3.392	1.609	-2.108	0.036
R			0.140	
R ²			0.020	

Beta: Coefficient, Std. Error: Standard Error, GAS: Guttman Attitude Scale

dependent variable, while wrestling attitude (GAS) was the independent variable. The results showed that wrestling attitude significantly affected sports courage ($p < 0.05$). All models met the conditions to determine the mediating role of athletic mental energy between sports courage and wrestling attitude.

Table 7 shows the multiple linear regression analysis where athletic mental energy (AMES) was added to Model 3 as an independent variable. Wrestling attitude (GAS) did not significantly affect sports courage (SCS-31) ($p > 0.05$). However, athletic mental energy (AMES) significantly affected sports courage (SCS-31) ($p < 0.05$). These results showed that athletic mental energy played a fully mediating role between sports courage and wrestling attitude. However, the significance of the change in beta

values should be considered to determine whether the effect of the mediating role of athletic mental energy is significant [47].

Table 8 the showed that the Sobel, Aroian, and Goodman test values were statistically significant ($p < 0.05$), indicating that athletic mental energy played a fully mediating role between sports courage and wrestling attitude.

Discussion

In recent years, there has been a growing body of research on psychological structures. However, there is limited research on athletic mental energy, wrestling attitude, and sports courage. This is the first study to address those three components. Therefore, the results were discussed within the scope of the hypotheses.

The first result showed that the AMES total score was negatively correlated with the SCS-31 total score ($r=-0.375$, $p<0.05$) and positively correlated with the GAS total score ($r=0.149$, $p<0.05$). The results also showed that the SCS-31 total score was negatively correlated with the GAS total score ($r=-0.179$, $p<0.05$). These results indicated that participants' athletic mental energy did not significantly predict their attitudes toward wrestling. Our results are consistent with the literature Konter, [30, 51, 52]. However, our results showed that the higher the athletic mental energy, the higher the sports courage. Our results are consistent with the literature [29, 53, 54]. Therefore, wrestlers with high confidence, motivation, and concentration can take risks and execute their movements skillfully, affecting their courage positively.

The second result showed that participants' attitudes toward wrestling significantly affected their athletic mental energy ($p<0.05$). This result suggests that wrestlers with more positive attitudes toward wrestling are likely to have higher levels of athletic mental energy. Therefore, we can state that wrestlers with more positive attitudes toward wrestling have higher motivation and concentration, affecting their performance positively. Islam and Imamoğlu [25] found that students receiving sports education had moderate-level attitudes toward physical education and sports teaching. Balaban et al. [55] reported that oil wrestlers had high attitudes toward leisure time. Yıldız [19] determined a positive relationship between attitudes and athletic mental energy. Our results are consistent with the literature. Our results confirmed Hypothesis I. Kaynar et al. [56] reported that trainers, lack of training, and social environment affected wrestlers' performance adversely. Demirtaş and Çıplak [57] determined that organizations, opponents, and training adversely affected wrestlers, while the COVID-19 pandemic adversely affected young wrestlers. Our results are inconsistent with the literature. More research is warranted to better understand the relationship between wrestlers' attitudes toward wrestling and athletic mental energy.

The third result showed that athletic mental energy significantly affected sports courage ($p<0.05$), suggesting that the higher the athletic mental energy the wrestlers have, the more courageous they are. Motivation and confidence make wrestlers more courageous, resulting in them performing better. Our result confirmed Hypothesis II. The first step of Heckhausen's Rubicon Model of Action Phases [16, 17] is about motivation, which is similar to the motivation mood of athletic mental energy. According to Kuhl's action control theory [58, 59, 60], athletic mental energy is a set of voluntary processes required to take action in the face of challenges. According to Konter and Beckmann [15], the mood of insisting on the solution in athletic

mental energy shows similar characteristics. Yıldız [19] also reported a positive correlation between athletic mental energy and sports courage, which is consistent with our result. More research is warranted to better understand the relationship between athletic mental energy and sports courage.

The fourth result showed that participants' attitudes toward wrestling significantly affected sports courage ($p<0.05$). This result suggests that wrestlers with more positive attitudes toward wrestling are likely to be more courageous. Wrestlers with positive attitudes toward wrestling are assertive, self-sacrificing, and determined risk-takers with high courage. Our result confirmed Hypothesis III. Wrestlers with high-level motor skills (strength, speed, endurance, etc.) and positive psychological characteristics are likely to have higher physical performance. Athletes must persevere in the face of challenges and act decisively and boldly to achieve their goals [44]. Wrestlers interested in developing their self-efficacy and mastery must develop self-regulation skills to build up the courage to face challenging tasks [61]. Konter [62] and Güvendi et al. [31] also reported a positive correlation between wrestling attitude and sports courage. On the other hand, Islam and Imamoğlu [25] and Güvendi et al. [31] did not find a positive correlation between wrestling attitude and sports courage.

The fifth result showed that participants' athletic mental energy played a fully mediating role between their sports courage and attitudes toward wrestling. Wrestlers should possess athletic mental energy because it turns them into assertive, self-sacrificing, and determined risk-takers. Our result confirmed Hypothesis IV. Peterson and Seligman [63] argue that it refers to the attainment of the self as a whole, which is related to autonomy and the intention to take responsibility. We can state that wrestlers must be persistent, determined, and aggressive risk-takers to win. Coaches and trainers should give young wrestlers responsibility because more responsibility means more courage [64]. Yıldız [19] also determined a positive correlation between athletic mental energy and sports courage. Konter [65] argues that injuries prevent soccer players from developing courage. One handicap of high determination and assertiveness is that young athletes take the risk of getting yellow or red cards. More research is warranted to better understand the relationship between athletic mental energy, sports courage, and attitudes toward wrestling.

Conclusions

Our results indicate that wrestlers must develop positive attitudes toward wrestling and build up the courage to show optimal performance. Our results also point to the effects of athletic mental energy on sports performance. Athletic mental energy plays a fully mediating role between sports courage

and attitudes toward wrestling. In conclusion, the theoretical model was evaluated using three models based on the data and was confirmed by the hypotheses. Authorities should inform wrestlers about athletic mental energy and sports courage to help them develop positive attitudes toward wrestling. They should also provide them with appropriate settings and time to help them develop those components. Wrestlers must be bold, determined, and courageous risk-takers to be successful. High motivation and concentration help them perform optimally. Coaches and trainers should encourage wrestlers to take bold action. Wrestlers should practice developing positive attitudes toward wrestling and build up the courage to show high performance during competitions. Researchers should recruit different samples to investigate the mediating role of athletic mental energy between wrestling attitude and sports courage.

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Ethical Considerations

The study was approved by the Social and Human Sciences Research Ethics Committee of Ordu University Rectorate (Date: 02.12.2021 & No: 2021/214).

Conflict of interest

The author have no conflicts of interest to declare.

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