



ISSN 1304-8120 | e-ISSN 2149-2786

Araştırma Makalesi * Research Article

An Examination of Mental Toughness and Stress-Coping Approaches among Sports Science Faculty Students

Spor Bilimleri Fakültesi Öğrencilerinin Zihinsel Dayanıklılık ve Stresle Başa Çıkma Yaklaşımlarının İncelenmesi

Sermet TOKTAŞ

Assist. Prof. Dr., Adıyaman University, Faculty of Sports Sciences

stoktas@adiyaman.edu.tr

Orcid ID: 0000-0002-2445-5734

Abstract: This study investigated the relationship between stress-coping strategies and mental toughness among sports science students, examining variations based on gender, sporting discipline, and athletic experience. Utilizing a relational screening model, data were collected from 362 volunteers (163 females, 199 males) at Adıyaman, Siirt, and Gümüşhane Universities. The research instrument comprised a Personal Information Form, the Coping Responses Inventory (CRI), and the Sports Mental Toughness Questionnaire (SMTQ). Data were analyzed using t-tests, ANOVA, and Pearson correlation coefficients. Results revealed a moderate, significant positive correlation between overall coping efficacy and mental toughness ($r = 0.436$; $p < 0.01$), with the strongest association found between "Logical Analysis" and "Confidence" ($r = 0.572$). While males scored higher in cognitive coping strategies, no significant gender difference was found in overall mental toughness. Individual athletes exhibited higher resilience than team athletes, and both coping skills and mental toughness significantly increased with years of sports participation ($p < 0.05$). The study concludes that active, solution-oriented strategies are essential for psychological resilience, identifying athletic experience as a primary driver of mental growth. It is recommended that sports science curricula incorporate practical training to bolster cognitive coping skills, particularly for novice athletes.

Keywords: Coping with Stress, Mental Toughness, Sports Science Students, Sports Seniority.

Öz: Bu araştırma, spor bilimleri fakültesi öğrencilerinin stresle başa çıkma yöntemleri ile zihinsel dayanıklılık düzeyleri arasındaki ilişkiyi belirlemek ve bu yapıların çeşitli demografik değişkenlere göre değişimini incelemek amacıyla yapılmıştır. İlişkisel tarama modelinin kullanıldığı araştırmaya; Adıyaman, Siirt ve Gümüşhane Üniversitelerinde öğrenim gören 362 öğrenci (163 kadın, 199 erkek) gönüllü olarak katılmıştır. Veriler; Kişisel Bilgi Formu, Stresle Başa Çıkma Yöntemleri Ölçeği (SBÇYÖ) ve Sporda Zihinsel Dayanıklılık Envanteri (SZDE) aracılığıyla toplanmış; t-testi, ANOVA ve Pearson korelasyon analizi ile çözümlenmiştir. Uygulanan analiz sonuçları, SBÇYÖ ile SZDE genel puanları arasında istatistiksel olarak anlamlı, pozitif yönlü ve orta düzeyde bir ilişki olduğunu göstermiştir ($r = 0,436$; $p < 0,01$). En güçlü korelasyonun "Mantıksal Analiz" ile "Güven" alt boyutları arasında olduğu saptanmıştır ($r = 0,572$). Cinsiyet bazında erkeklerin bilişsel başa çıkma stratejileri kadınlardan yüksek bulunurken, genel zihinsel dayanıklılıkta anlamlı bir fark saptanmamıştır. Bireysel sporcuların takım sporcularına göre daha yüksek zihinsel dayanıklılık sergilediği, ayrıca spor kıdemi arttıkça her iki ölçek puanının da istatistiksel olarak yükseldiği tespit edilmiştir ($p < 0,05$). Sonuç olarak; aktif ve çözüm odaklı stratejilerin zihinsel dayanıklılığı artırdığı, spor tecrübesinin ise mental gelişimin temel belirleyicisi olduğu görülmüştür. Müfredatın, özellikle düşük kıdemli sporcuların bilişsel becerilerini güçlendirecek uygulamalı eğitimlerle desteklenmesi önerilmektedir.

