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Araştırma Makalesi / Research Article

Sacred Strength: The Role of Motivational Religiosity in Developing Mental Toughness in Sport

Kutsal Güç: Sporda Zihinsel Dayanıklılığı Geliştirmede Motivasyonel Dindarlığın Rolü

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Abstract: Mental toughness is recognized as a critical psychological attribute that enables athletes to cope effectively with pressure, maintain focus, and persist through challenges. The psychological and sociocultural factors contribute to the development and sustenance of mental toughness. In this context, motivational religiosity, conceptualized as the use of religious beliefs and practices as a source of confidence and personal strength, is considered a potential influential factor, particularly among athletes facing the demands of competitive sport. This study investigates the relationship between motivational religiosity (MR) and mental toughness (MT) in competitive athletes, with an attention to the moderating roles of sports experience and education level, as well as the mediating roles of athletic identity (AI) and self-efficacy (SE). A total of 420 athletes (M_{age}= 21.26; *SD*=7.74) from diverse sporting disciplines participated in this quantitative cross-sectional study. Statistical analyses were conducted using PROCESS Macro for SPSS. Using double moderation analysis, the results indicated that MR was a significant positive predictor of MT. However, the strength of this relationship was moderated by both sport experience and educational attainment; notably, the association was weaker among athletes with greater experience and higher levels of education. Furthermore, a parallel multiple mediation analysis revealed that both AI and SE mediated the MR–MT relationship, with SE emerging as the stronger mediator. These findings suggest that MR may bolster MT by reinforcing athletic identity and perceived competence. The study contributes to the literature on the psychology of religion in sport by highlighting the interplay between contextual factors and psychological mechanisms that shape how religiosity influences athlete resilience. Future research should examine how motivational religiosity interacts with other psychological traits and investigate longitudinally whether faith-based interventions may actively contribute to the development of mental toughness over time.
Keywords: Psychology of Religion, Motivational Religiosity, Mental Toughness, Athletic Identity, Self-efficacy.

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Öz: Zihinsel dayanıklılık, sporcuların baskı altında iken zorluklarla etkili bir şekilde başa çıkmalarını, odaklarını korumalarını ve ısrarcı olmalarını sağlayan temel bir psikolojik özellik olarak kabul edilmektedir. Psikolojik ve sosyokültürel etmenler, zihinsel dayanıklılığın gelişimine ve sürdürülebilirliğine katkıda bulunmaktadır. Bu bağlamda, dini inanç ve uygulamaların özgüven ve kişisel güç kaynağı olarak kullanılmasını ifade eden motivasyonel dindarlık**,** özellikle rekabetçi sporun gerektirdiği taleplerle başa çıkan sporcular arasında, etkili bir faktör olarak değerlendirilmektedir. Bu çalışma, motivasyonel dindarlık ile zihinsel dayanıklılık arasındaki ilişkiyi incelemeyi amaçlamaktadır. Ayrıca bu çalışmada, spor deneyimi ve eğitim düzeyinin bu ilişki üzerindeki düzenleyici rolleri ile, atletik kimlik ve öz-yeterliğin aracı rollerine odaklanılmıştır. Bu kesitsel çalışmaya, farklı spor disiplinlerinden 420 rekabetçi sporcu (Yaş Ort. = 21.26; SS = 7.74) katılmıştır. İstatistiksel analizler için SPSS PROCESS Macro kullanılmıştır. İkili düzenleyicilik analizi kullanılarak elde edilen sonuçlar, motivasyonel dindarlığın zihinsel dayanıklılık üzerinde anlamlı ve pozitif bir yordayıcı olduğunu göstermiştir. Ancak bu ilişkinin gücü hem spor deneyimi hem de eğitim düzeyine göre değişmiş; özellikle deneyimi ve eğitim seviyesi yüksek olan sporcularda ilişki daha zayıf bulunmuştur. Ayrıca çoklu paralel aracılık analizi hem atletik kimlik hem de öz yeterliğin motivasyonel dindarlık- zihinsel dayanıklılık ilişkisine aracılık ettiğini, ancak öz yeterliğin daha güçlü bir aracı rol üstlendiğini ortaya koymuştur. Bu bulgular, motivasyonel dindarlığın atletik kimliği ve algılanan yeterliliği güçlendirerek zihinsel dayanıklılığı destekleyebileceğini göstermektedir. Bu çalışma, dindarlığın sporcu dayanıklılığını nasıl etkilediğini şekillendiren bağlamsal faktörler ile psikolojik mekanizmalar arasındaki etkileşimi vurgulayarak spor alanında din psikolojisi literatürüne katkıda bulunmaktadır. Gelecek araştırmalar, motivasyonel dindarlığın diğer psikolojik özelliklerle etkileşimini ve inanca dayalı müdahale programlarının zihinsel dayanıklılığı uzun vadede nasıl geliştirdiğini incelemelidir.
Anahtar Kelimeler: Din Psikolojisi, Motivasyonel Dindarlık, Zihinsel Dayanıklılık, Atletik Kimlik, Öz-yeterlik.

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Introduction

Mental toughness (MT), a multidimensional construct encompassing cognitive, emotional, and behavioral attributes, plays a crucial role in athletic performance and psychological well-being. Despite its frequent use in sport psychology literature, MT remains one of the most commonly cited yet least understood concepts (Gould et al., 2011, 126). While no universally accepted definition exists, most scholars agree that MT enables athletes to cope effectively with pressure, adversity, and competitive demands (Gucciardi et al., 2008; Jones et al., 2007). It is widely recognized as a psychological edge that allows athletes to remain focused, confident, and composed under stress, outperforming opponents in both consistency and mental resilience (Connaughton et al., 2008; Fourie - Potgieter, 2001; Jones et al., 2002).

