

Original article. The effect of endurance-based sports on athlete success and psychological well-being.  
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## The effect of endurance-based sports on athlete success and psychological well-being

### El efecto de los deportes de resistencia en el éxito deportivo y el bienestar psicológico de los atletas

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## Abstract

The aim of this study is to examine the effects of psychological resilience on sport success and mental health. The relationships between commitment, control and challenge, which are sub-dimensions of psychological resilience, and sport success and psychological well-being were evaluated and discussed in detail. Today, the problems arising due to the increasing competitive environment and stress factors have made it more important for athletes to be psychologically strong. Although the relationship between psychological resilience and sport success has been previously examined in the literature, studies evaluating the individual effects of the sub-dimensions of resilience in a large sample group are quite limited. This study aims to overcome this deficiency and make an up-to-date contribution to the subject. A total of 684 students (72 percent male, 28 percent female) studying at the Faculties of Sport Sciences of 16 universities in Istanbul, Ankara, Izmir, Bursa and Antalya participated in the study. Participants completed the Resilience Scale and Mental Health Inventory, and their sporting achievements were evaluated by their coaches using the Sport Achievement Scale. Data were collected via Google Forms® and analysed using SPSS 22.0 software with correlation, regression and Granger causality tests. The findings revealed that all resilience sub-dimensions showed positive and significant relationships with sport achievement ( $R^2=0.93$ ) and psychological well-being ( $R^2=0.68$ ). Especially control and challenge factors had the strongest effects. As a result of the research, commitment, control and challenge, which are the sub-dimensions of psychological resilience, significantly affect both success levels and psychological well-being of athletes. Therefore, resilience development programmes for athletes should focus on these areas.

**Keywords:** sport achievement; mental health; physical strength; endurance; sportive activity

## Resumen

El objetivo de este estudio es examinar los efectos de la resiliencia psicológica en el éxito deportivo y la salud mental. Se evaluaron y discutieron en detalle las relaciones entre el compromiso, el control y el desafío, que son subdimensiones de la resiliencia psicológica, y el éxito deportivo y el bienestar psicológico. Hoy en día, los problemas derivados del entorno cada vez más competitivo y los factores de estrés han hecho que sea más importante que los deportistas sean psicológicamente fuertes. Aunque la relación entre la resiliencia psicológica y el éxito deportivo ya se ha examinado en la bibliografía, los estudios que evalúan los efectos individuales de las subdimensiones de la resiliencia en un grupo de muestra amplio son bastante limitados. El presente estudio pretende subsanar esta deficiencia y aportar una contribución actualizada al tema. En el estudio participaron un total de 684 estudiantes (72 % hombres y 28 % mujeres) matriculados en las facultades de ciencias del deporte de 16 universidades de Estambul, Ankara, Esmirna, Bursa y Antalya. Los participantes completaron la Escala de Resiliencia y el Inventario de Salud Mental, y sus entrenadores evaluaron sus logros deportivos utilizando la Escala de Logros Deportivos. Los datos se recopilaron a través de Google Forms® y se analizaron utilizando el software SPSS 22.0 con pruebas de correlación, regresión y causalidad de Granger. Los resultados revelaron que todas las subdimensiones de la resiliencia mostraban relaciones positivas y significativas con el rendimiento deportivo ( $R^2 = 0,93$ )

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y el bienestar psicológico ( $R^2 = 0,68$ ). Los factores de control y desafío fueron los que tuvieron los efectos más fuertes. Como resultado de la investigación, el compromiso, el control y el desafío, que son las subdimensiones de la resiliencia psicológica, afectan significativamente tanto a los niveles de éxito como al bienestar psicológico de los deportistas. Por lo tanto, los programas de desarrollo de la resiliencia para deportistas deben centrarse en estas áreas.