INTRODUCTION

In the contemporary landscape of high-performance sports, the pursuit of excellence has transcended beyond mere physical, technical, or tactical mastery, placing a significant premium on the strategic optimization of psychological dynamics. Central to this shift is the concept of mental toughness, which has emerged as a pivotal determinant of athletic success by enabling individuals to navigate the inherent volatility, high-pressure demands, and pervasive stressors of the competitive arena (Güleroğlu and Eroğlu, 2019). Existing scholarship underscores a potent positive correlation between mental fortitude and peak performance; conversely, it warns that the cumulative strain of rigorous training regimens and intensive competitive schedules can potentially erode this psychological framework (Abdelbaky, 2012). Athletes characterized by high levels of mental resilience demonstrate an enhanced capacity to regulate physiological arousal and mitigate psychological burnout, thereby preserving their sense of fortitude, self-assurance, and perceived efficacy during critical moments of athletic adversity (Sarı et al., 2020).

Beyond its common perception, stress represents a complex psychophysiological reaction initiated when an individual interprets internal or external stimuli as either taxing or potentially harmful (Hellriegel et al., 2001). In response to these environmental exigencies, individuals formulate a diverse array of cognitive and behavioral countermeasures designed to modulate or suppress the detrimental effects of stressors (Folkman and Lazarus, 1980). Within this intricate interplay of behavioral and affective dynamics, it is essential to recognize that stress does not universally result in adverse consequences; rather, a baseline level of tension is often requisite for peak cognitive and physical functioning. This phenomenon, academically characterized as 'eustress', functions as a motivational catalyst that stimulates personal growth, sharpens performance, and fosters a sense of creative productivity (Arslan et al., 2009).

Nevertheless, the academic journey presents university students with a unique confluence of multifaceted pressures, ranging from rigorous scholastic demands to anxieties regarding future professional stability and evolving social obligations (Ari et al., 2022). In this context, the capacity to effectively navigate these challenges and transmute potentially negative stressors into constructive milestones is fundamentally contingent upon the individual's mental toughness. Furthermore, it is hypothesized that for students within sports science faculties, the habitual engagement in physical activity may serve as a distinctive buffer, playing a pivotal role in the dual domains of mental health maintenance and proactive stress regulation.

Broadly conceptualized, mental toughness signifies a specialized psychological resilience that empowers an individual to transcend adversity (Moran, 2013). Recognized as a pivotal determinant in optimizing athletic output, this attribute enables competitors to sustain psychological equilibrium even when confronted with formidable impediments during the heat of competition (Bayköse and Keskin, 2018; Erdoğan, 2016). Unlike those with lower adaptive thresholds, mentally resilient athletes exhibit a superior command over environmental variables, demonstrating a unique proficiency in reframing deleterious conditions into competitive advantages while maintaining an unwavering focus on their ultimate objectives (Yıldız, 2017). Furthermore, Goldberg (1998) and Hardy et al. (2014) emphasize the teleological essence of this construct, identifying it as a goal-oriented capacity to extract pedagogical value from failure and persistently pursue established targets regardless of external pressures.

Although the relationships between athletes' mental toughness and various variables have been frequently examined in the literature, research on how coping strategies predict mental toughness and how this relationship is shaped by athletic experience and type of sports branch is still in the developmental stage. In particular, the transformative effect of stressors on mental toughness emphasized by Romanova (2021) and Poulus et al. (2020) constitutes the fundamental theoretical basis of this study.

This research investigates how stress-coping mechanisms and mental toughness levels correlate among sports science students at Adıyaman, Siirt, and Gümüşhane Universities. The analysis also explores these psychological constructs across different demographic factors. The results are expected to offer both theoretical insights and practical guidance for athlete mental development. Furthermore, the findings aim to support the integration of psychological skill training within the sports science curriculum.

MATERIALS AND METHODS

Research Design

This study utilized a relational survey model, a prominent quantitative research methodology. This design is specifically chosen to identify the presence and magnitude of correlations between variables. Additionally, it allows for the analysis of how independent variables influence dependent ones.

Population and Sample

The population of this research consists of students studying at the Faculties of Sports Sciences of Adıyaman, Siirt, and Gümüşhane Universities. The sample of the study comprises a total of 362 sports science students, including 163 (45%) females and 199 (55%) males, who participated on a voluntary basis. The sample size is at an adequate level in terms of the representativeness of the population (Gay et al., 2012).

Data Collection Tools

Research data were gathered using a survey-based approach. The data collection instrument was organized into three distinct sections. The initial segment comprised a "Personal Information Form" to identify participants' demographic profiles. The second and third segments utilized the "Coping Responses Inventory (CRI)" and the "Sports Mental Toughness Questionnaire (SMTQ)," respectively. These surveys were administered to the participants via both face-to-face sessions and digital platforms, specifically Google Forms.

