

Relationship between psychological resilience and stress coping strategies in karate athletes

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Abstract

The aim of this research was to examine the psychological resilience and stress coping strategies of Karate athletes according to some demographic variables and to determine the relationship between them. A sample of 104 (54 females and 50 males, mean age 19.85 ± 4.10 years) Karate athletes who trained in different sport clubs in Turkey were recruited. The *Brief Resilience Scale (BRS)* (Smith et al., 2008) and the *Stress Coping Scale (SCS)* (Şahin & Durak, 1995) were used for data collection. Descriptive statistics, *t*-test and correlation analyses were used for data analysis. Participants' psychological resilience was at mid-level, while the SCS *self-confident approach* and *seeking social support* sub-dimensions were at high and low level respectively. The athletes' psychological resilience and stress coping strategies differed significantly according to gender. There was a positive and low significant correlation between experience and psychological resilience, in contrast a to negative and low significant correlation found between experience and *helpless approach* SCS sub-dimension. Middle and positive correlation was observed between age and psychological resilience. Finally, there were positive and middle significant correlations between psychological resilience and *self-confident approach* and *optimistic approach*, and a negative and middle significant correlation between psychological resilience and *helpless approach* SCS sub-dimensions.

Keywords: Martial arts; combat sports; karate; stress; resilience; coping strategies.

Relación entre resiliencia psicológica y estrategias de afrontamiento del estrés en karatekas

Resumen

Esta investigación analiza la resiliencia psicológica y las estrategias de afrontamiento del estrés en karatekas según diversas variables demográficas y determina la relación entre ellas. Un total de 104 karatekas (54 mujeres y 50 hombres, edad media $19,85 \pm 4,10$ años) de diferentes clubes deportivos turcos participaron en el estudio, en el que se administró la *Brief Resilience Scale (BRS)* (Smith et al., 2008) y la *Stress Coping Scale (SCS)* (Şahin & Durak, 1995). El análisis estadístico incluyó estadística descriptiva, pruebas *t* y correlaciones. La resiliencia psicológica de los participantes se situó en un nivel medio, mientras que sus niveles de *autoconfianza* y *búsqueda de apoyo social*, en relación al afrontamiento del estrés, fueron altos y bajos respectivamente. La resiliencia psicológica y las estrategias de afrontamiento del estrés difirieron significativamente según el género. Se observó una correlación positiva y baja significativa entre nivel de experiencia y resiliencia psicológica, en contraste con la correlación negativa y baja significativa hallada entre nivel de experiencia y la subdimensión del SCS de *indefensión*. Se observó una correlación media y positiva entre edad y resiliencia psicológica. Finalmente, se hallaron correlaciones positivas y medias significativas entre resiliencia psicológica y *autoconfianza* y *optimismo*, y una

Relação entre resiliência psicológica e estratégias de enfrentamento do estresse no karatecas

Resumo

Esta pesquisa analisa a resiliência psicológica e as estratégias de enfrentamento do estresse em karatecas de acordo com diversas variáveis demográficas e determina a relação entre elas. Participaram do estudo 104 karatecas (54 mulheres e 50 homens, idade média de $19,85 \pm 4,10$ anos) de diferentes clubes esportivos turcos. Foi aplicada a *Brief Resilience Scale (BRS)* (Smith et al., 2008) e a *Stress Coping Scale (SCS)* (Şahin & Durak, 1995). A análise estatística incluiu estatísticas descritivas, testes *t* e correlações. A resiliência psicológica dos participantes encontra-se em nível médio, enquanto os níveis de *autoconfiança* e *busca de suporte social*, em relação ao enfrentamento do estresse, são altos e baixos, respectivamente. A resiliência psicológica e as estratégias de enfrentamento do estresse diferiram de acordo com o gênero significativamente. Uma correlação positiva e baixa significância observou-se entre nível de experiência e resiliência psicológica, em contraste com a correlação negativa e baixa significância encontrada entre nível de experiência e subdimensão SCS de *desamparo*. Observou-se correlação média e positiva entre idade e resiliência psicológica. Finalmente, correlações positivas e médias significativas foram encontradas entre resiliência psicológica e *autoconfiança* e *otimismo*, e uma correlação

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correlación negativa y media significativa entre resiliencia psicológica e *indefensión*.