Drawing on multi-method research, Gucciardi and Gordon (2011) conceptualize MT as a set of psychological characteristics that enable athletes to perform optimally across a variety of challenging conditions. These characteristics include the ability to regulate emotions, intrinsic motivation, bounce back from setbacks, sustained attentional focus despite distractions, and an unshakable self-belief in one's ability to perform under any circumstance. Such traits are consistently identified across the literature as central components of MT (Bull et al., 2005; Connaughton, 2010; Connaughton - Hanton, 2009; Crust, 2008; Goldberg, 1998; Gucciardi et al., 2016; Gucciardi - Gordon, 2011; Jones et al., 2002).

In recent years, an increasing body of literature has explored how religiosity and spirituality may contribute to the development and reinforcement of MT. Research suggests that religious beliefs offer athletes a significant internal source of strength, meaning, and motivation that may help them cope with psychological stressors such as anxiety, competition pressure, and injury (Czech et al., 2004; Vernacchia et al., 2000; Watson - Nesti, 2005; Albayrak et al., 2019). Athletes who actively engage in religious practices such as prayer often report increased feelings of calmness, control, and inner strength, which align with core components of MT (Guntoro - Putra, 2022; Roychowdhury, 2019; Slatinsky et al., 2022). In this regard, religiosity may not only buffer stress responses but also foster mental attributes, such as perseverance and psychological resilience, that are essential for athletic success (Noh et al., 2023; Noh - Shahdan, 2021).

Motivational religiosity (MR), as a form of religiosity defined by the underlying motives for religious engagement rather than by frequency of practice, refers to psychological reasons that lead individuals to adopt and maintain religious beliefs and practices; these internalized motives can contribute to athletes' MT. In other words, MR emphasizes not just how religious a person is, but why they are religious. Drawing from the social-psychological framework of Batson and colleagues (Batson et al., 1993; Batson - Ventis, 1982), MR is seen as multidimensional, incorporating motives such as personal meaning-making, social belonging, and existential exploration. Uysal and colleagues (2014, 21) proposed a more specific categorization tailored to the Turkish cultural-religious context: the dimension of relationship with God as a source of strength and confidence, which reflects the individual's internalized connection to a divine presence as a source of emotional regulation and resilience, and the dimension of prosocial and religious-intellectual responsibility, which encompasses religious motivations rooted in moral behavior, social responsibility, and theological engagement. Together, these dimensions conceptualize MR as a value-driven, internalized framework that can influence coping, behavior, and can serve as a potentially significant factor in performance contexts such as sports, where internalized beliefs and emotional stability are critical for success.

In the competitive sport context, MR may serve as a psychological resource that athletes draw upon to manage stress, uncertainty, and performance pressure. Athletes with strong internalized religious motivations may derive a sense of purpose, resilience, and emotional regulation from their faith, which can be especially valuable in high-stakes environments. When religion is experienced as a personally meaningful and internalized value, rather than a tool for external validation, it may reinforce adaptive cognitive-emotional strategies such as focus, perseverance, and calm under pressure, all key attributes of MT. From a theoretical standpoint, the relationship between MR and MT can be situated within the

framework of self-determination theory (Ryan - Deci, 2000) and meaning-making models of coping (Park, 2005; Park, 2010). Self-determination theory posits that intrinsically motivated behaviors, rooted in personal meaning and self-endorsed values, enhance psychological well-being and resilience. In this sense, motivational religiosity can fulfill the basic psychological needs of autonomy, competence, and relatedness, which are essential for sustaining motivation and adaptive coping in sport. Similarly, the meaning-making perspective suggests that religion provides cognitive frameworks through which athletes interpret stressors, transforming adversity into purpose and growth. Integrating these theoretical perspectives helps explain how faith-based motivation may strengthen athletes' emotional regulation, persistence, and confidence, thereby enhancing mental toughness.

1. The Present Study

The present study aims to examine the effect of MR on MT in competitive athletes, with athletic identity and self-efficacy considered as potential mediating variables. Additionally, years of sports experience and education level are assessed as moderators to explore how these individual factors may shape the relationship between religiosity and MT. By focusing on MR as the primary independent variable, this research integrates perspectives from both the psychology of religion and sport psychology. In doing so, it seeks to contribute to a deeper understanding of how faith-based motivation can influence psychological resilience and performance in athletes. Although several studies have linked religiosity or spiritual factors to athletes' MT and related outcomes (Noh - Shahdan, 2021; Wandik et al., 2024), the specific relationship between MR and MT has not been examined using mediation or moderation analyses. Accordingly, the present study fills this gap by examining the direct association between MR and MT and by testing potential mediators and moderators that may explain and shape this relationship in competitive sport contexts.

2. Theoretical Background and Hypotheses

2.1. The Moderating Role of Years of Sports Experience and Educational Level (H_1)

Athletic experience, often measured by years of participation or sporting tenure, plays a critical role in shaping psychological attributes such as MT. A growing body of research suggests that athletes with more extensive competitive experience tend to demonstrate higher levels of MT, likely from repeated exposure to high-pressure competition and refined coping skills over time (Demir - Çelebi, 2019; Güvendi et al., 2020). Notably, the confidence subdimension of MT appears particularly sensitive to the influence of sporting experience (Eroğlu et al., 2020; Kalkavan et al., 2020). For example, Şimşek and Kartal (2023, 34) found in a sample of competitive team and individual athletes that MT differed significantly according to how many years participants had been licensed athletes.

