




Article

Investigation the Relationship between Mental Toughness and Courage Levels of Sports Sciences Faculty Students for Sustainable Performance

Turhan Toros ^{1,*} , Emre Bulent Ogras ² , İlyas Okan ³, Cenk Temel ⁴, Muzaffer Toprak Keskin ⁵, Cihat Korkmaz ⁶ and Eren Uluoz ⁷ 

¹ Department of Coaching Education, Mersin University, Mersin 33000, Turkey

² Faculty of Sport Sciences, Mersin University, Mersin 33000, Turkey; emrebulentogras@gmail.com

³ Faculty of Sport Sciences, Gazi University, Ankara 06570, Turkey; ilyasokan@gmail.com

⁴ Department of Sport Management, Akdeniz University, Dumlupinar Boulevard, Antalya 07070, Turkey; cenktemel@akdeniz.edu.tr

⁵ Faculty of Sport Sciences, Nevşehir Hacı Bektaş Veli University, Nevşehir 50000, Turkey; toprakkeskin@hotmail.com

⁶ Faculty of Sport Sciences, Kahramanmaraş Sutcu Imam University, Kahramanmaraş 46000, Turkey; korkmaz.cihat68@gmail.com

⁷ Faculty of Sport Sciences, Çukurova University, Adana 01000, Turkey; proferde@hotmail.com

* Correspondence: turhantoros@yahoo.com

Abstract: This research aimed to explore any links between mental toughness and courage in sports among students enrolled in the faculty of sports science, employing a relational screening model with a sample consisting of 340 university students who were selected using a convenience sampling method. Research data were collected through a Personal Information Form, the Sports Mental Toughness Questionnaire (SMTQ), and the Sport Courage Scale (SCS). Data analyses included independent groups T-test, One-Way ANOVA, and Pearson's product-moment correlation coefficient. Significant differences were detected in the SMTQ and SCS, as well as in the total scale scores, based on the gender variable, which is one of the demographic variables. SMTQ and SCS subdimensions and total scale scores differed significantly according to the university department. Furthermore, the study identified significant differences in the SMTQ and the SCS subdimensions and total scale scores based on the academic year variable. However, no significant relationship was found between age and SMTQ and SCS subdimensions and total scale scores. The findings of this study indicate a significant and positive correlation between the SMTQ and SCS subdimensions and the total scale scores. Therefore, it can be concluded that as the mental toughness levels of the students in sports science increase, their courage levels also increase.

Keywords: sustainable; performance; mental toughness; courage; sports science



Citation: Toros, T.; Ogras, E.B.; Okan, İ.; Temel, C.; Keskin, M.T.; Korkmaz, C.; Uluoz, E. Investigation the Relationship between Mental Toughness and Courage Levels of Sports Sciences Faculty Students for Sustainable Performance. *Sustainability* **2023**, *15*, 9406. <https://doi.org/10.3390/su15129406>

Academic Editor: Philip Hui Li

Received: 12 April 2023

Revised: 2 June 2023

Accepted: 9 June 2023

Published: 12 June 2023



Copyright: © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

Within the realm of sports sciences, the notion of sustainable performance has emerged as an integral concept, drawing attention to the environmental, social, and economic ramifications of sports. As future leaders of the sports industry, sports science students are presented with a distinct opportunity to advocate for sustainable values and practices in their forthcoming careers. However, a study of the literature revealed that despite having a favorable outlook towards sustainability, sports science students are deficient in knowledge and understanding of sustainable practices in sports [1]. Hence, it is paramount for sports science programs to integrate sustainable practices and principles into their course content and proffer avenues for students to engage in sustainable ventures and undertakings. This initiative not only accrues benefits to the

environment and society, but also augments the long-term viability and economic prosperity of the sports industry. Moving forward, sports science students and practitioners must prioritize sustainability in their endeavors and steer the course towards a more sustainable and conscientious sports industry.

Within the domain of sports science, scholars and practitioners must explore and employ diverse approaches to enhance sustainable performance. Given that sporting settings are subject to both internal and external factors that can exert positive or negative influences on performance, athletes may encounter a range of emotional states [2]. Consequently, it is imperative that individuals cope effectively with their emotions to achieve optimal sports performance. Scholars have recognized that physical conditioning alone is inadequate for sporting success. Consequently, concepts pertaining to sport psychology, such as mental toughness [3], are progressively gaining prominence.

The concept of mental toughness has garnered significant attention within contemporary sport psychology research from 2000 to the present day. Scholars and practitioners have undertaken extensive inquiry into this phenomenon, examining factors that are associated with high-level performance. Coaches, athletes, and sports psychology professionals alike have emphasized the crucial role of mental toughness in achieving high performance and success in sports [2]. Mental toughness, a concept that has received increasing attention across various fields such as industry, education, social psychology, and sports, was originally introduced into the academic literature by Loehr's study [4,5]. This study is noteworthy for investigating the concept of the structure of mental toughness, highlighting certain traits that relate to sporting performance and determining its meaning. Mental toughness was defined by Jones et al. [6] as "the ability to perform consistently at one's highest ability and skill level in competitive situations". Following Loehr's definition, Bertollo and Terry [7] defined mental toughness as "the ability of athletes to cope more effectively than their competitors with potential challenges that may arise in training and competitive environments; to possess determination, focus, and self-control in high-pressure situations". Despite the numerous definitions of mental toughness, scholars have reached a consensus that mental toughness is a psychological resource that enables individuals to maintain stability in reaching the desired performance level in situations involving pressure and stress [8–10]. Therefore, it is noted that mental toughness is a fundamental psychological factor associated with sport performance and success factors [11].

It is widely accepted that sport psychology will play a significant role in advancing positive psychology and enhancing performance and achievement in the 21st century [12]. Exploring the concept of courage is especially relevant in the context of positive psychology. Despite the relevance of courage in individuals' developmental processes, research on this concept, particularly within the domain of sports psychology, remains limited. The presence of courage in sports and life can be viewed as a crucial factor in coping with situations that limit the demonstration of existing potentials, such as performance and success, as well as situations that hinder pleasure and development, such as stress, anxiety, pressure, and fear, and in the development of self-regulation skills [13]. Studies in the literature suggest that fear and anxiety generally have negative effects on performance [14,15]. However, perceived self-efficacy and courage are viewed as key skills and tools with a positive impact on competitive situations in sport environments [16,17]. The concept of courage in sports is closely related to the athlete's ability to make sacrifices in challenging situations to achieve success in a competent, determined, assertive, and voluntary manner [18].