Palabras clave: Artes marciales; deportes de combate; kárate; estrés; resiliencia; estrategias de afrontamiento.

negativa e média significativa entre resiliência psicológica e *desamparo*.

Palavras-chave: Artes marciais; esportes de combate; karatê; estresse; resiliência; estratégias de enfrentamento.

1. Introduction

The concept of *psychological resilience*, which includes individuals' capacity to cope with difficulties in their daily life and the ability to recover themselves after difficult experiences (Jin & Wang, 2018), has been increasingly addressed in the fields of psychology (Karairmak, 2006), education (Aydın, Öncü, Akbulut & Küçük Kılıç, 2019; Çetin, 2019), work (Terte & Stephens, 2014) and sport (Erim & Küçük, 2017; Galli & Gonzalez, 2014; García, Vallerino, & Montero, 2014; Greco, Cataldi & Fischetti, 2019; Ortega et al., 2017; Ramirez-Granizo et al., 2020; Ruiz-Barquín, García Remis & Gutiérrez García, 2018; Ruiz-Barquín, Plura Maldonado & Gutiérrez García, 2019; Ruiz, de la Vega, Poveda, Rosado, & Serpa, 2012; Ruiz-Barquín, del Campo Vecino, & de la Vega Marcos, 2015; Ruiz-Barquín, Robles, García & Gutiérrez-García, 2018; Sarkar, 2017; Şahin & Güçlü, 2018). Especially in the studies in the psychology literature in recent years, positive perspectives that investigate and reveal the strengths of individuals rather than their weaknesses have become dominant (Karairmak, 2006). In this context, the concept of psychological resilience is also associated with positive psychology and it is defined as the positive psychological capacity that the individual has to recover from uncertainty, conflict, failure and increased responsibility (Luthans, 2002). Psychological resilience is also defined as the rapid recovery of the individual after a negative event (Bonanno, Brewin, Kaniasty, & La Greca, 2010), or that the individual remains psychologically healthy and stable despite being exposed to a negative event (Bonanno, 2004). On the other hand, it can be defined as the individual's self-recovery ability against difficult life conditions (Garmezy, 1991) and factors that reduce the negative effects of stress on the individual and support the adaptation of the individual (Jacelon, 1997).

Psychological resilience has become an important concept in terms of sports psychology (Solomon, 2015) and studies on psychological resilience of athletes have started to increase in recent years (Bingöl & Bayansalduz, 2016; Çutuk, Beyleroğlu, Hazar, Akkuş Çutuk & Bezci, 2017; Fletcher & Sarkar, 2012; Galli & Gonzalez, 2015; Galli & Vealey, 2008; Hosseini & Besharat, 2010; Johnson, 2015). In this context, it has been thought that not only physical capacity can be sufficient for an athlete to succeed in sport, but also high psychological resilience is needed (Şahin & Güçlü as cited in Küçük et al., 2015). Similarly, it is stated that an effective performance including the technical, tactical, conditional and psychological preparation of the athlete is required for succeeding in sports and, for this reason, the athletes prepare psychologically as well as physically before competition (Özdemir, 2019). Research shows that athletes with high psychological resilience have lower anxiety levels compared to those with low resilience (Martin-Krumm, Sarrazin, Peterson & Famose, 2003), they use strategies to face and solve problems rather than avoid them (Belem et al., 2015; Yi, Smith & Vitaliano, 2005) and have higher self-concept and self-esteem (Mummery, Schofield & Perry, 2004). It is also stated that psychological resilience plays an important role in dealing with and relieving stress, which is accepted as a determinant of success in sports (Codonhato, Vissoci, Junior, Mizoguchi & Fiorese, 2018). On the other hand, it is thought that resilience is a factor that positively interferes in the athletes' stress/recovery processes. Thus, resilience can be considered one of the essential characteristics for athletes to deal and overcome demands of competitive sport (Codonhato et al., 2018). Psychological resilience is frequently mentioned in studies to determine the reactions of individuals to stress (Moran & Eckenrode, 1992; Rew, Taylor-Seehafer, Thomas & Yockey, 2001; Tugade & Frederickson, 2004), and the effect of psychological factors in the context of stress process is generally conceptualized as psychological resilience (Fletcher & Sarkar, 2013). In this context, it is stated that athletes under stress should especially recognize their stress and choose and use coping strategies that will enable them to effectively cope with stress (Dugdale, Eklund & Gordon, 2002). Coping with stress is a concept frequently used in sports in recent years (Arşan & Koruç, 2009), defined as behavioral and cognitive efforts to overcome the difficulties and needs in the world of the individual and to keep him under control (Lazarus & Folkman, 1984). It is stated that the positive effect of sports, especially in the physiological and psychological sense, positively affects their ability to cope with stress (Yeltepe, 2007). In this context, studies have shown that people who exercise