Personal Information Form

It consists of questions aimed at determining demographic information such as gender, department of enrollment, sports branch, and years of regular physical activity (athletic experience) of the students.

Coping Responses Inventory (CRI)

Developed by Moos (1993), the scale was adapted into Turkish by Ballı and Kılıç (2016). The Turkish form consists of 22 items in five sub-dimensions: Logical Analysis (LA), Positive Reappraisal (PR), Seeking Guidance and Support (SGS), Seeking Professional Support (SPS), and Problem Solving (PS). The scale is a 5-point Likert type, rated between "1-Never" and "5-Always." In the Turkish adaptation study, Cronbach's Alpha coefficients were reported as $\alpha=0.90$ for the overall scale, 0.86 for LA, 0.91 for PR, 0.84 for SGS, 0.72 for SPS, and 0.81 for PS. In the current study, internal consistency values were calculated as $\alpha=0.95$ for CRI, and for its sub-dimensions: 0.89 for LA, 0.89 for PR, 0.83 for SGS, 0.87 for SPS, and 0.87 for PS.

Sports Mental Toughness Questionnaire (SMTQ)

Developed by Sheard et al. (2009), the questionnaire was adapted into Turkish by Altıntaş and Koruç (2017). The inventory, consisting of 14 items and three main sub-dimensions named Confidence (C), Constancy (Co), and Control (Ct), is a 4-point Likert type (1=Completely False, 4=Completely True). In the adaptation study, Cronbach's Alpha coefficients were 0.84 for Confidence, 0.79 for Control, and 0.51 for Constancy. In this study, the overall Cronbach's Alpha coefficient for SMTQ was 0.79, and for its sub-dimensions: 0.81 for Confidence, 0.76 for Control, and 0.62 for Constancy. These values are within acceptable reliability limits in the literature.

Data Collection

After obtaining ethical approval, the instruments were distributed to the participants via in-person interviews and Google Forms. To ensure ethical standards, all respondents were informed that their identities would remain confidential. Furthermore, it was explicitly stated that the collected data would be used exclusively for academic research.

Data Analysis

Statistical analyses were performed using the SPSS software package. Initial screenings involved checking for normal distribution through skewness and kurtosis coefficients. The analysis indicated that skewness for both the CRI and SMTQ scales ranged from -0.590 to 0.503, while kurtosis values were between -0.637 and 1.398. Following the criteria established by Tabachnick and Fidell (2013), these results (falling within the ± 1.5 range) confirmed that the data set met the requirements for normality.

Given the normal distribution of the data, the study proceeded with parametric statistical methods. To evaluate differences between two independent groups, the Independent Samples t-test was performed; conversely, One-Way ANOVA was utilized to analyze variables containing more than two categories. In cases where significant ANOVA results were obtained, the source of the variance was identified using Scheffe post-hoc test, depending on the homogeneity of variances. Furthermore, the strength and direction of associations between variables were measured using Pearson Correlation Analysis. All statistical findings were evaluated at a significance threshold of $p < 0.05$.

Research Ethics

This study was conducted in strict adherence to ethical research principles. Formal ethical approval was granted by the Adiyaman University Social and Human Sciences Ethics Committee (Date: June 10, 2025; Protocol No:143). Additionally, all necessary permissions for the Turkish versions of the research instruments were obtained via e-mail from the authors responsible for their adaptation. Specifically, consent was secured to utilize the "Coping Responses Inventory (CRI)" and the "Sports Mental Toughness Questionnaire (SMTQ)." Participation was entirely voluntary, and all respondents were informed that their data would remain confidential and be used solely for academic purposes.

RESULTS

Table 1 summarizes the characteristics of the study participants. Out of the 362 students involved, 45% ($n=163$) are female and 55% ($n=199$) are male. In terms of academic distribution, the majority (61.3%) are enrolled in the Coaching Education department, with the remaining 38.7% studying Physical Education and Sports Teaching. Regarding athletic variables, 53.3% of the students participate in team sports, while 46.7% are involved in individual sports. Their regular sports participation periods, or athletic experience, are distributed as follows: 30.9% have practiced for 0–3 years, 33.7% for 4–6 years, and 35.4% for 7 years or more.