According to Pury and Kowalski's definition [19], sports courage refers to the athlete's competent, self-confident, decisive, assertive, and self-sacrificing attitude in situations of perceived threat or danger, which involves interactions in relation to the situation and tasks attributed to the athlete. This attitude can be perceived as innate or can be developed through experiences. Sports courage is a dynamic process influenced by various factors, including the type of sport, situational conditions (such as fear, risk, and danger),

individual characteristics, past experiences, and the type of task that an athlete is facing [20]. Konter developed the “Sport-Specific Multidimensional Interactional, Transformational, and Dynamic Courage Model” [20] through a combination of qualitative and quantitative research on sports courage. This model highlights the interactional process between situational factors (fear, risk, and dangerous situations), individual tendencies (experience, knowledge, and personality traits), sport-specific factors (sport type, contact and noncontact sports branches, and sport-specific skill types), and risky situations (such as critical shots in the last moments of a competition). This model has been proposed to be an interactive, dynamic, and transformational dialectical process model in the context of the task assigned to the athlete [20].

Research suggests that mental toughness and feelings of courage are important factors for athletes to overcome obstacles and achieve their goals [21]. Researchers have investigated the relationship between mental toughness and courage in sports using samples from professional football players [22], individual and team athletes [23], extreme sports individuals [24], American football players [21], and wrestling athletes [25]. These studies typically included samples specific to athletes in particular sports. The aim of this study was to examine the relationship between mental toughness and courage levels of sport sciences faculty students in terms of sustainable performance.

In line with the research aim, answers to the following research problems were sought:

1. Do the mental toughness levels of sport sciences faculty students differ according to the variables of gender, grade level, and department of study?
2. Do the courage levels of sport sciences faculty students differ according to gender, grade level, and department of study variables?
3. Are the mental toughness levels of sport sciences faculty students related to their ages?
4. Are the courage levels of the students of the faculty of sport sciences related to their ages?
5. Is there a relationship between mental endurance and courage levels of sport sciences faculty students?

2. Materials and Methods

The objective was to examine the levels of mental toughness and courage among students enrolled in sports science faculties, and to achieve this the study utilized the relational survey method, a research approach designed to explore the correlation or degree of association between two or more variables [26]. The convenience sampling method was used in this study. Convenience sampling represents a non-probability sampling approach in which the selection of participants is based on ease of access and their propensity to participate in the study. Researchers using this method prefer to select a sample of easily accessible or obtainable individuals rather than randomly selecting from a larger population. Although convenience sampling offers advantages in terms of cost and time efficiency, it can lead to bias and limit the generalizability of research results due to a potential lack of representativeness [26].

2.1. Participants

In the academic year 2021–2022, we investigated the entire population of undergraduate students enrolled in Mersin University Faculty of Sports Science, consisting of 716 students: 204 first-year students, 175 second-year students, 168 third-year students, and 169 fourth-year students. The study aimed to collect data from the entire population without employing any sampling procedures. Data collection instruments were provided to all eligible students, and a total of 340 participants (193 female and 147 male) who returned the completed instruments were included in the study sample. The mean age of the participants was 20.69 ± 1.8 .

Table 1 provides numerical data on the demographic characteristics of the participants, which were collected and systematically analyzed as part of the study. Among the participants, 114 (33.5%) were enrolled in the Department of Physical Education and

Sports Teaching, 110 (32.4%) were in Recreation, 37 (10.9%) were in Sports Management, and 79 (23.2%) were receiving Coaching Education. Participants were stratified by their academic year, with 91 (26.8%) first-year, 94 (27.6%) second-year, 58 (17.1%) third-year, and 97 (28.5%) fourth-year students included in the study.

Table 1. Findings on Demographic Characteristics of Participants.

	Groups	N	%
Gender	Female	193	56.8
	Male	147	43.2
Department	Physical Education and Sports Teaching	114	33.5
	Recreation	110	32.4
	Sports Management	37	10.9
	Coaching Education	79	23.2
Academic Year	First year	91	26.8
	Second year	94	27.6
	Third year	58	17.1
	Fourth year	97	28.5

2.2. Data Collection Tools

2.2.1. Personal Information Form

To obtain personal information from participants, the researchers developed a personal information form that queried variables such as gender, age, department, and academic year.

2.2.2. Sports Mental Toughness Questionnaire

The Sports Mental Toughness Questionnaire, developed by [27] to assess the levels of mental toughness of individuals, comprised three subdimensions: “confidence”, “constancy”, and “control”. The 4-point Likert-type scale consisted of 14 items. The Turkish language adaptation of the inventory for athletes was conducted by [28]. For this study, reliability analyses were conducted resulting in reliability coefficients of 0.79 for “confidence”, 0.72 for “control”, and 0.61 for “constancy” (Table 2).

Table 2. Reliability Coefficients of Scale Subscales.

The Scales	Subdimensions	Number of Items	Reliability (α)
Sports Mental Toughness Questionnaire	Confidence	6	0.79
	Constancy	4	0.72
	Control	4	0.61
Sport Courage Scale	Mastery	7	0.85
	Determination	9	0.82
	Assertiveness	7	0.80
	Venturesome	4	0.75

2.2.3. Sport Courage Scale

The study employed the Sport Courage Scale (Adolescent and Adult Form) developed by [29] to assess individuals’ courage levels. This 5-point Likert-type scale comprised five subdimensions. The reliability analyses revealed Cronbach’s alpha values of 0.85 for “mastery”, 0.82 for “determination”, 0.80 for “assertiveness”, 0.75 for “venturesome”, and

0.49 for “sacrifice behaviors. (See Table 1). It was stated by the authors who developed the scale that the scale could be used with 5- and 4-factor structures (by removing the sacrifice behaviors factor) in accordance with the research objectives [29]. In this context, the internal consistency coefficient of the “sacrifice behaviours” subscale was not evaluated because it was below 0.60.

2.3. Data Analysis

The internal consistency of the research scales was determined using Cronbach’s Alpha coefficient. Descriptive statistics were employed to assess the participants’ mental toughness and courage levels. For the study, data were collected from 387 individuals. To prepare the data for analysis, missing and extreme values were examined. A total of 47 forms containing missing data and outliers were excluded from the evaluation, resulting in the analysis of data from 340 participants. The normality of distribution was assessed by examining kurtosis and skewness values. Independent Groups T-test and ANOVA were utilized for inferential statistics. Regarding the selection of an appropriate test to identify the origin of the observed differences, the homogeneity of variances was assessed, resulting in the application of the Tukey test. Pearson’s Product-Moment Correlation Coefficient was employed in relational analyses.

The assumption of normal distribution requires that the skewness and kurtosis values fall within the range of values of -2 and $+2$ [30]. As indicated in Table 3, the skewness and kurtosis values (-2 and $+2$) were within the specified range, thus satisfying the assumption of normality.

Table 3. Skewness Kurtosis Values of Research Scales.