regularly have low levels of depression and anxiety, have higher ability to cope with stress (Scully, Kremer, Meade, Graham & Dudgeon, 1998; Hassmen, Koivula & Uutela, 2000) and higher resilience (Greco, Fischetti, Cataldi & Latino, 2019; Johnson, 2015).

As a result of the literature review, despite the importance of psychological resilience and stress coping strategies in sport, few studies have examined these variables in athletes (Akman, 2019; Alincak & Abakay, 2015; Arsan & Koruç, 2009; Arslan, 2016; Campen & Roberts, 2001; Codonhato et al., 2018; Erim & Küçük, 2017; Fletcher & Sarkar, 2012; Fountain, 2017; Hammermeister & Burton, 2004; Hosseini & Besharat, 2010; Karademir & Açak, 2019; Özdemir, 2019; Sarkar & Fletcher, 2014; Secades et al., 2016; Şahin & Güçlü, 2018; Tazegül, 2015; Yoo, 2001). Moreover, there has been little research on the martial arts (Greco, Fischetti, Cataldi & Latino, 2019; Litwic-Kaminska, 2013; Özdevecioğlu & Yalçın, 2010; Radochonski, Cynarski, Perenc & Siorek-Maslanka, 2011; Üstün, Gümüştül, Demirel & Göral, 2014), especially about Karate (Boghrabadi, Arabameri & Sheikh, 2015; Turgut, 2016). In this context, it is thought that knowing psychological resilience and stress coping strategies will contribute to increase performance and fill an important gap in the literature. The performances of athletes may differ across competitions under the pressure of heavy training and anxiety for success. In order to minimize these performance fluctuations, deal with sport-specific challenges and eventually succeed, the athlete must increase its levels of psychological endurance (Sheard, 2013). And beside this, it is stated that psychological resilience has a relevant role in coping with stress and the athletes' recovery, highlighting its importance in the understanding of these variables (Codonhato et al., 2018). From this point of view, the aim of this research was to examine the psychological resilience and stress coping strategies of Karate athletes according to some variables and to determine the relationship between them. For this purpose, answers to the following questions were sought.

1. What are the levels of coping and psychological resilience of the participants?
2. Do the participants' coping with stress and resilience differ significantly by gender?
3. Are there significant relationships between the participants' experience in practicing sports and their coping with stress and psychological resilience?
4. Are there significant relationships between the participants' age and their coping with stress and psychological resilience?
5. Is there a significant relationship between the participants' age and their coping with stress and psychological resilience?

2. Methods

This was an empirical, quantitative, cross-sectional, descriptive study of populations through survey research (Montero & León 2007).