As a moderator, sports experience may strengthen how religiosity affects toughness (Nicholls et al., 2009). Experienced athletes often face more setbacks, potentially enhancing their ability to utilize personal belief systems, such as religious faith, as adaptive coping mechanisms. For instance, seasoned athletes who view faith as a source of purpose may integrate religious coping more effectively under stress, magnifying the positive link between religiosity and toughness (Bounds et al., 2023). In contrast, less experienced or novice athletes with limited exposure might not yet translate their religious motivation into resilient performance. Thus, years of experience likely moderate the religiosity–toughness relationship: the same level of religiosity may yield greater toughness in a veteran athlete than in a newcomer, because veterans have honed how to apply their beliefs in competition.

Educational attainment has been shown to affect both religiosity (Schwadel, 2011) and athletes' MT (Bounds et al., 2023). Research within athletic populations has yielded mixed results regarding the role of education. For instance, Wandik et al. (2024, 984), in a study of elite youth athletes, found that higher levels of education were associated with increased religiosity and MT, and that MT was positively correlated with religiosity. Similarly, Şimşek and Kartal (2023, 33) reported that MT tends

to increase with higher educational attainment among athletes. However, other sport-specific investigations, such as that by Akgül (2019), have found no significant effect of education on MT. These divergent findings suggest that the moderating influence of education on the religiosity-MT relationship may be context-dependent.

In summary, existing research suggests that both sporting experience and educational attainment can play potential moderating roles in the relationship between MR and MT. Based on the theoretical and empirical evidence, the following hypotheses are proposed:

H_1: Years of sports experience and educational level will positively moderate the relationship between MR and MT among the study participants.

2.2. The Indirect Effect of Athletic Identity and Self-efficacy (H_2)

Athletic identity (AI) refers to the degree to which an individual defines themselves in terms of the athletic role. According to Brewer and Cornelius (2001, 102), it reflects the centrality of being an athlete to one's self-concept. Components of AI, such as perceived competence and social reinforcement from teammates, have been shown to correlate positively with MT (Petrie et al., 2014). Empirical findings by Altıntaş and Kelecek (2017, 267) further support this relationship, indicating that strong AI is a significant predictor of elevated MT. This study implies that athletes who strongly identify with their athletic role are more likely to exhibit psychological characteristics associated with perseverance and resilience.

In addition to its association with MT, AI has also been linked to religiosity and spirituality. Several studies suggest that religious commitment can reinforce AI by imbuing the athlete role with a sense of deeper meaning and purpose (Saville et al., 2021; Watson, 2010). Proios (2017, 119), for example, demonstrated that strong religious belief positively influences AI. These findings align with broader literature indicating that religious beliefs enhance coping mechanisms, support psychological well-being, and provide existential meaning for athletes (Noh - Shahdan, 2020). Taken together, these insights suggest that religiosity may strengthen AI, which in turn contributes to the development of MT by reinforcing purpose, commitment, and psychological resilience within the athlete's self-concept.

Self-efficacy (SE) is closely related to self-competency, the belief in one's ability to succeed (Nicholls, 2011), and is a key component of MT. Athletes who perceive themselves as capable are more motivated, persistent, and resilient, reflecting core attributes of confidence and control (Whitton et al., 2020). Empirical studies have found significant positive associations between SE and MT in competitive athletes (Aizava et al., 2023; Crust - Azadi, 2010), highlighting the role of self-belief in sustaining high performance under pressure.

Religiosity has been linked to greater coping efficacy and resilience in athletes. Slatinsky and colleagues (2022) found that stronger religious belief correlated with higher resilience among college football players, while Noh and Shahdan (2021) reported that athletes commonly use faith to manage anxiety and competitive stress. In this way, religious belief may also underpin athletic SE. Hoven's (2019) qualitative research revealed that athletes often attribute their confidence to their faith. These findings suggest a reciprocal relationship in which religiosity not only supports coping but also strengthens self-belief, ultimately contributing to MT through enhanced resilience and perceived competence.

The literature suggests that MR may influence MT through AI and SE. This framework supports a mediation model, represented as MR → AI, SE → MT. Accordingly, the following hypothesis is proposed:

H_2: AI and SE significantly mediate the relationship between MR and MT among the study participants.

3. Research Methodology

This study adopted a quantitative, cross-sectional, and correlational survey design to examine the direct relationships among the variables, as well as to explore the potential mediating and moderating

effects that may influence these relationships. Such a design is appropriate for identifying associations between psychological constructs measured as a single point in time without manipulating variables (Creswell - Creswell, 2018). Mediation and moderation analyses were conducted within this theoretical framework to provide a more comprehensive understanding of the intervariable dynamics. The required sample size was calculated using G*Power 3.1, while all subsequent statistical analyses were performed using SPSS version 24 and the PROCESS Macro.

3.1. Participants

The study employed both convenience and purposive sampling methods. Participants were volunteers who met specific inclusion criteria and were readily accessible. The target population consisted of licensed athletes aged 17 and above who competed at a competitive level and had a minimum of three years of athletic experience. Sample size determination was based on two G*Power analyses. The first, assessing a double moderation model (F test, fixed model R^2 deviation), indicated that 188 participants were needed with a medium effect size (R^2 = 0.70), α = 0.05, power = 0.80, and six predictors. The second analysis, testing R^2 increase in regression with 2 key predictors out of a total of 6 predictors (partial R^2= 0.03, α = 0.05, power = 0.80), suggested a minimum of 315 participants. Following the power analyses and subsequent data cleaning procedures to exclude missing or invalid responses, valid data were obtained from 420 competitive athletes. This number exceeds the minimum required sample size, thereby ensuring high statistical power for the analyses. Consequently, the reliability of the study's findings can be considered robust in terms of sample size.