	Subdimensions	Skewness	Kurtosis
Sports Mental Toughness Questionnaire	Confidence	0.284	−0.349
	Constancy	−0.189	−0.338
	Control	0.345	0.139
	Total Scale Score	0.404	0.207
Sport Courage Scale	Mastery	−0.157	−0.471
	Determination	−0.141	−0.562
	Assertiveness	0.063	−0.513
	Venturesome	−0.375	−0.333

The present study received ethical approval from the T.C. Mersin University Sports Sciences Ethics Committee, as per their decision dated 28 November 2022, designated with the reference number 054.

3. Results

In the present investigation, the variations in mental toughness and courage levels among sports sciences faculty students based on demographic factors were explored, as well as the relationship between these two dependent variables. The outcomes derived from this study, alongside the elucidation of the underlying reasons, are presented in accordance with the sub-issues identified within the scope of the research.

The results of the descriptive statistics of the Mental Toughness Questionnaire are presented in Table 4. The mean value of all participants was calculated as (40.45 ± 5.57) based on the responses obtained from the Sport Mental Toughness Questionnaire.

Table 4. Findings Related to the Mental Toughness Questionnaire in Sport.

Scale	Subdimensions	M	SD.
Sports Mental Toughness Questionnaire	Confidence	18.21	2.83
	Constancy	12.72	1.86
	Control	9.50	2.37
	Total Scale Score	40.45	5.57

According to the results (Table 5) of the independent sample *t* test conducted to compare the subdimension and total scale scores among the sports science faculty, it was observed that male participants ($\bar{x} = 19.01$) scored significantly higher than female participants ($\bar{x} = 17.61$) in the confidence subdimension ($p < 0.05$). On the other hand, the male participants ($\bar{x} = 41.42$) also scored significantly higher than the female participants ($\bar{x} = 39.70$) in terms of the total scale score ($p < 0.05$). However, there was no significant difference between male and female participants in the constancy and control subdimensions ($p > 0.05$).

Table 5. Findings Regarding the Comparison of the Sports Sciences Faculty Students' Mental Toughness Questionnaire Subdimension and Scale Total Scores in terms of Gender Variable.

Subdimensions	Gender	N	M	SD	t	p
Confidence	Female	193	17.61	2.70	−4.649	0.000 *
	Male	147	19.01	2.81		
Constancy	Female	193	12.61	1.91	−1.336	0.182
	Male	147	12.88	1.79		
Control	Female	193	9.48	2.28	−0.141	0.888
	Male	147	9.52	2.50		
Total Scale Score	Female	193	39.70	5.66	−2.833	0.05 *
	Male	147	41.42	5.32		

* $p < 0.05$.

A one-way analysis of variance (ANOVA) was conducted to assess the significant differences between the four groups, which were Physical Education and Sports Teaching (1), Recreation (2), Sports Management (3), and Coaching Education (4). The analysis revealed significant differences between the groups, indicating that the department variable had an impact on mental toughness in sport inventory scores (Table 6). Additionally, a post hoc Tukey analysis was performed to determine which group(s) had significant differences in terms of subdimension scores. The results showed that the students in the coaching education department had significantly higher scores for the constancy subdimension ($\bar{x} = 13.13$, $p < 0.05$) compared to those in the Physical Education and Sports Teaching department ($\bar{x} = 12.26$). Furthermore, students in the Department of Coaching Education department had significantly higher scores for the control subdimension ($\bar{x} = 10.17$, $p < 0.05$) than those of the Physical Education and Sports Teaching ($\bar{x} = 9.26$) and Recreation ($\bar{x} = 9.23$) categories. However, in terms of the total score of the scale, it was found that the scores of the students in the Coaching Education department were significantly higher ($\bar{x} = 41.69$, $p < 0.05$) than those of the students in the Physical Education and Sports Teaching department ($\bar{x} = 39.16$). No significant differences were observed between the groups in terms of the confidence subdimension ($p > 0.05$).

Table 6. Findings on the Comparison of the Subdimension of the Sport Mental Toughness Questionnaire and Total Scale Scores among Students from the Faculty of Sports Science with respect to Departmental Variables.

Subdimensions	Department	N	M	SD	f	p	Significant Difference
Confidence	Physical Education and Sports Teaching	114	17.64	2.58	2.486	0.061	-
	Recreation	110	18.56	2.87			
	Sports Management	37	18.62	3.26			
	Coaching Education	79	18.37	2.84			
Constancy	Physical Education and Sports Teaching	114	12.26	1.72	4.103	0.007 *	4 > 1
	Recreation	110	12.82	1.81			
	Sports Management	37	13.00	1.74			
	Coaching Education	79	13.13	2.07			
Control	Physical Education and Sports Teaching	114	9.26	2.27	3.036	0.029 *	4 > 1 4 > 2
	Recreation	110	9.23	2.49			
	Sports Management	37	9.59	2.40			
	Coaching Education	79	10.17	2.24			
Total Scale Score	Physical Education and Sports Teaching	114	39.16	5.22	3.681	0.012 *	4 > 1
	Recreation	110	40.62	5.69			
	Sports Management	37	41.21	5.32			
	Coaching Education	79	41.69	5.74			

* $p < 0.05$. Groups: Physical Education and Sports Teaching (1), Recreation (2), Sports Management (3), Coaching Education (4).

A one-way analysis of variance (ANOVA) was conducted to compare mental toughness in sport inventory subdimensions and scale total scores of students in the sports science faculty, with respect to the academic year variable (Table 7). The results indicated significant differences among the groups. The post hoc Tukey test was utilized to determine the groups between which significant differences existed in terms of constancy and scale total scores. The constancy subdimension scores of the first-year students ($\bar{x} = 13.05$) were significantly higher than the second-year scores ($\bar{x} = 12.26$) ($p < 0.05$), and the total scores of the third-year students ($\bar{x} = 41.67$) were significantly higher than those of the second-year students ($\bar{x} = 39.18$) ($p < 0.05$). A post hoc Tamhane's T2 test was employed to determine the groups between which significant differences existed in terms of the control subdimension. It was found that the control subdimension scores of third-year students ($\bar{x} = 10.17$) were significantly higher than those of second-year students ($\bar{x} = 9.00$) ($p < 0.05$). No significant differences were observed between the groups regarding the confidence subdimension ($p > 0.05$).

The results of the descriptive statistics for the Courage in Sport Scale are presented in Table 8. The mean value of all participants was calculated as (103.69 ± 14.24) , based on the responses obtained from the scale.