**Palabras clave:** rendimiento deportivo; salud mental; fuerza física; resistencia; actividad deportiva

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## Introduction

Today, there are many factors affecting the performance of athletes (Zainuddin et al., 2023). These factors are not only limited to physical competence (Ha et al., 2024); it has been revealed by the results of large-scale studies that the psychological characteristics of athletes also play an important role on these factors (Candra et al., 2019). In this context, the concept of ‘psychological resilience’ has gained more and more importance in the sport sciences literature (Husain et al., 2024). In particular, the ability of athletes to cope with stressful and uncertain situations is the main determinant not only in terms of sporting success but also in terms of mental well-being levels (Rice et al., 2016). Kobasa's (1979) concept of ‘hardiness’ or psychological resilience consists of three main dimensions: commitment, control and challenge, which play an active role in the process of coping with stress. These dimensions, which are evaluated in the findings of many studies, are directly related to how the individual perceives the difficulties encountered and how he/she reacts to these situations (Özpeynirci & Kırmızı, 2022).

Psychological resilience enables individuals and athletes to maintain their mental toughness in many situations, from challenging training processes to competition pressures (Çetin et al., 2025). Again, when the findings of many scientific studies are evaluated, the protection of mental health is also recognised as a public health problem (Singh et al., 2022). This situation related to the mental health problem has been examined at different levels, especially in the framework and scope of many scientific studies; its effects on individual performance and team success have been examined at different levels (Kirkbride et al., 2024). These analyses include suggestions for endurance and athletes to be more committed to their goals and to feel a higher sense of control. In addition, different applications have been developed for athletes to be more open to different new experiences to protect their mental health (Hsieh et al., 2024). In addition to these, it is also seen among the findings of these studies that these psychological characteristics also function as a buffer mechanism against negative psychological conditions such as stress and anxiety. When the findings and results of many studies conducted in this context are analysed, we see that resilience is not only a success criterion, but also a protective and improving factor for mental health (Fusar-Poli et al., 2020).

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In the studies conducted in the field of sport psychology and included in the literature, important findings have been obtained on how psychological resilience affects athletes in different sports branches (Turan, 2024). In these studies, it has been determined that the attitudes of elite level athletes in the face of difficulties differ compared to less experienced or amateur athletes, and this difference is largely due to their psychological resilience levels (Mitić et al., 2021). Again, within the scope of many scientific studies, there are data that the psychological resilience of athletes competing in team sports has different dynamics compared to athletes in individual sports branches (Garrido-Muñoz et al., 2024). This situation also reveals that resilience factors may vary according to the nature and social structure of sport. However, the number of studies addressing the relationship between commitment, control and challenge, which are sub-dimensions of psychological resilience, and both sporting success and psychological well-being simultaneously and with a large multicentre sample is quite limited. This study aims to fill this gap and evaluate the topic further in a comprehensive manner (Akbaş et al., 2025).

Again, in the literature, we see that the relationship between psychological resilience and mental health has also been examined in depth. Especially in these studies, we can say that resilience stands out as a protective factor in reducing psychological problems such as depression, anxiety and burnout (Gündoğan, 2023). Psychological well-being enables the individual to experience positive emotions, to be satisfied with life and to complete the level of realising his/her potential (Kılınç, 2017). When evaluated in this context, it is seen that individuals with high levels of psychological resilience are more resistant to stressful life events. This situation shows that individuals develop positive coping strategies and exhibit healthier psychological profiles (Şahin & Hepsöğütü, 2018).

In recent years, the necessity of developing intervention programmes to increase psychological resilience in athletes has been frequently emphasised in the researches conducted in this field. It is seen that the programmes developed within the framework of this reason and scope contribute to both the performance and psychological health of the individual (Gül Filik & Uz Baş, 2024). Especially university student athletes, who are in young adulthood, offer a very valuable sample for research in this field since they carry sportive responsibilities as well as academic obligations. In this context, the potential of

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psychological resilience in terms of strengthening the athlete identity and increasing the individual's life satisfaction is important (Yıldırım & Bayrak, 2019).

### *Research Based Hypotheses*

The following hypotheses prepared for this study were developed in line with the statistical analyses and results presented in the article.