2.1. Participants

A total of 104 (54 women, 50 men) Karate athletes, selected by easy sampling method in Turkey, 2019, participated in this study. Their average age was 19.85 ± 4.10 years-old and their mean experience in doing sports was 6.51 ± 4.56 years. Up to 92 participants were licensed athletes, while 12 of them were not. In addition, 15 participants stated that they were national-level athletes. It was considered that the experience and the belt level usually develop in parallel, so no differentiation was made according to belt rank.

2.2. Data collection tools

Socio-demographic questionnaire: A simple socio-demographic questionnaire was used. It consisted of questions about the participants' gender, age, status of being a licensed athlete, experience and being a national athlete.

Brief Resilience Scale (BRS): The BRS developed by Smith et al. (2008) and adapted to Turkish by Doğan (2015) was used to measure the participants' psychological resilience levels. Although there are different scales developed on the subject in the literature, the BRS was selected as it is



widely used, it is composed of few items and is an up-to-date tool. The scale, which is a self-report measurement tool, has a single sub-dimension structure consisting of six items, and is scored in a 5-point Likert scale. Items 2, 4 and 6 in the scale are coded in reverse. The lowest score that can be obtained from the scale is 6 and the highest score is 30. Higher scores indicate higher psychological resilience, while lower scores indicate lower psychological resilience. The Cronbach Alpha internal consistency coefficient of the scale calculated on the data collected within the evaluated research was 0.76.

Coping Style Scale (SCS): The *Ways of Coping Inventory* questionnaire, developed by Folkman and Lazarus (1980) and adapted to Turkish as *Stress Coping Scale* by Şahin and Durak (1995), was used to measure the way athletes coped with stress. This scale was used because it has been widely used and fitted well to our study purposes. The scale consists of 30 items and 5 sub-dimensions: *self-confident approach* (7 items), *optimistic approach* (5 items), *helpless approach* (8 items), *submissive approach* (6 items) and *seeking social support* (4 items). It is scored in a 4-point Likert scale. The Cronbach Alpha internal consistency coefficients of the scale calculated on the data collected within the evaluated research were 0.82 for the *self-confident approach*, 0.63 for the *optimistic approach*, 0.74 for the *helpless approach*, 0.62 for the *submissive approach* and 0.62 for the *seeking of social support* sub-dimensions. According to Özdamar (2002), these were acceptable (between $0.60 \leq \alpha < 0.70$) or medium ($0.61 < \alpha < 0.80$) reliability levels.

2.4. Procedure

The principle of volunteering was taken as a basis for participation. All participants were informed verbally and in writing about the study purposes and procedures, and also that they could quit the study at any time. Once informed consent was obtained the questionnaires were administered in a single session for each participant or group. They were also informed that parental consent form was not taken, for those participants under 18 years-old, because of using of noninvasive methods, keeping participant information confidential and not using methods such as voice/image recording or interview. The full procedure was developed with the knowledge of the club coaches and the Turkish Karate Federation.

2.5. Statistical analysis

The statistical analyses were carried out with SPSS 21 program. Descriptive statistics (frequency, mean, standard deviation), *t*-test and Pearson's correlation tests were used. Skewness and kurtosis values were examined in deciding whether the data satisfied or not the prerequisites for conducting parametric test. The normality coefficient value was taken as |1| in this study (Büyüköztürk, 2012). Cronbach Alpha internal consistency coefficients were also calculated to determine the reliability of the scales. The significance level was set at $p < 0.05$.

3. Results

Participants' mean score for BRS was 3.50 ± 0.71 . The scores for SCS subdimensions showed that the *self-confident approach* sub-dimension had the highest mean (3.36), while the *seeking for social support* sub-dimension had the lowest (2.05). The skewness and kurtosis values showed that the data were distributed within the area of normalcy (Table 1).

Table 1. Descriptive Statistics for the BRS and SCS.