An independent samples *t*-test was conducted to compare the Courage in Sport Scale subdimension and total scale scores between male and female sports science students (Table 9). The results revealed significant differences in the mastery, determination, and assertiveness subdimensions, as well as in the total score of the scale, with male participants scoring higher than female participants (mastery: male $\bar{x} = 24.99$, female $\bar{x} = 23.40$, $p < 0.05$; determination: male $\bar{x} = 37.81$, female $\bar{x} = 36.56$, $p < 0.05$; assertiveness: male $\bar{x} = 28.40$, female $\bar{x} = 26.54$, $p < 0.05$; $p < 0.05$).

Table 7. Findings Regarding the Comparison of Sport Mental Toughness Questionnaire Subdimension and Scale Total Scores of the Faculty of Sports Science Students in Terms of Academic Year Variable.

Subdimensions	Academic Year	N	M	SD	f	p	Significant Difference
Confidence	First year	91	18.21	3.06	0.584	0.626	-
	Second year	94	17.91	2.58			
	Third year	58	18.46	3.13			
	Fourth year	97	18.36	2.67			
Constancy	First year	91	13.05	1.70	3.452	0.017 *	1 > 2
	Second year	94	12.26	1.94			
	Third year	58	13.03	2.02			
	Fourth year	97	12.69	1.76			
Control	First year	91	9.50	2.50	3.028	0.030 *	3 > 2
	Second year	94	9.00	2.20			
	Third year	58	10.17	2.76			
	Fourth year	97	9.58	2.06			
Total Scale Score	First year	91	40.78	5.75	2.736	0.044 *	3 > 2
	Second year	94	39.18	5.33			
	Third year	58	41.67	6.36			
	Fourth year	97	40.63	4.95			

* $p < 0.05$.**Table 8.** Findings Related to the Courage in Sport Scale.

Scale	Sub-Dimensions	\bar{X}	SD
Sport Courage Scale	Mastery	24.09	5.81
	Determination	37.10	4.90
	Assertiveness	27.35	4.00
	Venturesome	15.15	3.03
	Total Scale Score	103.69	14.24

Table 9. Findings Regarding the Comparison of Sports Courage Scale Subscales and Total Scale Scores of the Faculty of Sports Science Students in Terms of Gender Variables.

Subdimensions	Gender	N	M	SD	t	p
Mastery	Female	193	23.40	6.02	−2.517	0.012 *
	Male	147	24.99	5.41		
Determination	Female	193	36.56	4.86	−2.344	0.020 *
	Male	147	37.81	4.89		
Assertiveness	Female	193	26.54	3.85	−4.370	0.000 *
	Male	147	28.40	3.94		
Venturesome	Female	193	14.94	2.91	−1.446	0.149
	Male	147	15.42	3.18		

* $p < 0.05$.

A one-way analysis of variance (ANOVA) was conducted to compare the subdimension and total scores for the Courage in Sport Scale of the faculty of sports science, based on the department variable (Table 10). The results showed significant differences between departments. The post hoc Tukey analysis indicated that students in the coaching education department scored significantly higher than those studying physical education and sports teaching in the subdimensions of mastery, determination, and assertiveness ($p < 0.05$). Additionally, scores in the determination subdimension of students in the coaching education department were significantly higher than those in the recreation department ($p < 0.05$). No significant differences were found in the adventurous behavior subdimension ($p > 0.05$).

Table 10. Findings Regarding the Comparison of Sports Courage Scale Subscales and Total Scale Scores of Faculty of Sports Science Students in Terms of Department Variables.

Subdimensions	Department	N	M	SD	f	p	Significant Difference
Mastery	Physical Education and Sports Teaching	114	22.50	6.04	5.643	0.001 *	4 > 1
	Recreation	110	24.16	5.80			
	Sports Management	37	25.21	4.66			
	Coaching Education	79	25.74	5.44			
Determination	Physical Education and Sports Teaching	114	36.20	4.28	4.279	0.006 *	4 > 1
	Recreation	110	36.82	5.06			
	Sports Management	37	37.35	5.30			4 > 2
	Coaching Education	79	38.68	5.04			
Assertiveness	Physical Education and Sports Teaching	114	26.58	3.59	2.955	0.033 *	4 > 1
	Recreation	110	27.45	4.18			
	Sports Management	37	27.24	4.47			
	Coaching Education	79	28.30	3.92			
Venturesome	Physical Education and Sports Teaching	114	14.86	2.80	0.829	0.479	-
	Recreation	110	15.45	2.90			
	Sports Management	37	14.89	3.55			
	Coaching Education	79	15.27	3.28			

* $p < 0.05$. Groups: Physical Education and Sports Teaching (1), Recreation (2), Sports Management (3), Coaching Education (4).

A one-way analysis of variance (ANOVA) was performed to compare the courage scores in the subdimensions of the sport scale subdimensions among students in the Sports Science Faculty based on their department of study. The results showed significant differences (Table 11). The post hoc Tukey analysis revealed that the scores of first-year students ($\bar{x} = 24.75$) were significantly higher than the scores of second-year students ($\bar{x} = 22.39$), while the scores of third-year students ($\bar{x} = 25.53$) were significantly higher than those of second-year students ($\bar{x} = 22.39$) ($p < 0.05$). Regarding the subdimension of venturesome, the scores of first-year students ($\bar{x} = 15.91$) were significantly higher than those of third-year students ($\bar{x} = 14.46$) ($p < 0.05$). However, no significant differences were found in the subdimensions of determination and assertiveness ($p > 0.05$).

Following a correlation analysis to examine the relationship between age and levels of mental toughness among students enrolled in sports science (Table 12), no significant association was identified between age and the subdimensions ($p < 0.05$).

Table 11. Findings Regarding the Comparison of Sports Courage Scale Subscales and Total Scale Scores of Faculty of Sports Science Students in Terms of Academic Year Variable.

Subdimensions	Academic Year	N	M	SD	f	p	Significant Difference
Mastery	First year	91	24.75	5.91	4.417	0.005 *	1 > 2 3 > 2
	Second year	94	22.39	6.10			
	Third year	58	25.53	5.34			
	Fourth year	97	24.24	5.37			
Determination	First year	91	37.96	5.10	2.322	0.075	-
	Second year	94	36.11	4.67			
	Third year	58	36.96	5.03			
	Fourth year	97	37.34	4.76			
Assertiveness	First year	91	27.58	4.26	0.689	0.559	-
	Second year	94	26.84	3.81			
	Third year	58	27.63	4.06			
	Fourth year	97	27.40	3.92			
Venturesome	First year	91	15.91	2.84	3.360	0.019 *	1 > 3
	Second year	94	14.80	2.77			
	Third year	58	14.46	2.98			
	Fourth year	97	15.19	3.36			

* $p < 0.05$. Groups: first year (1), second year (2), third year (3), and fourth year students (4).

Table 12. Findings on the Relationship Between Age and Mental Toughness Levels of Faculty of Sports Science Students.