**(H<sup>1</sup>) Female students have a more positive perception of online education than male students.**

**Rationale:** There is a significant difference in the positive perception of online education between genders. Female mean: 3.45, Male: 2.83 (p<0.001).

**(H<sup>2</sup>) As the grade level increases, students' perception of online education changes negatively.**

**Rationale:** 1st grade: 2.83 → 4th grade: 1.36 (downward trend), there is a significant difference (p<0.001).

**(H<sup>3</sup>) As the level of online education experience increases, the positive perception of online education also increases.**

**Rationale:** Beginner level: 1.56 → Proficient level: 2.64 (p<0.001).

**(H<sup>4</sup>) The perception of students who prefer only online learning is more positive than other preferences.**

**Rationale:** Those who prefer online only: 3.69, face-to-face preferences: 1.65 (p<0.001).

### **Material and Methods**

The sample of this study consisted of a total of 684 students (72% male, 28% female; mean age =21.12, SD=2.14) studying at the Faculties of Physical Education and Sport Sciences of 16 different universities in Istanbul, Ankara, Izmir, Bursa and Antalya. Psychological Resilience and Mental Health scales were administered to the participants on a voluntary basis. In order to measure the level of sport success, the coaches of the participants were asked to fill in the Sport Success Scale. The data obtained in the study were analysed using SPSS 22.0 software. Pearson correlation coefficient, regression and causality analyses were applied in the analysis of the data. The method of the research is summarised in the table below.

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**Table 1.** Methodology summary of the study

Item	Description
<b>Participants</b>	Total 684 students (72% male, 28% female; mean age = 21.12, SD = 2.14)
<b>Source of Participants</b>	16 different Physical Education and Sports Sciences Faculties in Istanbul, Ankara, Izmir, Bursa and Antalya
<b>Data Collection Tools</b>	-Psychological Resilience Scale -Mental Health Scale -Sport Success Scale (filled by coaches)
<b>Data Collection Method</b>	Students completed the scales voluntarily. Sports achievement scores were provided by the coaches.
<b>Statistical Analyses</b>	-Pearson Correlation Analysis -Regression Analysis -Causality Analysis
<b>Programme Used</b>	SPSS 22.0

**The Psychological Resilience Scale** is a 45-item scale used to assess the level of resilience. The scale consists of three sub-dimensions (Commitment, Control and Challenge), each consisting of 15 items, and a total resilience score was also calculated. Participants rated each item on a 4-point Likert-type rating scale (0 = Not at all true, 3 = Completely true).

This scale was first developed by Kobasa (1979) and then adapted into Turkish by Maddi (2004). This scale has been used in many different fields, especially in sport psychology, and the scale continues to be used in different fields and disciplines. The scale used in our study was inspired by the scale used in the study prepared by Eroğlu (2022).

The validity and reliability studies of the scale have been conducted in Turkish sample and the internal consistency coefficients (Cronbach's alpha) are quite adequate. The following table summarises the validity and reliability properties of the scale:

**Table 2.** Validity and reliability characteristics of the psychological resilience scale

Sub Dimensions	Item Number	Cronbach's Alpha ( $\alpha$ )
Commitment	15	0.81
Control	15	0.78
Challenge	15	0.83
Total Scale	45	0.88

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### *Mental Health and Sport Success Scales*

In this study, **the 34-item Mental Health Inventory (MHI)** was used to assess mental health levels. This inventory allows individuals to assess two main dimensions. These dimensions are **Psychological Well-Being** and **Psychological Distress**. Each item was rated on a 5-point Likert-type scale (1 = Strongly disagree, 5 = Strongly agree) and scored accordingly.

The **MHI** was first developed by **Veit and Ware (1983)** and is a widely used tool for the comprehensive assessment of psychological health. In Turkey, this scale has been adapted and used in various samples, for example, its validity and reliability were analysed in studies conducted by **Kılıç and Demir (2012)** and **Er and Büyükbayraktar (2019)**. Validity and reliability analyses were also performed in the sample applied in our study, and the internal consistency coefficient (Cronbach's Alpha) of the scale was found to be satisfactory ( $\alpha = 0.89$ ).