This cross-sectional survey study employed a questionnaire-based data collection method. Data were gathered through both face-to-face fieldwork and online surveys. Between February 2023 and August 2023, the researcher attended individual sports competitions as a non-participant observer to administer surveys and observe athletes' MT in real-time competitive settings. Concurrently, additional data were collected through online platforms from athletes who met the inclusion criteria.

The final sample comprised 420 athletes aged between 17 and 47 years (*M* = 21.26, *SD* = 7.74), selected after excluding inaccurate or incomplete responses from the initial 500 collected. Of the participants, 54% (*n*=227) were female and 46% (*n*=193) were male. Regarding educational attainment, 58% (*n* = 244) had not completed a bachelor's degree, whereas 42% (*n* = 176) had obtained a bachelor's degree or higher. Participants reported an average of 9 years (*SD*=6.6) of sports experience and engaged in sports for an average of 8.7 hours per week (*SD*=5.1). A summary of these demographic and training characteristics is presented in Table 1.

Table 1: Characteristics of Sample (*n*=420)

Variable	Group	Frequency (f)	Percentage (%)
Gender	Male	193	46
	Female	227	54
Education	Less than bachelor's degree (a)	244	58
	Bachelor's degree or higher (b)	176	42
Age	*M*= 21,26 (*SD*=7.74)		
Years of sports experience	*M*= 9 (*SD*=6.6)		
Weekly training hours	*M*= 8.7 (*SD*=5.16)		

Abbreviations: *M*, mean; *SD*, standard deviation.

3.2. Procedure

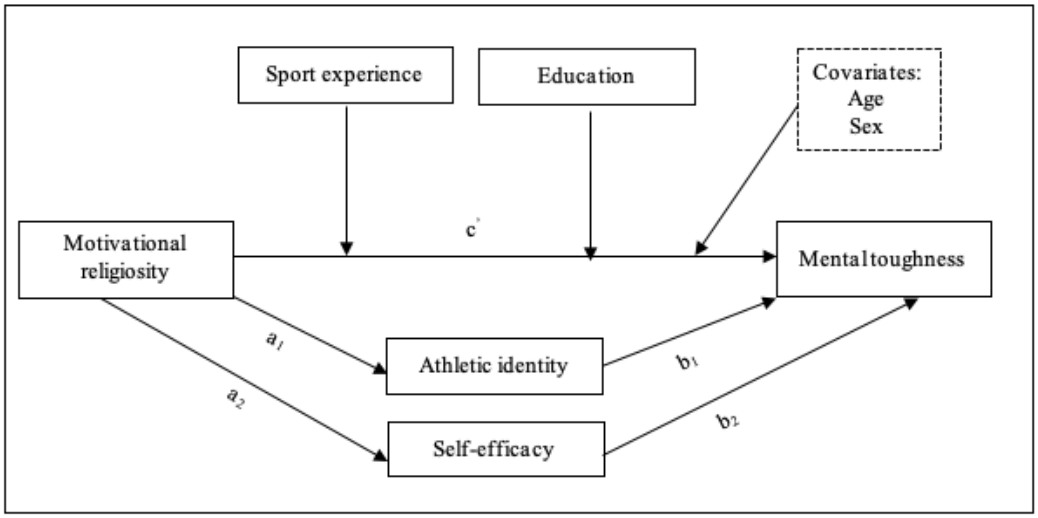
Prior to the main analyses, preliminary data screening was conducted to assess missing values, outliers, and multicollinearity. Descriptive statistics, including means, standard deviations, frequencies, and percentages, were calculated to summarize the sociodemographic characteristics of the sample (see Table 2). Categorical variables, such as gender and educational level were recoded into dummy variables in accordance with the guidelines of Hardy (1993). Reliability analyses were performed using Cronbach's alpha coefficients for the primary scales, and the mean values of core study variables were examined. Pearson's r coefficients were used to assess bivariate correlations

among the study variables. Following these preliminary procedures, moderation and mediation analyses were carried out using the PROCESS macro (Hayes, 2022).

Before performing the moderation analyses, age and gender were included as covariates to control for their potential confounding effects and to ensure that the results were independent of these demographic factors. Additionally, the continuous variables, years of sports experience and MR, were mean-centered to reduce multicollinearity and facilitate interpretation of interaction effects.

Simple moderation analyses were first conducted to examine whether years of sports experience and educational level independently moderated the relationship between MR and MT. This was followed by a double moderation analysis to explore the combined moderating effects of both variables on the same relationship. To further examine the underlying mechanisms, simple mediation analyses were performed to assess whether SE and AI individually mediated the relationship between MR and MT. Subsequently, a parallel multiple mediation analysis was carried out to evaluate the simultaneous mediating roles of these variables within a unified model. All moderation and mediation models employed bootstrapping procedures with 5,000 resamples to produce bias-corrected 95% confidence intervals for the indirect and interaction effects. Statistical significance was determined based on whether the confidence intervals excluded zero. Overall, these analyses provided a comprehensive assessment of the direct, indirect, and conditional effects among the study variables. The proposed theoretical model of the research is presented in Figure 1.