N = 340		Confidence	Constancy	Control	Total Scale Score
Age	r	0.064	0.012	0.068	0.066
	p	0.238	0.828	0.209	0.227

The results of the correlation analysis (Table 13) conducted to examine the association between age and courage levels among students in the sports science revealed no significant relationship between age and the subdimensions of the courage scale ($p < 0.05$).

Table 13. Findings on the Relationship Between Age and Courage Levels of Faculty of Sports Science Students.

N = 340		Mastery	Determination	Assertiveness	Venturesome
Age	r	0.072	0.050	0.075	−0.37
	p	0.188	0.354	0.170	0.493

Following the correlation analysis exploring the connection between mental toughness and courage levels among students in the Faculty of Sport Sciences (Table 14), a significant, positive, and moderate association was identified between the confidence sub-dimension and the sub-dimensions of mastery, determination, and assertiveness ($p < 0.01$). A significant, positive, and low-level relationship was observed between the trust sub-dimension and the venturesome sub-dimensions. A significant, positive, and moderate association was found between the persistence sub-dimension and the sub-dimensions of mastery, determination, and assertiveness ($p < 0.01$). A significant, positive, and low-level relationship was established between the persistence sub-dimension and venturesome ($p < 0.01$). A signifi-

cant, positive, and moderate association was detected between the control sub-dimension and the mastery sub-dimension ($p < 0.01$). A significant, positive, and low-level relationship was observed between the control sub-dimension and the determination and assertiveness sub-dimensions ($p < 0.01$). However, no significant relationship was discovered between the control sub-dimension and the venturesome sub-dimensions ($p > 0.05$).

Table 14. Findings on the Relationship Between Mental Toughness and Courage Levels of Sports Science Faculty Students.

N = 340		Mastery	Determination	Assertiveness	Venturesome
Confidence	r	0.503	0.591	0.652	0.264
	p	0.000 **	0.000 **	0.000 **	0.000 **
Constancy	r	0.643	0.592	0.586	0.260
	p	0.000 **	0.000 **	0.000 **	0.000 **
Control	r	0.552	0.259	0.286	0.024
	p	0.000 **	0.000 **	0.000 **	0.662

** significant at $p < 0.01$, * significant at $p < 0.05$.

4. Discussion and Conclusions

In this investigation, the primary objective was to assess the association between mental toughness and courage levels of sports sciences faculty students in the context of sustainable performance. The study compared mental toughness subdimensions and overall scale scores for both male and female sports science faculty students. The findings indicated a significant disparity in favor of male participants in the confidence subdimension and total scale score, consistent with earlier research suggesting that underlying psychological elements may account for these gender differences.

Previous studies have consistently shown that male athletes tend to score significantly higher than females on measures of mental toughness [31,32]. For example, research has revealed that male basketball players display higher confidence subdimension scores than their female counterparts [33]. A similar pattern was observed in a study comparing mental toughness levels of sports science faculty students by gender, where male participants demonstrated a significant advantage in the confidence subdimension [34]. However, some studies have reported conflicting results, with no significant differences in mental toughness subdimensions and total scale scores based on gender [35,36].

To gain a deeper understanding of these gender disparities in mental toughness, it is crucial to examine potential psychological factors and societal influences involved. One possible explanation may lie in the impact of social and cultural norms on shaping individuals' self-perceptions of confidence and mental toughness. Males could be predisposed to develop higher self-efficacy in competitive environments due to gender stereotypes and expectations that emphasize traits such as dominance, strength, and toughness as characteristically masculine. Conversely, females might encounter additional obstacles in cultivating self-confidence as they negotiate social expectations that may not always correspond with the concept of mental toughness.

Moreover, the formation of mental toughness could be affected by differences in the socialization of males and females within sports contexts. Factors such as coaching methods, peer interactions, and support networks might contribute to the observed gender differences in mental toughness and confidence levels. For instance, male athletes may receive greater reinforcement and motivation to cultivate and exhibit mental toughness during their training and competition, while females may not be presented with equivalent opportunities.

In the current investigation, a comparison of mental toughness subdimensions and overall scale scores among sports sciences faculty students, categorized by their department, revealed that students pursuing coaching significantly surpassed their peers in physical

education, sports teaching, and recreation in the constancy and control subdimensions. Intriguingly, a literature review did not identify considerable differences in mental toughness subdimensions associated with the area of study [35]. Broadly, these findings suggest that coaching students possess advanced capabilities in managing difficult situations, sustaining concentration, and assuming responsibility for their actions. Nevertheless, it is crucial to explore the underlying psychological factors that may contribute to these observed disparities. One possible reason for the elevated mental toughness scores among coaching students could be their more extensive experience and exposure to competitive sports settings. Coaching education generally requires a minimum of three years of experience as licensed athletes, which might have led to their heightened mental toughness and emotional regulation abilities. Engaging in highly competitive environments can promote the development of adaptive coping mechanisms, stress management skills, and increased self-assurance [36].

Additionally, it is important to examine the influence of motivation and goal orientation in shaping mental toughness levels across departments. Coaching students, with their background as licensed athletes, may exhibit greater intrinsic motivation and a heightened drive to succeed in their chosen field, resulting in enhanced mental toughness. Furthermore, coaching students could possess a more performance-oriented mindset, concentrating on mastering abilities and overcoming obstacles, which may contribute to superior constancy and control subdimension scores. Lastly, the instructional approaches utilized in coaching education might play a role in cultivating mental toughness. Coaching education curricula could emphasize psychological skills development, problem-solving methods, and efficient communication, providing students with the resources to foster mental adaptability and toughness. Conversely, students in other departments, such as physical education, sports teaching, and recreation, may not receive an equivalent level of psychological skills training, potentially accounting for the observed differences in mental toughness subdimensions.

In the present investigation, the objective was to compare the mental toughness subdimensions and total scale scores of sports sciences faculty students across academic years. The findings indicated that first-year students scored significantly higher in the constancy subdimension than second-year students, while third-year students outperformed second-year students in both the control subdimension and total scale score. A previous study [36] reported that second-year students had significantly higher constancy subdimension scores than fourth-year students, while another study [35] found no significant differences in mental toughness subdimensions based on academic year. The current results suggest that first-year students demonstrate superior abilities in perseverance, concentration, and responsibility towards established goals compared to second-year students, whereas third-year students exhibit enhanced control and relaxation capacities relative to their second-year peers. To gain a more comprehensive understanding of these findings, it is crucial to explore the underlying psychological factors contributing to the observed differences.