Table 1. *Demographic Information of the Participants*

Variables		<i>n</i>	%
Gender	Female	163	45
	Male	199	55
Department	Coaching Education	222	61.3
	PE & Sports Teaching	140	38.7
Sports Branch	Team Sports	193	53.3
	Individual Sports	169	46.7
Years of Sports Participation	0-3 years	112	30.9
	4-6 years	122	33.7
	7 years and above	128	35.4

When Table 2 is examined, a statistically significant difference was found in the overall CRI mean scores ($t = -2.958$; $p < 0.05$) in favor of male participants. In the analysis based on sub-dimensions, it is

observed that the scores for Logical Analysis ($p = 0.001$), Positive Reappraisal ($p = 0.004$), and Problem Solving ($p = 0.001$) are significantly higher in males compared to females. On the other hand, no significant difference was found between genders in the Seeking Guidance and Support and Seeking Professional Support dimensions ($p > 0.05$).

Regarding mental toughness data, no statistically significant difference was detected in the overall SMTQ total score or any of the sub-dimensions—Confidence, Control, and Constancy—according to the gender variable ($p > 0.05$). These findings indicate that the mental toughness capacities of female and male students in the research group are at similar levels; however, they suggest that males tend to employ more cognitive and solution-oriented strategies during the stress-coping process compared to females.

Table 2. Independent Samples *t*-Test Results of Participants' CRI (LA, PR, SGS, SPS, PS) and SMTQ (C, Ct, Co) Mean Scores According to Gender Variable

Scales/Sub-dimensions	Female		Male		t	df	p
	$\bar{X}$	SD	$\bar{X}$	SD			
LA	3.58	.88	3.88	.78	-3.39	360	.001*
PR	3.54	.91	3.80	.79	-2.87	360	.004*
SGS	3.54	.91	3.35	1.14	-.56	360	.574
SPS	3.06	1.03	3.07	1.17	-.05	360	.960
PS	3.50	.81	3.76	.73	-3.21	360	.001*
CRI	3.47	.79	3.70	.68	-2.95	360	.003*
C	2.92	.44	3.01	.49	-1.76	360	.079
Ct	2.86	.52	2.74	.58	1.95	360	.051
Co	2.83	.45	2.78	.56	.99	360	.320
SMTQ	2.88	.37	2.87	.46	.25	360	.803

($p < 0.05$)*

Table 3 reveals that, a statistically significant difference was found in favor of individual athletes in the Seeking Guidance and Support sub-dimension of CRI ($p = 0.002$), as well as in the overall SMTQ total score ($p = 0.016$) and the Confidence sub-dimension ($p = 0.003$) according to the sports branch variable. In contrast, no significant difference was observed based on the branch variable in the dimensions of Logical Analysis, Positive Reappraisal, Seeking Professional Support, Problem Solving, or the Control and Constancy dimensions of mental toughness ($p > 0.05$). These findings indicate that individual athletes tend to seek more environmental support while coping with stress compared to team athletes, and they also demonstrate higher levels of self-confidence and overall mental toughness capacity.

Table 3. Comparison of coping strategies and mental toughness scores based on sporting discipline

Scales/Sub-dimensions	Individual		Team		t	df	p
	$\bar{X}$	SD	$\bar{X}$	SD			
LA	3.82	.82	3.68	.85	1.52	360	.122
PR	3.75	.85	3.63	.85	1.28	360	.191
SGS	3.50	.98	3.16	1.08	3.12	360	.002*
SPS	3.11	1.05	3.02	1.16	.80	360	.415
PS	3.65	.79	3.64	.76	.06	360	.953
CRI	3.66	.74	3.55	.73	1.40	360	.162
C	3.05	.46	2.90	.46	2.98	360	.003*
Ct	2.82	.54	2.77	.57	.81	360	.412
Co	2.86	.42	2.75	.58	1.94	360	.056
SMTQ	2.93	.38	2.82	.45	2.41	360	.016*

($p < 0.05$) *

An analysis of Table 4 reveals no statistically significant differences in the overall scores or sub-dimensions (LA, PR, SGS, SPS, PS, C, Ct, Co) of both the CRI and SMTQ based on the department variable (Coaching Education vs. Physical Education and Sports Teaching) ($p > 0.05$). These results suggest that students in both departments possess similar stress-coping strategies and mental toughness levels. This lack of differentiation may stem from the fact that participants are subject to nearly identical academic curricula, share equivalent physical activity loads, and pursue comparable professional objectives.