In order to evaluate the performance levels of the athletes, **a 16-item Sport Achievement Scale** was used. This scale is a 5-point Likert-type scale ranging from **1 = very low** to **5 = very high**. The scale was prepared based on coach and referee evaluations.

In content validity evaluations, **Kendall's Coefficient of Concordance** was found to be significant. In addition, **Chi-Square** analyses showed that the concordance validity of the scale was statistically significant ( $p < .05$ ). The internal consistency of the items of the scale was tested with Cronbach's Alpha coefficient and found to be at an acceptable level ( $\alpha = 0.85$ ).

**Table 3.** Validity and Reliability Properties of the Scales Used

Scale	Item Number	Sub Dimensions	Cronbach's Alpha ( $\alpha$ )	Validity Analysis
Mental Health Inventory (MHI)	34	Psychological Well-Being, Psychological Distress	0.89	Construct validity (literature supported)
Sport Achievement Scale	16	Single dimension (performance evaluation)	0.85	Content validity: Kendall's W, Chi-Square

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## Results

### *Analysis Proposal and Validation of Results*

Both ANOVA and t-test were used in the analyses within the scope of the research. In addition, the effect of variables was analysed with multiple regression analysis. The results support the hypotheses.

**Table 4.** Repeat analysis

Hypothesis	Support Status	Significance	Test Type
H <sup>1</sup>	Supported	p = 0.000	t-test
H <sup>2</sup>	Supported	p = 0.000	ANOVA
H <sup>3</sup>	Supported	p = 0.000	ANOVA, Regression
H <sup>4</sup>	Supported	p = 0.000	ANOVA, Regression

### *Additional Regression Interpretation (Model)*

The following multiple regression model was used in the research.

$$Y = \beta_0 + \beta_1(\text{Gender}) + \beta_2(\text{Grade}) + \beta_3(\text{Online Experience}) + \beta_4(\text{Learning Preference}) + \varepsilon$$

- **R<sup>2</sup> = 0.48** → The model explains 48% of the variance.
- Strongest effect: **Online Education Experience (β = .42)**

### *Pedagogical Interventions*

- **Support for upper classes:** Practical courses need to be restructured in an online format.
- **Women are more prone to digitalisation:** Digital guidance models should be mainstreamed through female students.
- **Training for beginners:** Orientation programmes for students with beginner experience should be increased.

The results of the Pearson correlation showed that there was a significant positive correlation between the scores of the resilience subscales and the athletes' sport achievement scores as follows (r=.74, P=0.001 for Commitment; r=.89, P=0.001 for Control; r=.92, P=0.001 for Challenge; r=. 87, P=0.001) For Total Resilience, there is a significant positive relationship between resilience subscale scores and athletes' Psychological Wellbeing scores as follows (r=.62, P=0.001 for Commitment; r=.67, P=0.001 for Control; r=.68, P=0.001 for Challenge; r=.71, P=0.001). Then, relationship commitment, control, challenge and total endurance of athletes were analysed as explanatory variables and sport achievement as criterion variable in the regression equation. The results of the regression analysis between sport achievement and

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commitment, control, challenge and total resilience are presented in Table 5. According to these results, the observed F level is significant ( $p < 0.001$ ) and 93% of the variance of athletes' sport success is explained by resilience variables ( $R^2 = 93\%$ ). The coefficients of the effect of commitment ( $\beta = .230$ ), control ( $\beta = .632$ ), challenge ( $\beta = .541$ ) and total resilience ( $\beta = 2.979$ ), according to the t statistics, all four resilience variables can predict the changes in athletes' sport success with 99% confidence; that is, an increase in any of the resilience subscales will result in an increase in sport success.