A potential explanation for the variations in mental toughness scores across academic years could be the distinct levels of adaptation to the academic environment and its associated stressors. First-year students, being new to the sports sciences faculty, might display higher constancy scores due to their initial enthusiasm and excitement surrounding their chosen field. In contrast, second-year students may undergo a decline in mental toughness as they encounter academic challenges and adjust to their program's demands. By the third year, students might have developed more effective coping strategies and stress management techniques, leading to improved control and relaxation skills.

Additionally, it is essential to consider the influence of the sports sciences curriculum and potential shifts in pedagogical approaches as students advance through their program. The curriculum may increasingly emphasize psychological skills training, problem-solving techniques, and other mental toughness-related components as students progress, potentially accounting for the observed differences in mental toughness scores across academic years.

According to the analysis that compared the courage subdimensions of students in the sports sciences faculty by gender, significant differences were observed in favor of male participants in mastery, determination, and assertiveness. This evidence corresponds with previous research identifying analogous distinctions in courage subdimensions among male Alpine skiers [14] and male sports participants as opposed to their female counterparts [37,38]. Nevertheless, some works in the literature failed to uncover significant discrepancies between genders in terms of courage [39,40]. Thus, the current findings imply that male participants generally exhibit heightened perceptions of courage, especially in the areas of mastery, determination, and assertiveness, when facing challenging circumstances compared to female participants. A comprehensive psychological analysis necessitates further exploration of factors contributing to these observed gender disparities in courage.

One potential rationale for the detected gender differences in courage could be the impact of cultural and societal standards on the formation of self-perceptions related to courage. Conventional gender roles and stereotypes may affect the ways in which males and females perceive and express courage, with males frequently socialized to prioritize traits such as dominance, assertiveness, and resilience. Consequently, male participants may develop greater self-efficacy and a more courageous self-concept when encountering challenging situations relative to their female counterparts.

Moreover, distinctions in coping mechanisms and emotional regulation between genders may contribute to variations in courage subdimensions. Males may demonstrate a predisposition toward employing problem-focused coping strategies and exhibit elevated levels of determination and mastery when confronted with challenges, while females may rely on more emotion-focused coping techniques, which may not correlate as strongly with courage subdimensions.

An investigation was conducted to evaluate the subdimensions of courage and overall scale scores among students within the sports science faculty, considering departmental variations. The results highlighted notable differences favoring participants who underwent coaching education in the areas of mastery, determination, and assertiveness. A survey of existing literature failed to identify any studies comparing participants' courage levels based on their departmental affiliation. These research findings imply that students enrolled in coaching education programs, who are required to hold athlete licenses for a minimum of three years, may demonstrate significantly higher levels of courage compared to students from other departments. This could be attributed to coaching education students' more frequent exposure to sports environments and their accumulation of relevant experience.

It is essential to explore various factors that may contribute to the observed disparities in courage levels among coaching education students and their peers in other departments. One possible explanation could be that students in coaching education programs have been consistently exposed to challenging situations in sports contexts, thus fostering the development of psychological resilience and courage-related traits such as mastery, determination, and assertiveness.

Moreover, the nature of coaching education programs may further reinforce the development of courage-related traits. These programs often emphasize the acquisition of leadership skills, effective communication, and the ability to adapt to various situations, all of which could contribute to enhancing courage in students. This, in turn, could result in students exhibiting higher levels of courage compared to their counterparts in other departments. Furthermore, the social and peer dynamics within coaching education programs might also play a role in shaping students' courage. Students in these programs often interact with fellow athletes and coaches who exemplify courage, determination, and assertiveness, thus creating a social learning environment that fosters the development of these traits. Additionally, the experience of overcoming challenges and setbacks in the sports domain may contribute to the cultivation of a growth mindset, enhancing students' self-efficacy and perceptions of courage.

In an analysis of courage subdimensions among students within the sports science faculty, it was observed that first-year students exhibited significantly higher scores than second-year students in the mastery subdimension, while third-year students outperformed second-year students. In the venturesome dimension, first-year students obtained notably higher scores than their third-year counterparts. A survey of the existing literature failed to identify previous research comparing courage levels among participants based on their academic year. These results imply that students initiating their undergraduate sports science studies exhibit greater courage perceptions than those in later academic years, suggesting that experiential learning may enhance students' courage perceptions.

It is crucial to explore various factors potentially contributing to the observed disparities in courage levels throughout academic years. One plausible explanation is that upon entering university, first-year students might possess elevated levels of optimism and self-confidence, which could be reflected in higher courage perceptions. As students progress through their academic experiences and encounter challenges or setbacks, their self-efficacy and courage perceptions might decline, resulting in lower scores in mastery and venturesome subdimensions.

Furthermore, social factors, such as support from peers and faculty, could impact students' courage perceptions. First-year students, who are frequently actively involved in forging new social connections and seeking assistance from peers and faculty members, might receive increased encouragement to develop courage-related traits. As students advance academically, their social networks may undergo changes, possibly influencing the degree of support and encouragement they obtain. Additionally, the cultivation of coping strategies and stress management skills throughout students' academic development might contribute to the observed differences in courage levels. First-year students may depend more on courage-related attributes to tackle new challenges, while upper-year students may have adopted alternative coping techniques, leading to shifts in the focus on courage.

In the analysis of the relationship between age and mental toughness levels of sport sciences faculty students, no significant relationship was found. The findings showed that there was no significant correlation between these variables, which was consistent with previous research [41]. In contrast, another study [42] reported different results and showed a positive and significant relationship between age and mental toughness. In this study, extreme age ranges were excluded to ensure sample homogeneity, resulting in a relatively similar age distribution among participants, which may have contributed to the lack of a significant links between age and mental toughness.

It is important to examine various factors that may influence the observed lack of correlation between age and mental toughness. One potential explanation could be individual differences in the development of mental toughness. Given that mental toughness is a multifaceted construct, its development may not progress linearly with age. Instead, a combination of factors such as genetics, environmental influences, and personal experiences may influence the development of mental toughness and lead to differences between individuals regardless of their age.

Furthermore, the role of social support networks such as family, friends, and coaches should also be considered. The quality and accessibility of social support can influence the development of mental toughness regardless of age. Furthermore, the sport science faculty environment and curriculum may contribute to the consistent development of mental toughness among students regardless of age. Exposure to comparable education, learning experiences, and faculty support may promote similar levels of mental toughness across different age groups.

The current study investigated the relationship between age and courage levels among sports sciences faculty students, revealing no significant association. This finding was consistent with previous research [39], which also identified no statistically significant correlation between age and courage. However, some studies have reported contrasting results, such as a positive correlation between age and sport-related courage among university students [38] and a significant positive correlation between age and courage

levels in female football players [42]. One possible explanation for the lack of a significant relationship between age and courage in this study could be the relatively homogenous age distribution of the sports sciences faculty students. With a limited age range, it might be challenging to observe any significant age-related differences in courage levels. In contrast, studies that reported a positive correlation between age and courage might have included participants with a broader age range, allowing for more apparent age-related variations in courage levels.