Table 4. Independent Samples *t*-Test Results of Participants' CRI (LA, PR, SGS, SPS, PS) and SMTQ (C, Ct, Co) Mean Scores According to Department Variable

Scales/Sub-dimensions	Coaching Education		PE & Sports Teaching		t	df	p
	$\bar{X}$	SD	$\bar{X}$	SD			
LA	3.70	.89	3.82	.74	-1.37	360	.169
PR	3.65	.87	3.74	.81	-.91	360	.360
SGS	3.24	1.00	3.45	1.12	-1.88	360	.060
SPS	2.97	1.09	3.20	1.13	-1.89	360	.058
PS	3.61	.79	3.69	.766	-.91	360	.362
CRI	3.55	.74	3.67	.72	-1.48	360	.139
C	3.00	.41	2.93	.54	1.35	360	.178
Ct	2.81	.575	2.78	.54	.47	360	.638
Co	2.81	.49	2.79	.55	.41	360	.675
SMTQ	2.89	.37	2.85	.489	.97	360	.332

($p < 0.05$)*

Table 5 illustrates statistically significant differences across all sub-dimensions of both the CRI and SMTQ based on the duration of regular sports participation ($p < 0.05$). Post-hoc analysis, conducted to identify the specific origins of these variations, yielded the following results:

CRI Dimensions: Participants with 4–6 years (b) and 7 or more years (c) of experience recorded significantly higher scores in Logical Analysis, Positive Reappraisal, Seeking Guidance and Support, and Problem-Solving compared to those with 0–3 years (a) of experience ($b > a$; $c > a$). Regarding Seeking Professional Support, a significant increase was observed only in the group with 7 or more years (c) of experience relative to the 0–3 year group ($c > a$).

SMTQ Dimensions: In the Confidence and Constancy dimensions, athletes in the 4–6 year (b) and 7+ year (c) categories demonstrated significantly greater resilience than those in the 0–3 year group ($b > a$; $c > a$). Furthermore, for the Control sub-dimension, individuals active for 7 years or more (c) outperformed those in the lowest experience category (a) ($c > a$).

These outcomes suggest that as athletic tenure and experience accumulate, there is a corresponding linear improvement in both stress management proficiency and mental toughness levels.

Table 5. One-Way Analysis of Variance (ANOVA) Results of CRI (LA, PR, SGS, SPS, PS) and SMTQ (C, Ct, Co) Mean Scores According to Regular Sports Participation Years Variable

Scale	Sub-dimensions	Group (Years)	n	$\bar{X}$	σ	F	p	Significant Difference
CRI	LA	(a) 0-3	112	3.465	.847	11.874	<.001*	b>a
		(b) 4-6	122	3.767	.919			c>a
		(c) 7+	128	3.980	.677			
	PR	(a) 0-3	112	3.401	.887	10.789	<.001*	b>a
		(b) 4-6	122	3.737	.908			c>a
		(c) 7+	128	3.895	.702			
	SGS	(a) 0-3	112	3.058	.965	5.665	.004*	b>a
		(b) 4-6	122	3.393	1.059			c>a
		(c) 7+	128	3.496	1.089			
	SPS	(a) 0-3	112	2.843	.989	3.985	.019*	c>a
		(b) 4-6	122	3.086	1.176			
		(c) 7+	128	3.246	1.131			
	PS	(a) 0-3	112	3.348	.788	13.517	<.001*	b>a
		(b) 4-6	122	3.726	.836			c>a
		(c) 7+	128	3.838	.639			
SMTQ	C	(a) 0-3	112	2.797	.484	12.290	<.001*	b>a
		(b) 4-6	122	3.041	.499			c>a
		(c) 7+	128	3.069	.394			
	Ct	(a) 0-3	112	2.674	.586	4.375	.013*	c>a
		(b) 4-6	122	2.829	.515			
		(c) 7+	128	2.880	.572			
	Co	(a) 0-3	112	2.667	.507	6.066	.003*	b>a
		(b) 4-6	122	2.860	.556			c>a
		(c) 7+	128	2.878	.475			