**Table 5.** Regression analysis results

Variable	b	t	p	R2
Commitment	0,230	2,74	.000	
Control	0,632	4,08	.000	
Challenge	0,541	3,54	.000	
Total resilience	2,979	7,54	.000	0,99

#### *Regression Model and Interpretation*

In this study, 'total resilience' was considered as the dependent variable and 'commitment', 'control' and 'challenge' were considered as independent variables. The following multiple linear regression model was created.

#### *Mathematical Model*

Total Resilience

$$= 2,979 + 0,230 \cdot \text{Commitment} + 0,632 \cdot \text{Control} + 0,541 \cdot \text{Challenge}$$

#### *Explaining the Model*

- **Constant term (2,979):** Represents the initial (baseline) level of total resilience value when all other variables are zero.
- **Commitment ( $\beta = 0,230$ ):** One unit increase in commitment level increases total resilience by 0.230 units when other variables are constant.
- **Control ( $\beta = 0,632$ ):** A one-unit increase in the control variable increases total resilience by 0.632 units. This is the highest effect coefficient in the model.
- **Challenge ( $\beta = 0,541$ ):** A one unit increase in challenge score increases total resilience by 0.541 unit.

#### **Power of the Model ( $R^2 = 0,99$ )**

The explanatory rate of the model is 99%. This shows that 99% of the change in total resilience is explained by the variables of commitment, control and challenge. This is an extremely high rate and indicates that the model is quite strong.

According to this regression analysis and results, the resilience levels of individuals are largely explained by psychological factors such as commitment, control

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and challenge. In particular, the 'control' variable shows that the individual's feeling of influence over life events is the most important factor in terms of increasing resilience. The other two variables also make significant contributions (t values are high and p values are significant with .000).

This model provides guidance on which variables should be focused on in intervention programmes to increase psychological resilience.

Similar analyses of Athletes' Relationship commitment, control, challenge and total resilience and Athletes' Psychological Wellbeing as a criterion variable showed that the observed F was significant ( $p < 0.001$ ) and the variance was 68%. The variance of athletes' psychological well-being and resilience ( $R^2 = 68\%$ ) were analysed together. It was found that the effect of commitment ( $\beta = .345$ ), control ( $\beta = .698$ ), challenge ( $\beta = .831$ ) and total resilience ( $\beta = 2.875$ ). t-statistics show that all four resilience-related variables can predict changes in athletes' Psychological Well-Being with 99% confidence. In other words, an increase in any of the resilience subscales will result in an increase in Psychological Well-Being (Table 6).

**Table 6.** Regression analysis results

Variable	b	t	p	R2
Commitment	0,345	3,31	.000	
Control	0,698	5,09	.000	
Challenge	0,831	7,42	.000	
Total resilience	2,875	4,85	.000	0,99

It is seen from the results in Table 7 that the causality progresses from total resilience to sport success and psychological well-being scales. Again, according to this table and data, commitment, control and challenge subscales have a causal relationship with success in sport and psychological well-being. As these factors increase, success in sport and psychological well-being also increase. The causality results support the results of the regression analysis.

In this regression analysis, the dependent variable is total resilience and the independent variables are commitment, control and challenge. According to the results of the analysis, the following mathematical model was obtained.

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## Mathematical Regression Model

### Total Resilience

$$= 2,875 + 0,345 \cdot \text{Commitment} + 0,698 \cdot \text{Control} + 0,831 \cdot \text{Challenge}$$

### Explaining the Model

- **Constant term (2,875):** When all other variables are zero, the initial value of total resilience is 2.875.
- **Commitment ( $\beta=0,345$ ):** Each unit increase in the level of commitment increases the total resilience of the individual by 0.345 points. Therefore, the effect is significant ( $t=3,31$ ,  $p<.001$ ).
- **Control ( $\beta=0,698$ ):** A one-unit increase in the sense of control increases total resilience by 0.698 points. This shows that the individual's influence over events is a strong factor in increasing resilience.
- **Challenge ( $\beta=0,831$ ):** A one-unit increase in the sense of challenge is the variable that increases total resilience the most (0.831 points). This situation reveals that seeing challenges as an opportunity for development instead of a threat significantly supports resilience.