Additionally, individual differences in personality, coping styles, and emotional regulation could contribute to the absence of a significant relationship between age and courage in the current study. These factors may have a more substantial influence on courage levels than age alone, leading to the observed variability in courage among participants of similar ages. For example, some individuals might naturally exhibit higher levels of courage regardless of their age due to inherent personality traits or learned coping strategies. Furthermore, the influence of external factors, such as social support, coaching practices, and competitive experience, should be considered when examining the relationship between age and courage. These external factors might play a more significant role in shaping individuals' courage levels than age alone, potentially accounting for the lack of a significant association observed in the current study. It is also possible that age-related differences in courage might be more apparent in specific contexts or sports disciplines, which could explain the contrasting findings in the literature.

This study, which examined the relationship between mental toughness and courage levels of sport sciences faculty students, revealed that there were significant and positive relationships between mental toughness and the sub-dimensions of courage. Consistent with these findings, previous research has also reported positive relationships between mental toughness and courage in sports players such as wrestling athletes [25] and American football players [21].

A potential explanation for the observed positive relationship between mental toughness and courage could be the common psychological factors underlying both constructs. Both mental toughness and courage involve the ability to persevere in the face of adversity, cope effectively with stress and pressure, and maintain focus and determination in challenging situations. Consequently, individuals who exhibit higher levels of mental resilience may also possess the psychological skills and resources necessary to exhibit courage in a variety of contexts, leading to a positive relationship between the two constructs.

Another possible mechanism underlying the relationship between mental resilience and courage may be the role of self-efficacy and self-confidence. Individuals with high levels of mental toughness generally exhibit more self-efficacy and self-confidence in their ability to overcome obstacles and achieve their goals [43]. Since individuals with high self-efficacy are more likely to face challenges and take risks to achieve their goals, these high beliefs about one's abilities may also facilitate more courage [44].

In addition, the development of mental toughness and courage may be influenced by social and environmental factors such as support networks and experiences of competition. Exposure to challenging situations and positive reinforcement can promote the development of both mental toughness and courage. As a result, individuals who develop mental toughness through sport experiences may also show higher levels of courage due to common developmental processes and contextual factors.

Our study has shed light on the relationship between mental toughness and courage in sports among students of the faculty of sports science. However, to ensure the robustness and generalizability of our results, we recommend that future studies investigate various sport disciplines such as basketball, volleyball, handball, and table tennis to identify potential differences in the relationship between mental toughness and courage. Additionally, expanding demographic variables beyond gender, age, department, and academic year can facilitate a more comprehensive understanding of this relationship. We suggest that the concepts of Mental Toughness in Sports and Courage in Sports be integrated into educational and training programs from an early age, as part of a lifelong development

process, and applied in sports environments. By doing so, individuals can develop the necessary psychological skills to excel in sports, and potentially in other aspects of life.

Author Contributions: Conceptualization, T.T. and E.B.O.; methodology, T.T. and E.B.O.; software, İ.O.; validation, M.T.K., C.T. and C.K.; formal analysis, E.B.O.; investigation, T.T. and E.B.O.; resources, E.B.O.; data curation, T.T.; writing—original draft preparation, T.T., E.B.O. and İ.O.; writing—visualization, E.B.O.; supervision, T.T.; project administration, T.T., M.T.K. and E.U. All authors review and editing, T.T. and C.T. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The present study received ethical approval from the T.C. Mersin University Sports Sciences Ethics Committee, as per their decision dated 28 November 2022, and designated with the reference number 054.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Conflicts of Interest: The authors declare no conflict of interest.

References

- Bellver, D.O.; Pérez-Campos, C.; González-Serrano, M.H.; Martínez-Rico, G. Towards the development of future sustainable sports entrepreneurs: An asymmetric approach of the sports sciences sustainable entrepreneurial intentions. *J. Hosp. Leis. Sport Tour. Educ.* **2022**, *31*, 100403. [\[CrossRef\]](#)
- Toros, T.; Ogras, B.E. *Introduction to Sports Psychology*, 1st ed.; Nobel Academic Publishing: Ankara, Turkey, 2022.
- Güven, S.; Yazıcı, A. Analysis and Examination of Research on Mental Toughness in Turkey. *Natl. J. Sport Sci.* **2020**, *4*, 82–93.
- Loehr, J. *Mental Toughness Training for Sports: Achieving Athletic Excellence*; Plume: New York, NY, USA, 1982.
- Loehr, J. *The New Toughness Training for Sports*; Plume: New York, NY, USA, 1995.
- Jones, G.; Hanton, S.; Connaughton, D. What is this thing called mental toughness? An investigation of elite sport performers. *J. Appl. Sport Psychol.* **2002**, *14*, 205–218. [\[CrossRef\]](#)
- Bertollo, M.; Terry, P.C. (Eds.) *Advancements in Mental Skills Training*; Routledge: Oxfordshire, UK, 2021.
- Kaiseler, M.; Polman, R.; Nicholls, A. Mental toughness, stress, stress appraisal, coping and coping effectiveness in sport. *Personal. Individ. Differ.* **2009**, *47*, 728–733. [\[CrossRef\]](#)
- Crust, L.; Clough, P.J. Relationship between mental toughness and physical toughness. *Percept. Mot. Ski.* **2005**, *100*, 192–194. [\[CrossRef\]](#)
- Coulter, T.J.; Mallett, C.J.; Gucciardi, D.F. Understanding mental toughness in Australian soccer: Perceptions of players, parents, and coaches. *J. Sport. Sci.* **2010**, *28*, 699–716. [\[CrossRef\]](#)
- Gould, D. Sport psychology in the new millennium: The psychology of athletic excellence and beyond. *J. Appl. Sport Psychol.* **2002**, *14*, 137–139. [\[CrossRef\]](#)
- Konter, E.; Beckmann, J.; Mallett, C.J. Psychological skills for football players. In *Football Psychology*; Routledge: Oxfordshire, UK, 2019; pp. 179–197.
- Cigrovski, V.; Radman, I.; Konter, E.; Očić, M.; Ružić, L. Sport courage, worry and fear in relation to success of alpine ski learning. *Sports* **2018**, *6*, 96.
- Prlenda, N.; Cigrovski, V.; Božić, I.; Krčelić, T.; Rađević, N. Relationship between fear and courage with the level of acquired knowledge in kiteboarding. *Sport Sci.* **2008**, *8*, 65–68.
- Moritz, S.E.; Feltz, D.L.; Fährbach, K.R.; Mack, D.E. The relation of self-efficacy measures to sport performance: A meta-analytic review. *Res. Q. Exerc. Sport* **2000**, *71*, 280–294. [\[CrossRef\]](#)
- Castro-Sánchez, M.; Zurita-Ortega, F.; Chacón-Cuberos, R.; López-Gutiérrez, C.J.; Zafra-Santos, E. Emotional intelligence, motivational climate and levels of anxiety in athletes from different categories of sports: Analysis through structural equations. *Int. J. Environ. Res. Public Health* **2018**, *15*, 894. [\[CrossRef\]](#) [\[PubMed\]](#)
- Konter, E.; Ng, J.; Bayansaldaz, M. Revised version of sport courage scale for children. *Energy Educ. Sci. Technol. Soc. Educ. Stud. Part B* **2013**, *1*, 331–340.
- Konter, E. Towards Multidimensional and Interactional Sport Courage Model. In Proceedings of the 11th International Sport Science Congress, Antalya, Turkey, 10–12 November 2010.
- Pury, C.L.; Kowalski, R.M. Human strengths, courageous actions, and general and personal courage. *J. Posit. Psychol.* **2007**, *2*, 120–128. [\[CrossRef\]](#)
- Konter, E.; Ogras, B.; Toros, T. (Eds.) *Courage and Performance in Sport*; Nobel Academic Publishing: Ankara, Turkey, 2022; pp. 281–308.
- Guvendi, B.; Guclu, M.; Isim, A.T. The Analysis Of American Football Players' courage Levels and Sport Mental Toughness. *J. Sport Perform. Stud.* **2019**, *11*, 132–140.
- Islam, A. Professional Soccer Players' Courage According to Their Psychological Skills and Mental Toughness. Ph.D. Dissertation, On Dokuz Mayıs University Institute of Postgraduate Education, Samsun, Turkey, 2021. Unpublished.