Figure 1: Proposed Theoretical Model



3.3. Measures

Sport Mental Toughness Questionnaire SMTQ-14. To assess athletes' psychological capacity to recover from adversity and perform under pressure, the Sport Mental Toughness Questionnaire (SMTQ-14), developed by Sheard et al. (2009) and adapted to Turkish by Altıntaş and Koruç (2016), was utilized. The SMTQ consists of 14 items across three subscales: confidence, constancy, and control. Items are rated on a 4-point Likert scale (1= Strongly Disagree to 4= Strongly Agree). The Kaiser-Meyer-Olkin (KMO) measure for the scale was .80, and Bartlett's test of sphericity was significant (χ^2=830,95; p<.01), indicating the data's suitability for factor analysis. The Cronbach's alpha values for the subscales were: confidence α =.84, constancy α =.51, and control α =.79. For this study, the overall MT scores were analyzed, and the Cronbach's alpha of .77.

Münchner Motivational Religiosity Inventory. To assess the multidimensional motivational structure of athletes' religiosity, the Münchner Motivational Religiosity Inventory, developed by Zwingmann et al. (2010) and adapted into Turkish by Uysal et al. (2014), was utilized. The instrument comprises 20 items across two subscales: the relationship with God as a source of power and confidence, and pro-social and religious-intellectual responsibility. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy for the scale was reported as .90, indicating suitability for factor

analysis. The original study reported a Cronbach's alpha of .96, while the present study yielded a slightly higher reliability coefficient of α =.97, reflecting excellent consistency.

Athletic Identity Measurement Scale. The Athletic Identity Measurement Scale, developed by Brewer and Cornelius (2001) and adapted into Turkish by Öztürk and Koca (2013), was used to assess the degree to which individuals identify themselves as athletes and adopt athletic roles. The 7-item scale includes three subscales: social identity, exclusivity, and negative affectivity. In the original Turkish validation study, Cronbach's alpha coefficients were reported as α = .69 (social identity), α = .79 (exclusivity), and α = .59 (negative affectivity), with an overall reliability of α = .81. In the current study, the internal consistency reliability of the scale was found to be α = .87, indicating strong internal consistency.

Self-Efficacy Scale. Athletes' perceived confidence in their athletic capabilities was assessed using the Self-Efficacy Scale, originally developed by Riggs et al. (1994) and adapted into Turkish by Öcel (2002). The original scale comprises 10 items on a single-factor structure, rated on a 5-point Likert scale (1= Strongly Disagree, 5= Strongly Agree). While the internal consistency of the Turkish adaptation was previously reported as α = .61**,** additional validation procedures were necessary, as comprehensive psychometric evidence was not available. Therefore, exploratory (EFA) and confirmatory factor analyses (CFA) were conducted prior to the main analyses. Based on the results, four items were removed, and the remaining six items were retained for use in this study. The revised version yielded an internal consistency coefficient of α = .60.

4. Results

4.1. Preliminary Analysis

Table 2 presents the descriptive statistics, including means, standard deviations, range, and Cronbach's alpha of the study variables and their zero-order Pearson correlation coefficients. The results indicate that MR is positively related to MT (β = .243; p < .001), SE (β = .293; p < .001), and AI (β = .17; p < .001). Additionally, MT is positively correlated with both SE (β = .53; p < .001) and AI (β = .202; p < .001).

Table 2: Descriptive Statistics, Reliability, and Correlation Analysis for the Study Variables

Variable	1	2	3	4
1 Motivational Religiosity	-			
2 Mental Toughness	.243**	-		
3 Self-Efficacy	.293**	.53**	-	
4 Athletic Identity	.17**	.202**	.310**	-
M	4.13	2.73	3.54	5.61
SD	.89	.42	.7	1.25
Range	1-5	1-4	1-5	1-7
Cronbach (α)	.975	.768	.591	.87

Abbreviations: *M*, mean; *SD*, standard deviation. **p < 0.001.

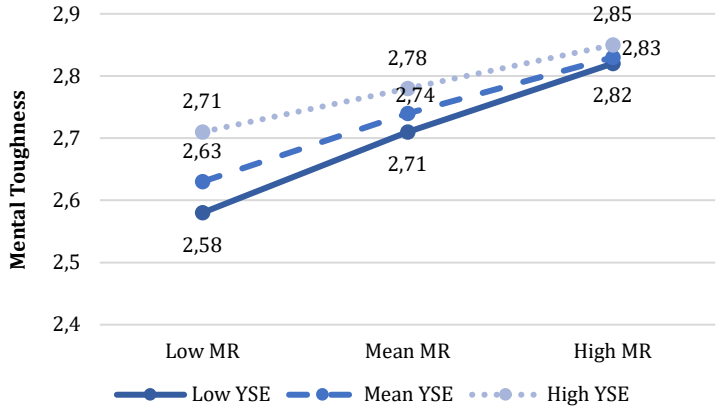
4.2. Moderation (H_1)

The analysis revealed that years of sports experience significantly moderated the relationship between MR and MT ($F_{5, 414}$ = 15.18; p < 0.001; R^2 = .155). To account for potential confounding variables, age (β = .008; p < 0.05; t = 2.346; 95% CI= [.0013, .0152]) and sex (β = .103; p < 0.01; t = 2.593; 95% CI= [.0249, .1806]) were included as covariates. The interaction between MR and years of sports experience was found to be statistically significant (β = -.0064; p < 0.05; t = -2.08; 95% CI= [-.0124, -.0004]), indicating a moderation effect. As illustrated in Figure 2, the impact of MR on MT varied according to athletes' years of sports experience, suggesting that this relationship may strengthen or weaken depending on the level of sports experience.