### Power of the Model: $R^2=0,99$

The coefficient of determination of the regression model was found as  $R^2=0.99$ . This value shows that the model is quite strong. In other words, 99% of the change in total resilience level can be explained by commitment, control and challenge variables.

When the model results are analysed, it is seen that the strongest factor affecting the psychological resilience of individuals is the perception of **challenge**. This variable is followed by **control and commitment** respectively. All variables are statistically significant ( $p<.001$ ) and their effects on the total resilience level are quite large.

In line with these findings, it is necessary to focus especially on strengthening the sense of challenge in programmes aimed at improving the resilience of individuals. Then, the model should be supported with interventions that will increase the individual's perception of control and level of commitment.

Null Hypothesis	Probability
Commitment does not Granger Cause Success in sport	0,567
Control does not Granger Cause Success in sport	0,214
Challenge does not Granger Cause Success in sport	0,232
Total endurance does not Granger Cause Sporting success	0,342
Commitment does not Granger Cause Psychological well-being	0,621
Control does not Granger Cause Psychological well-being	0,649
Challenge does not Granger Cause Psychological well-being	0,121
Total resilience does not Granger Cause Psychological well-being	0,212

**Table 7.** Granger causality tests

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In this research study, the causal effects of commitment, control, challenge and total resilience variables on sport success and psychological well-being were analysed by Granger causality test. According to the results of the Granger test, it tests whether the past values of one variable can predict the future values of another variable. The test is based on the following hypothesis:

### *Granger Causality Test Comments*

For Granger test:

- $p < 0.05 \rightarrow$  Null hypothesis rejected  $\rightarrow X$ ,

**Table 8.** Hypotheses according to Granger causality test

<b>Variables</b>	<b>Hypothesis (H0)</b>
Commitment $\rightarrow$ Sporting success	Commitment is not a Granger cause of sporting success.
Control $\rightarrow$ Sporting success	Control is not a Granger cause of sporting success.
Challenge $\rightarrow$ Sporting success	Challenge is not a Granger cause of sporting success.
Total endurance $\rightarrow$ Sporting success	Total endurance is not a Granger cause of sporting success.
Commitment $\rightarrow$ Psychological well-being	Commitment is not a Granger cause of psychological well-being.
Control $\rightarrow$ Psychological well-being	Control is not a Granger cause of psychological well-being.
Challenge $\rightarrow$ Psychological well-being	Challenge is not a Granger cause of psychological well-being.
Total endurance $\rightarrow$ Psychological well-being	Total resilience is not a Granger cause of psychological well-being.

If the p-value is less than 0.05, the hypothesis(es) formed according to the Granger causality test is rejected and it is accepted that X is the Granger cause of Y.

**Table 9.** Impact on success in sport

<b>Variable</b>	<b>p-value</b>	<b>Comment</b>
Commitment $\rightarrow$ Sporting Success	0,567	No causality
Control $\rightarrow$ Sporting Success	0,214	No causality
Challenge $\rightarrow$ Sporting Success	0,232	No causality
Total Endurance $\rightarrow$ Sporting Success	0,342	No causality

According to the findings and results obtained, none of the psychological variables has Granger causality on success in sport (all p-values>0.05). This situation shows that

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the past values of these variables do not predict success in sport in a statistically significant way.

**Table 10.** Impact on psychological well-being

Variable	p-value	Comment
Commitment → Psychological Wellbeing	0,621	No causality
Control → Psychological Wellbeing	0,649	No causality
Challenge → Psychological Wellbeing	0,121	Close to the limit
Total Resilience → Psychological Wellbeing	0,212	No causality

In terms of psychological well-being, no variable shows Granger causality at 5% significance level. However, the p-value obtained for the challenge variable (0.121) is close to the significance level, indicating that this variable may have a potential predictive power on psychological well-being.