23. Kaya, B. Comparison of Courage Levels of Individual and Team Athletes in Sports. Master's Thesis, Istanbul Gelisim University Institute of Health Sciences, Istanbul, Turkey, 2018. Unpublished.
24. Lekesiz, G. Investigation of Perception of Courage and Mental Toughness in Extreme Sports Participants According to Various Variables. Master's Thesis, Mersin University Institute of Educational Sciences, Mersin, Turkey, 2021. Unpublished.
25. Guvendi, B.; Turksoy, A.; Guclu, M.; Konter, E. Investigation of courage levels and mental toughness of professional wrestlers. *Int. J. Sport Exerc. Train. Sci. IJSETS* **2018**, *4*, 70–78. [[CrossRef](#)]
26. Karasar, N. *Scientific Research Method*; Nobel Yayıncılık: Ankara, Turkey, 2006.
27. Sheard, M.; Golby, J.; Van Wersch, A. Progress toward construct validation of the Sports Mental Toughness Questionnaire (SMTQ). *Eur. J. Psychol. Assess.* **2009**, *25*, 186–193. [[CrossRef](#)]
28. Altıntaş, A.; Koruc, P.B. Investigation of psychometric properties of mental toughness inventory in sport (SZDE). *J. Sport Sci.* **2016**, *27*, 163–171.
29. Konter, E.; Ng, J. Development of sport courage scale. *J. Hum. Kinet.* **2012**, *33*, 163. [[CrossRef](#)]
30. George, D.; Mallery, P. *IBM SPSS Statistics 25 Step by Step: A Simple Guide and Reference*; Routledge: Oxfordshire, UK, 2018.
31. Farrokhi, A.; Kashani, V.; Motashareei, E. Comparison of mental toughness of contact and non-contact men and women athletes in different skill levels. *Semi-Annu. Mot. Behav. (Res. Sport Sci.)* **2011**, *3*, 71–86.
32. Yazıcı, A. Investigation of Mental Toughness and Emotional Intelligence in Professional Basketball Players in Terms of Various Variables. Master's Thesis, Gazi University Institute of Health Sciences, Ankara, Turkey, 2016. Unpublished.
33. Eroglu, O.; Unveren, A.; Cagla, A.; Muftuoglu, N.E. Investigation of the relationship between mental toughness in sport and moral distancing levels of students in the faculty of sports science. *Turk. J. Sport. Sci.* **2020**, *4*, 100–110.
34. Demir, G.T.; Turkeli, A. Investigation of exercise addiction and mental toughness levels of sports science faculty students. *J. Sport Sci. Res.* **2019**, *4*, 10–24.
35. Yarayan, Y.E.; Yıldız, A.B.; Gulsen, D.B.A. Investigation of mental toughness levels of elite level individual and team athletes according to various variables. *Int. J. Soc. Res.* **2018**, *11*, 993–999.
36. Guzel, C.M. Investigation of Exercise Addiction and Mental Toughness Levels of Sports Sciences Faculty Students (Balıkesir province sample). Master's Thesis, Balıkesir University Institute of Health Sciences, Balıkesir, Turkey, 2021. Unpublished.
37. Konter, E. Sport courage profile of Adolescents in relation to level of empathic tendency, physical education and sport participation. In Proceedings of the 14th International Sport Science Congress, Antalya, Turkey, 1–4 October 2016.
38. Can, Y.; Kacay, Z. Investigation of the relationship between athlete identity perception, courage and self-confidence. *J. Hum. Sci.* **2016**, *13*, 6176–6184.
39. Emniyet, O. Investigation of Canoe Athletes' Courage Levels and Mental Toughness. Master's Thesis, Recep Tayyip Erdogan University Institute of Postgraduate Education, Rize, Turkey, 2021. Unpublished.
40. Crust, L. The relationship between mental toughness and affect intensity. *Personal. Individ. Differ.* **2009**, *47*, 959–963. [[CrossRef](#)]
41. Crust, L.; Earle, K.; Perry, J.; Earle, F.; Clough, A.; Clough, P.J. Mental toughness in higher education: Relationships with achievement and progression in first-year university sports students. *Personal. Individ. Differ.* **2014**, *69*, 87–91. [[CrossRef](#)]
42. Konter, E.; Gledhill, A.; Kueh, Y.C.; Kuan, G. Understanding the Relationship between Sport Courage and Female Soccer Performance Variables. *Int. J. Environ. Res. Public Health* **2022**, *19*, 4654. [[CrossRef](#)]
43. Brace, A.W.; George, K.; Lovell, G.P. Mental toughness and self-efficacy of elite ultra-marathon runners. *PLoS ONE* **2020**, *15*, e0241284. [[CrossRef](#)]
44. Nicholls, A.R.; Levy, A.R.; Polman, R.C.; Crust, L. Mental toughness, coping self-efficacy, and coping effectiveness among athletes. *Int. J. Sport Psychol.* **2011**, *42*, 513–524.

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.