As years of sports experience increased, athletes demonstrated higher average levels of MT. The influence of MR on MT was significantly greater among athletes with fewer years of experience (β = .153; p < 0.001; t = 5.6; 95% CI= [.0994, .2071]), but this effect diminished as sports experience

increased (β = .089; p < 0.01; t = 3.52; 95% CI= [.0395, .1394]). Johnson-Neyman analysis indicated that the moderating effect of sports experience was statistically significant for athletes with fewer than 10 years of experience, whereby the positive association between MR and MT was attenuated. For athletes with over 10 years of experience, MR was no longer a significant predictor of MT.

Figure 2: Moderation effect of sports experience on the relationship between MR and MT

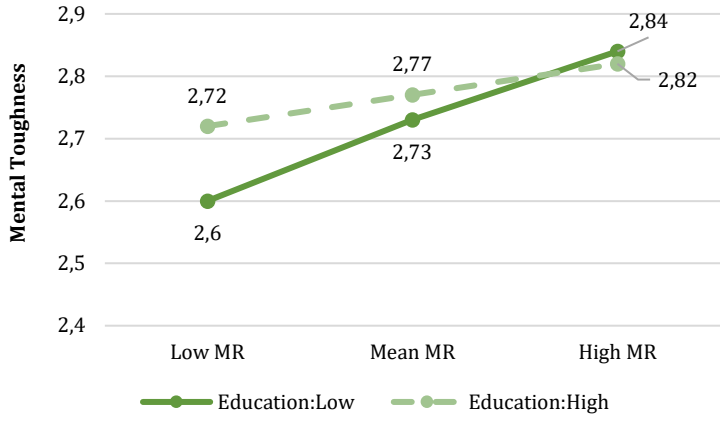


Abbreviations: MR, Motivational Religiosity; YSE, Years of Sport Experience
*Covariates included in the model: age and sex

The relationship between MR and MT was significantly moderated by the athletes' education level ($F_{5, 414}$ = 14.85; p < 0.001; R^2 = .152), after controlling for age (β = .0107; p < 0.001; t = 3.725; 95% CI= [.0051, .0164]) and sex (β = .107; p < 0.01; t = 2.705; 95% CI= [.0292, .1847]). The interaction between MR and education level was statistically significant (β = -.0866; p < 0.05; t = -2.01; 95% CI= [-.1721, -.0011]). These findings indicate that the predictive effect of MR on MT varied depending on educational attainment. This moderating effect is visually represented in Figure 3.

The findings indicate that the positive predictive relationship between MR and MT is significantly stronger among athletes with lower educational attainment, categorized in this study (see Table 1) as less than bachelor's degree (a) (β = .155; p < 0.001; t = 5.506; 95% CI= [.1002, .2114]). However, this effect diminishes among those with a bachelor's degree or higher education levels (b) (β = .069; p < 0.05; t = 2.09; 95% CI= [.0041, .1343]), suggesting that educational attainment acts as a buffering moderator. These results do not support H_1, which predicts that sports experience and education level will positively moderate the relationship between MR and MT.

Figure 3: Moderation effect of education level on the relationship between MR and MT



Abbreviation: MR, Motivational Religiosity
*Covariates included in the model: age and sex

A double moderation analysis was conducted to examine whether years of sports experience and education level jointly moderated the relationship between MR and MT. The overall model was

statistically significant and explained 16% of the variance in MT (F7, 412 = 11.2243; p < 0.001; R2 = .16). These findings indicate that the influence of sports experience and education level contributes meaningfully to the prediction of MT based on levels of MR (see Table 3). To control for potential confounding effects, age (β = .007; p < 0.05; t = 1.951; 95% CI= [-.0001, .0143]) and sex (β = .101; p < 0.01; t = 2.568; 95% CI= [.0239, .1796]) were included as covariates. Moreover, the addition of the two moderators resulted in a small but statistically significant increase in explained variance (F2, 412 = 2.88; R2 change: .01; p<0.05), suggesting a limited but notable joint moderating effect. Furthermore, a post hoc power analysis was conducted for a multiple regression model with seven predictors. Based on an assumed medium effect size (f^2 = 0.19), alpha level of .05, and a total sample size of N=420, the analysis yielded a power estimate of 0.99 (1- β= .99). This indicates a very high likelihood of detecting a true effect and a minimal risk of a Type II error (Parameters: critical F = 2.032; numerator df = 7; denominator df = 412; λ = 80.12).

Table 3: Result of Double Moderation Analysis

Predictor	B	*SE*	t values	p	CI	
					LB	UB
constant	2.287	.1605	14.251	.0000	1.9722	2.6033
MR	.3318	.1675	1.9803	.048	.0024	.6611
YSE (W)	.0071	.0042	1.6923	.091	-.0011	.0153
Education (Z)	.044	.0446	.9854	.325	-.0437	.1317
MRxW	-.004	.0034	-1.245	.213	-.011	.0025
MRxZ	-.061	.0488	-1.26	.208	-.1574	.0344
Age (cov)	.007	.0037	1.951	.0517	-.0001	.0143
Sex (cov)	.101	.0396	2.568	.0106	.0239	.1796

Abbreviations: MR, motivational religiosity; YSE, years of sports experience; cov, covariant; *SE*, Standard Error; LB, lower bound; UB, upper bound; CI, confidence interval.