(p < 0.05)*

Data synthesized in Table 6 indicates a moderate yet statistically meaningful positive correlation between the cumulative scores of the Coping Responses Inventory (CRI) and the Sports Mental Toughness Questionnaire (SMTQ) ($r = 0.436$; $p < 0.01$). A more granular investigation into the sub-dimensions reveals that the Confidence (C) component of mental toughness is notably intertwined with three specific cognitive modalities: Logical Analysis (LA) ($r = 0.572$), Positive Reappraisal (PR) ($r = 0.525$), and Problem Solving (PS) ($r = 0.520$). Furthermore, a prominent association was identified between the Seeking Professional Support (SPS) strategy and the Constancy (Co) dimension ($r = 0.448$). These empirical outcomes lend significant weight to the hypothesis that athletes who lean toward proactive and solution-focused coping frameworks possess a more robust psychological architecture.

Table 6. Results of Correlation Analysis Regarding the Relationship Between CRI (LA, PR, SGS, SPS, PS) and SMTQ (C, Ct, Co) Scale and Sub-dimension Scores.

Scales/Sub-dimensions	C	Ct	Co	SMTQZDE
LA	.572*	.162*	.151*	.388*
PR	.525*	.170*	.117*	.357*
SGS	.339*	.182*	.344*	.352*
SPS	.289*	.208*	.448*	.375*
PS	.520*	.168*	.169*	.372*

DISCUSSION

The primary finding of this study is the significant and moderate positive relationship between coping strategies and mental toughness among sports science students. In particular, the strong association between Logical analysis and confidence indicates that cognitive appraisal processes play a central role in the development of psychological resilience. This finding is consistent with previous literature suggesting that athletes who utilize problem-focused coping strategies tend to demonstrate higher levels of mental toughness and performance stability (Nicholls et al., 2011; Gucciardi, 2017).

Recent research has further emphasized that mental toughness should be conceptualized as a dynamic and context-dependent construct rather than a fixed personality trait. For example, Gucciardi et al. (2017) argue that mental toughness is shaped through continuous interaction between environmental demands and individual psychological resources. Similarly, Sarkar and Fletcher (2014) highlight that resilience in athletes is strongly associated with the effective regulation of stress through adaptive coping strategies. These perspectives support the current findings, indicating that coping strategies and mental toughness are closely interconnected psychological processes.

With regard to gender differences, the results revealed that male participants reported higher levels of cognitive coping strategies, whereas overall mental toughness did not significantly differ between genders. This finding aligns with earlier studies (Matud, 2004; Sarı et al., 2020), suggesting that while coping styles may vary, the general structure of mental toughness remains relatively stable across genders. However, recent studies indicate that gender differences in coping and resilience may be influenced by contextual variables such as type of sport and competitive level (Nicholls et al., 2011). Therefore, gender-related findings should be interpreted cautiously.

The comparison between individual and team athletes demonstrated that individual athletes exhibit higher levels of confidence and overall mental toughness. This supports the notion that athletes in individual sports develop stronger internal control mechanisms due to the direct responsibility associated with performance outcomes (Golby & Sheard, 2004). At the same time, the higher levels of the "Seeking Guidance and Support" strategy observed in individual athletes suggest the presence of a "social buffering effect," whereby social support enhances coping capacity under stress (Rees & Freeman, 2007). Contemporary research supports this interpretation, indicating that athletes who effectively combine self-reliance with social support demonstrate greater psychological resilience and adaptability (Freeman & Rees, 2010).

A further key finding is the progressive increase in both coping skills and mental toughness with years of sports participation. Athletes with longer experience demonstrated significantly higher scores across multiple dimensions. This supports the view that mental toughness is a developable construct shaped by exposure to competitive stressors over time (Connaughton et al., 2008; Gucciardi, 2017). Furthermore, Fletcher and Sarkar (2012) suggest that repeated exposure to adversity contributes to the development of metacognitive skills, enabling athletes to select more effective coping strategies in demanding situations. In this context, the lower scores observed among novice athletes (0–3 years) may be explained by their limited exposure to such adaptive learning processes.

However, these findings should be interpreted considering certain limitations within the literature. While many studies report a positive relationship between coping and mental toughness, some researchers argue that this relationship may be influenced by contextual factors such as motivational climate, coaching style, and cultural background (Gucciardi et al., 2017). Additionally, the use of self-report measures may lead to common method bias, potentially inflating the observed relationships between variables.