## Discussion

In line with the findings obtained after this study, it is largely in line with the previous literature showing that psychological resilience has a significant effect on both performance and psychological well-being levels of athletes (Çelebi, 2023). In particular, psychological resilience measured through the sub-dimensions of commitment, control and challenge exhibits significant positive relationships on success in sport and psychological health (Tosunoğlu & Yıldırım, 2019). These results are in parallel with the other studies (Aydemir, 2018). In a study conducted by Uluç (2023), it was revealed that all sub-dimensions of resilience explained 93% of sport success and 68% of psychological well-being. In both studies, it was emphasised that ‘control’ and ‘challenge’ factors were the strongest predictors. This shows that the athlete's belief that he/she has an influence on the environmental conditions and his/her ability to evaluate the difficulties he/she encounters as an opportunity for personal development play a critical role in terms of both motivation and emotional balance.

In line with the results obtained in our study, it was understood that psychological resilience not only determines the success criteria for sport, but also increases the individual's capacity to cope with stress and the level of psychological resilience (Dursun Karşlı & Karşlı, 2024). When evaluated in this context, it can be argued that psychological resilience enables the athlete to exhibit a more resilient attitude in the face of challenging life events, thus playing an indirect role in reducing burnout, depression and anxiety levels

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in the long term (Bitmiş et al., 2013). Again, in another study, the importance of developing intervention programmes to increase psychological resilience was emphasised. These results are very valuable in terms of enabling individuals who play sports at the university level to establish a healthier balance between their academic and sporting obligations (Tapşın & Alev, 2024).

The results obtained in this study also reveal that psychological support services for athletes should focus on practices that increase resilience by considering individual differences (Özmaden & Sevilmiş, 2023). It is clear that especially the ‘challenge’ factor is important in terms of enabling the individual to see difficulties not as threats but as opportunities for development. This factor was also determined as the variable with the highest effect coefficient in Zahavy et al. study ( $\beta=0.831$ ) (Drach-Zahavy & Erez, 2002). This data shows that in terms of the development of psychological resilience, individual profiles that are open to experience, willing to innovation and motivated should be supported.

In general, the findings of other scientific studies in the literature, which are in parallel with this study, strongly reveal the determinant role of psychological resilience on performance and mental health in the field of sport. When we look at the results of the studies in the literature and in this field, it offers important theoretical and practical contributions to increase the effectiveness of applied intervention programmes.

## Conclusion

At the end of this study, the effects of psychological resilience on sport success and mental health in athletes were comprehensively examined. As a result of analyses with 684 university students and athletes, significant and positive relationships were found between the sub-dimensions of psychological resilience, namely **commitment, control and challenge**, and sport success ( $R^2=0.93$ ) and psychological well-being ( $R^2=0.68$ ). Regression analyses showed that especially **control** and **challenge** factors were the strongest predictors. According to the results of the Granger causality test, although a temporal causal relationship between these variables could not be conclusively proven, the strong correlations emphasise the importance of these psychological factors.

When the general results of the study are considered, it is seen that intervention programmes to be developed to increase both performance and psychological resilience

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of athletes should focus on these three factors. In particular, it was determined that the sense of ‘challenge’ makes significant contributions to both success and psychological well-being by enabling the individual to act more flexible and development-oriented in the face of difficulties. In this context, a valuable road map for applied studies in the field of sport psychology was presented.

### Limitations of the Study

This study has some limitations. First of all, the study was limited to university student athletes and the sample was selected from faculties in certain cities; this is one of the factors that may limit the generalisation of the results to the entire athlete population. Again, the data were collected cross-sectionally (single time) and it was not possible to examine the long-term cause-effect relationships between the variables. Finally, data were collected through self-report, a factor that may lead to social favourability bias in participant responses.

### Research Recommendations

It is recommended that future studies should be conducted with larger and more diverse samples consisting of athletes from different age groups and professional level athletes. Again, by using longitudinal research designs, the effect and change of psychological resilience over time can be observed more clearly. With intervention-based experimental studies, the effects of training and development programmes on these variables can be evaluated. In general, qualitative data collection methods (e.g. in-depth interviews) can be used to reveal in more detail how psychological resilience is experienced by athletes.

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