4.3. Mediation (H_2)

Mediation analyses were conducted to examine the mediating roles of SE and AI in the relationship between MR and MT. The model confirmed a significant positive direct effect of MR on MT (B= .117; *t* = 5.445; 95% CI= [.0752, .1601]). As illustrated in Table 4, both mediators demonstrated significant associations with the predictor and outcome variables. Specifically, AI was found to significantly mediate the MR-MT relationship. MR was positively associated with AI (B= .245; *t* = 3.622; 95% CI= [.1121, .3781]), and AI, in turn, was positively associated with MT (B= .066; *t* = 4.308; 95% CI= [.0359, .0962]). Similarly, SE was also found to function as a significant mediator, showing a robust positive association with both MR (B= .235; *t* = 6.455; 95% CI= [.1637, .3071]) and MT (B= .284; *t* = 11.149; 95% CI= [.2343, .3346]).

Table 4: Unstandardized Regression Coefficient with Direct Relationship

Direct Relationship	Unstandardized Coefficient	t values	CI	
			LB	UB
MR>MT (c')	.1176	5.445	.0752	.1601
MR>AI (a_2)	.2451	3.622	.1121	.3781
AI>MT(b_2)	.0661	4.308	.0359	.0962
MR>SE(a_1)	.2354	6.455	.1637	.3071
SE>MT (b_1)	.2844	11.149	.2343	.3346

Abbreviations: MR, motivational religiosity; MT, mental toughness; SE, self-efficacy; AI, athletic identity; LB, lower bound; UB, upper bound; CI, confidence interval. *All models adjusted for participants' age and sex.

The result of the mediation analysis indicated that the indirect effect of AI on the relationship between MR and MT was statistically significant (β = 0.016; 95% CI = .0063, .0287; see Table 5). A post hoc power analysis for this indirect effect, conducted with parameters of f^2 = .04, α = .05, total N = 420, and

four predictors, revealed a statistical power of 0.93 (1–β), demonstrating adequate sensitivity to detect the effect. Similarly, the indirect effect of SE in the MR-MT relationship was also significant (β = 0.66; 95% CI = .041, .0947; see, Table 4). The corresponding post hoc power analysis, based on f^2 = .12, α = .05, and the same sample and predictor parameters, yielded a statistical power of 0.99 (1–β), indicating a high likelihood of detecting a true effect and a minimal risk of Type II error. These findings suggest that both AI and SE serve as independent and meaningful mediators in the relationship between MR and MT.

The results indicated that MR positively influenced AI, which subsequently contributed to increased MT. similarly, MR was found to enhance SE, which also led to higher levels of MT. Both AI and SE acted as independent mediators in the relationship between MR and MT. In the AI mediation model, the direct effect of MR on MT remained statistically significant (β = .101; p < .001), as did the direct effect in the SE mediation model (β = .05; p < .001). Furthermore, the indirect effects through AI and SE, along with the total effect of MR on MT (β = .117; p < .001), were also significant (see Table 5). These findings indicate the presence of partial mediation in both models, suggesting that AI and SE each partially explain the mechanism through which MR impacts MT. Consequently, these findings support the presence of parallel indirect pathways through AI and SE in the association between MR and MT.

Table 5: Mediation Analysis Summary

Relationship	Total Effect	Direct Effect	Indirect Effect	CI		t statistic
				LB	UB	
MR>AI>MT	.117 (0.000)	.101 (0.000)	.016	.0063	.0287	5.445
MR>SE>MT	.117 (0.000)	.05 (0.01)	.066	.0409	.0947	5.445

Abbreviations: MR, motivational religiosity; MT, mental toughness; SE, self-efficacy; AI, athletic identity; LB, lower bound; UB, upper bound; CI, confidence interval. *All models adjusted for participants' age and sex.

Following the simple mediation analyses, multiple mediation analysis was conducted to examine whether AI and SE, as two independently significant mediators, concurrently account for the relationship between MR and MT. Both mediators were simultaneously entered into the model to assess their parallel mediating effects, controlling for age and gender. The results revealed that the direct effect of MR on MT remained statistically significant (β = .048; p < 0.05; t = 2.388; 95% CI= [.0084, .0868]). The overall model accounted for 34% of the variance in MT (ΔR2=.34), suggesting a substantial proportion of MT can be explained by MR through its effects on both AI and SE. The post hoc power analysis for the multiple mediation model, using f^2 = .04, α = .05, and N = 420 with seven predictors, demonstrated sufficient statistical power (1–β = .88) to detect indirect effects (Cohen, 2013). Within the model, the indirect effect of MR on MT through SE was significant (β = .063; SE=.013; 95% CI= [.0393, .0918]). However, the indirect pathways via AI did not reach significance (β = .006; SE=.004; 95% CI= [-.001, .0151]), suggesting that SE, but not AI, serves as a significant mediator in this model.

Tablo 6: Parallel Multiple Mediation Model: Direct, Indirect, and Total Effects of MR on MT (Hayes, Model 4)

Effect	Path	b	*SE*	CI	
				LB	UB
Direct	MR>MT	.0476	.0199	.0084	.0868
Indirect (M1)	MR>AI>MT	.0062	.004	-.001	.0151
Indirect (M2)	MR>SE>MT	.0639	.0135	.0393	.0918
Total	MR>MT	.1176	.0216	.0752	.1601

Abbreviations: MR, motivational religiosity; MT, mental toughness; SE, self-efficacy; AI, athletic identity; b, Unstandardized Coefficient; *SE*, Standard Error; LB, lower bound; UB, upper bound; CI, confidence interval. *All models adjusted for participants' age and sex.