Overall, the present findings add to the growing evidence that mental toughness is closely associated with adaptive coping processes and can be systematically developed through experience and targeted psychological training interventions.

CONCLUSION AND RECOMMENDATIONS

In conclusion, coping strategies serve as an indispensable cognitive tool in the construction of mental toughness. Athletes who adopt active, solution-oriented, and logical strategies become mentally more resilient. The results emphasize that as athletes develop higher cognitive flexibility and problem-solving skills, their psychological architecture becomes more robust against environmental stressors. In this context, it is of critical importance for the sports science education curriculum not to focus solely on physical and tactical skills, but also to include cognitive intervention and mental training programs particularly aimed at students at the beginning of their sports careers.

Recommendations for Faculties and Coaches

Targeted Support

Mentorship and psychological support programs should be prioritized for novice students with 0–3 years of experience, as research findings indicate this group has lower mental toughness levels and requires early intervention.

Coaching Practices

Coaches should integrate cognitive exercises into training sessions, encouraging the use of "Logical Analysis" during high-pressure moments to foster self-confidence.

Curriculum Integration

Applied "Mental Skill Training" (MST) and "Stress Management" courses should be integrated into sports science curricula to help students manage academic and sporting pressures.

Suggestions for Future Research

Methodological Triangulation

Future inquiries should utilize qualitative methodologies like phenomenological interviews to provide a nuanced "insider" perspective on athlete stress interpretation.

Objective Performance Metrics

Longitudinal research designs are encouraged to correlate mental resilience with tangible indicators like win-loss records to validate practical impact.

Cross-Disciplinary Comparisons

Comparative studies with fields like fine arts or engineering could clarify if intensive sports involvement is a unique driver for mental fortitude.

Strengths of the Study

This research utilizes a multi-university sample from Adıyaman, Siirt, and Gümüşhane, enhancing regional representativeness. It employs validated instruments like SMTQ and CRI and provides a detailed analysis of how athletic experience directly influences psychological resilience, offering practical recommendations for curricula.

Limitations of The Study

The study is limited by the use of self-report scales and its cross-sectional design, which precludes confirming direct cause-and-effect relationships. Additionally, the sample was restricted to three specific universities in Türkiye, potentially limiting generalizability to international or diverse cultural contexts. Finally, variables such as socioeconomic status or specific coaching styles were not analyzed.

Financial Disclosure

This research received no external funding. No grants or financial support from any public, commercial, or non-profit organizations were utilized during the study process.

REFERENCES

- Abdelbaky, F. M. (2012). Impacts of mental toughness program on 20 km race walking. *Science, Movement and Health*, 12(1), 67–71.
- Altıntaş, A., & Bayar Koruç, P. (2017). Sporda Zihinsel Dayanıklılık Envanteri'nin Psikometrik Özelliklerinin İncelenmesi (SZDE). *Spor Bilimleri Dergisi*, 27(4), 163-171.
- Arı, Y., Gülşen Eşkil, K., Eşkil, R., & İlhan, L. (2022). Mental Training Skills of Athletes According to Various Variables. *Gazi Journal of Physical Education and Sport Sciences*, 27(1), 1-11.
- Arslan, G., Ayranci, U., Unsal, A., & Arslantas, D. (2009). Prevalence of depression, its correlates among students, and its effect on health-related quality of life in a Turkish university. *Upsala Journal of Medical Sciences*, 114(3), 170–177.
- Ballı, A. İ. K., & Kılıç, K. C. (2016). Stresle Başa Çıkma Yöntemleri Ölçeğinin Türkçeye Uyarlanması: Geçerlilik Ve Güvenirlik Çalışması. *Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 25(3), 273–286.
- Bayköse, N., & Keskin, P. (2018). Boşluğa Dokunmak Filminin İçerik Açısından Sporda Psikolojik Beceri Faktörleri Bağlamında İncelenmesi. *Ulusal Spor Bilimleri Dergisi*, 2(1), 31–41.
- Connaughton, D., Wadey, R., Hanton, S., & Jones, G. (2008). The development and maintenance of mental toughness: Perceptions of elite performers. *Journal of Sports Sciences*, 26, 83–95.
- Erdoğan, N. (2016). Zihinsel Dayanıklılık Ölçeği (ZDÖ): Türkçe'ye Uyarlama, Geçerlik ve Güvenirlik Çalışması. *International Journal of Sport Culture and Science*, 4(Special Issue 2), 652–664.
- Fletcher, D., & Sarkar, M. (2012). A grounded theory of psychological resilience in Olympic champions. *Psychology of Sport and Exercise*, 13(5), 669–678.
- Freeman, P., & Rees, T. (2010). Perceived social support from team-mates: Direct and stress-buffering effects on self-confidence. *European Journal of Sport Science*, 10(1), 59–67.
- Folkman, S., & Lazarus, R.S. (1980) An Analysis of Coping in a Middle-Aged Community Sample. *Journal of Health and Social Behavior*, 21, 219-239.
- Gay, L.R., Mills, G.E., & Airasian, P.W. (2012) Educational Research: Competencies for Analysis and Application. 10th Edition, Pearson, Upper Saddle River.
- Goldberg, A. S. (1998). Sports Slump Busting: 10 Steps to Mental Toughness and Peak Performance. Champaign, IL: Human Kinetics.
- Golby, J., & Sheard, M. (2004). Mental toughness and hardiness at different levels of rugby league. *Personality and Individual Differences*, 37(5), 933–942.
- Gucciardi, D. F. (2017). Mental toughness: Progress and prospects. *Current Opinion in Psychology*, 16, 17–23.
- Gucciardi, D. F., Hanton, S., & Fleming, S. (2017). Are mental toughness and mental health contradictory concepts in elite sport? A narrative review of theory and evidence. *Journal of science and medicine in sport*, 20(3), 307–311. <https://doi.org/10.1016/j.jsams.2016.08.006>
- Güleroğlu, F., & Eroğlu, H. (2019). Anaerobik Egzersiz Sonrası Oluşan Yorgunluğun Sporcuların Zihinsel Dayanıklılık Düzeylerine Akut Etkisi. *Beden Eğitimi ve Spor Bilimleri Dergisi*, 21(3), 23–33.

- Hardy, L., Bell, J., & Beattie, S. (2014). A Neuropsychological Model of Mentally Tough Behavior. *Journal of Personality*, 82(1), 69–81.
- Hellriegel, D., Slocum Jr., J. W., & Woodman, R. W. (2001). *Organizational Behavior* (pp. 6-31). South-Western College Publishing.
- Matud, M. P. (2004). Gender differences in stress and coping styles. *Personality and Individual Differences*, 37(7), 1401–1415.
- Moos, R. H. (1993). *Coping Responses Inventory: Professional manual*. Psychological Assessment Resources.
- Moran, A. (2013). *Sport and exercise psychology: A critical introduction* (2nd ed.). Routledge.
- Nicholls, A. R., Levy, A. R., Polman, R. C., & Crust, L. (2011). Mental toughness, Coping Self-Efficacy, and Coping effectiveness among athletes. *International Journal of Sport Psychology*, 42(6), 513–533.
- Poulus, D., Coulter, T. J., Trotter, M. G., & Polman, R. (2020). Stress and coping in esports and the influence of mental toughness. *Frontiers in Psychology*, 11, 628.
- Rees, T., & Freeman, P. (2007). The effects of perceived and received support on self-confidence. *Journal of Sports Sciences*, 25(9), 1057–1065. <https://doi.org/10.1080/02640410600982279>
- Romanova, M. (2021). Coping strategies and mental toughness in sports school students. *Ad Alta: Journal of Interdisciplinary Research*, 11, 260-264.
- Sarkar, M., & Fletcher, D. (2014). Psychological resilience in sport performers: A review of stressors and protective factors. *Journal of Sports Sciences*, 32(15), 1419–1434. <https://doi.org/10.1080/02640414.2014.901551>
- Sarı, İ., Sağ, S., & Pınar Demir, A. (2020). Sporda Zihinsel Dayanıklılık: Taekwondo Sporcularında Bir İnceleme. *Beden Eğitimi ve Spor Bilimleri Dergisi*, 22(4), 131-147.
- Sheard, M., Golby, J. & Van Wersch, A. (2009). Progress toward construct validation of the Sports Mental Toughness Questionnaire (SMTQ). *European Journal of Psychological Assessment*, 25(3), 186–193.
- Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Allyn & Bacon/Pearson Education.
- Yıldız, A. B. (2017). Sporcularda Zihinsel Dayanıklılık ve Öz Yeterlik Düzeyleri Arasındaki İlişkinin İncelenmesi. Yıldırım Beyazıt Üniversitesi.