In the multiple mediation model, SE was found to be a significant mediator in the relationship between MR and MT, whereas AI did not demonstrate a statistically significant mediating effect. Although AI was previously shown to have a mediating role in separate analyses, its influence diminished upon the inclusion of SE in the model. To evaluate whether multicollinearity influenced this result, variance inflation factor (VIF) values were examined, and no multicollinearity issue was detected (VIF= 1.109). This indicates that the reduction in the mediating effect of AI may be attributed to conceptual or statistical overlap with SE, resulting from shared variance between the two constructs. Accordingly, it can be concluded that SE exerts a more robust and unique mediating influence on the relationship between MR and MT.

Discussion and Implication

The present study, which aimed to examine the direct and indirect associations between MR and MT in competitive athletes, revealed that MR is a significant predictor of MT in competitive athletes. Athletes with stronger religious motivation tended to report higher levels of mental toughness, aligning with prior research in the fields of psychology of religion and sport psychology (Guntoro - Putra, 2022; Noh - Shahdan, 2021). This result that MR bolsters MT is well-aligned with the literature, indicating that faith-based coping and identity can enhance athletes' focus and endurance (Şimşek - Kartal, 2023; Slatinsky et al., 2022). Moreover, the relationship between MR and MT was found to be moderated by both years of sports experience and educational level.

The moderating roles of experience and education illuminate how MR's influence may depend on athletes' background. Specifically, MR was more strongly predictive of MT among novices and those with lower educational attainment. This pattern can be evaluated in light of prior evidence (Bounds et al., 2023) that MT typically grows with age and sporting experience. Nicholls et al. (2009) found positive correlations between athletes' experience and MT. In practical terms, more seasoned athletes may already possess developed coping skills and confidence, so the additional boost from religiosity is comparatively smaller. Conversely, younger or less experienced athletes may lack seasoned coping strategies and might thus lean more heavily on faith-based motivation to endure challenges. Similarly, the attenuated MR–MT link among highly educated athletes echoes sociological findings that higher education often corresponds to lower religious commitment on average (Hall et al., 1986), implying that education level can shape how central faith is to one's psychological resources.

These findings suggest that as athletes gain more experience and higher levels of education, they may increasingly rely on alternative psychological resources beyond religiosity. The observed moderating effects indicate that demographic factors such as experience and education significantly shape the role of religiosity in sport-related psychological outcomes. This aspect has been relatively underexplored in previous literature. To better understand these dynamics, future research should investigate how athletes' coping strategies and psychological frameworks evolve over time with continued exposure to competitive sport and educational environments.

The mediation analyses revealed that both AI and SE individually mediated the relationship between MR and MT. However, in the parallel multiple mediation model, only SE remained a significant mediator, indicating it played a more substantial role in the MR-MT pathway. These findings highlight the psychological mechanisms through which MR influences MT, suggesting that religiosity may enhance MT, primarily fostering a stronger sense of competence. Athletes who are motivated by religiosity may gain assurance in their abilities, perhaps by attributing success to faith or feeling guided by a higher purpose, which directly enhances their resilience under pressure. AI played a secondary role: MR likely reinforces athletes' commitment to their sport, consistent with models of religious coping in performance (Noh et al., 2023), and this stronger identity initially appeared to boost toughness. But when controlling for SE, the identity effect diminished, suggesting that feeling capable (SE) is the more proximate mechanism by which religiosity translates into toughness. This is

in line with previous research demonstrating links between religiosity, AI, and SE (Aizava et al., 2023; Hoven, 2019; Proios, 2017; Saville et al., 2021; Slatinsky et al., 2022).

The present results have important implications for both sport psychology and the psychology of religion. Theoretically, they support integrative models (Noh - Shahdan, 2021), positing that faith-based factors contribute to athletic outcomes. Demonstrating that MR predicts a performance-relevant trait like MT extends the scope of religious psychology into the high-performance domain. It suggests that sport psychologists should include spiritual motivation alongside traditional constructs when modeling athlete resilience. From the perspective of the psychology of religion, these findings highlight how faith can have concrete effects beyond general well-being or moral behavior, extending to tangible performance capacities. Practically, coaches and practitioners should recognize that religiosity can be a resource in athletes' mental toolkit. In line with recommendations by Noh et al. (2024), professionals might encourage positive religious coping (such as prayer, meditation, or spiritual support), especially for younger or less experienced athletes, as these individuals appear to benefit more in terms of MT. Overall, this cross-disciplinary evidence suggests that spiritual beliefs and values should be considered in athlete development programs, with tailored approaches depending on an athlete's experience and background.

Limitations and Future Directions

Several limitations should be acknowledged. The study employed convenience and purposive sampling methods, which constrain the generalizability of the findings beyond the specific participant group. Given that participants were selected based on predetermined criteria, the sample's representativeness is limited. This, in turn, may affect the contextual validity of the moderator effects identified. Additionally, the mean level of religiosity in the sample was relatively high (M=4.13), suggesting that religious motivation was particularly salient for these athletes. Consequently, interpretations of the results should consider the influence of this elevated religiosity when assessing the broader applicability of the findings.

Future research should examine how MR interacts with other psychological traits and investigate longitudinally how faith-based interventions might build MT in athletes. Finally, given the moderating effects of experience and education, future research should delve into the causes of these moderation patterns, perhaps through qualitative or mixed-method studies on how athletes of different backgrounds use faith in practice. Overall, the findings of this study highlight the potential of MR as a contributing factor to athletes' MT, thereby presenting a promising avenue for future interdisciplinary research.

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