	<i>M</i>	<i>SD</i>	<i>Skewness</i>	<i>Kurtosis</i>	<i>Min</i>	<i>Max</i>
BRS	3.50	0.71	0.05	0.45	1.17	5.00
Self-confident approach	3.36	0.41	-0.11	-0.11	2.14	4.00
Optimistic approach	3.10	0.45	-0.18	0.42	1.80	4.00
Helpless approach	2.65	0.53	-0.31	0.24	1.00	3.88
Submissive approach	2.92	0.49	-0.24	0.13	1.33	4.00
Seeking for social support	2.05	0.55	0.46	0.81	1.00	4.00

Results from the *t*-tests indicated that males scored significantly higher than females in the BRS and the *self-confident approach* and *optimistic approach* SCS sub-dimensions (Table 2).



Table 2. Results of *t*-test according to gender.

	Female (n=54)		Male (n=50)		<i>t</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
BRS	3.32	0.73	3.70	0.65	2.74	0.007**
Self-confident approach	3.27	0.36	3.46	0.43	2.47	0.015*
Optimistic approach	2.95	0.40	3.25	0.44	3.60	0.000***
Helpless approach	2.70	0.51	2.60	0.55	0.97	0.336
Submissive approach	2.98	0.44	2.86	0.54	1.16	0.247
Seeking for social support	2.07	0.59	2.03	0.50	0.37	0.715

p*<0.05; *p*<0.01; ****p*<0.001

A positive, low significant correlation was found between experience and psychological resilience, while there was a negative, low significant correlation between experience and *helpless approach* SCS sub-dimension. There was a positive and middle significant correlation between age and psychological resilience (Table 3).

Table 3. Correlations between experience and age with BRS and SCS.

	<i>Experience</i>		<i>Age</i>	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
BRS	0.20	0.042*	0.31	0.002**
Self-confident approach	0.15	0.119	0.19	0.054
Optimistic approach	0.07	0.510	0.16	0.112
Helpless approach	-0.22	0.025*	-0.09	0.367
Submissive approach	-0.11	0.271	-0.17	0.080
Seeking for social support	-0.05	0.640	-0.02	0.846

n=104; **p*<0.05; ***p*<0.01

Correlation between BRS and SCS sub-dimension scores are presented in Table 4. There were positive, middle significant correlations between psychological resilience and *self-confident approach*, *optimistic approach* and a negative, middle significant correlation with *helpless approach*.

Table 4. Correlations between BRS and SCS.

	<i>r</i>	<i>p</i>
Self-confident approach	0.33**	0.001***
Optimistic approach	0.35**	0.001***
Helpless approach	-0.48**	0.001***
Submissive approach	0.11	0.281
Seeking for social support	-0.15	0.119

n=104; ****p*<0.001

4. Discussion

The findings obtained from this study, which was carried out to examine the psychological resilience and stress coping strategies of Karate athletes according to some variables and to determine the relationship between them, are discussed and interpreted in the light of the literature in this section.

First, it can be said that the scores of the participants were relatively at a middle level. Güvendi, Türksoy, Güçlü and Konter (2018) determined that professional wrestlers' mental endurance levels were high. Koçak, Atlı Özbaş and Gürhan (2017) found that the level of psychological resilience of physical education and sports students participating in inter-university football competitions was at middle level. In Özdemir's (2019) study on elite athletes, it was determined that the level of psychological resilience of the participants was at middle level too. On the other hand, it was determined that the participants mostly used self-confidence strategies to cope with stress, while the lowest was searching for social support strategies. In the study conducted by Ruiz-Barquín et al. (2018) in order to define the psychological profile of competitive mixed martial arts athletes, it was found that the psychological resilience levels of the participants were very high. In another study conducted by Ruiz-Barquín et al. (2018) on judo competitors, it was found that the psychological resilience levels of the participants were high. In another study conducted on judo



competitors, 38% of the participants showed high psychological resilience (García et al., 2014). This difference between the results is thought to be due to the characteristics of the samples. Further studies could overcome the limitations of this study by including performance level or similar variables.

According to our results, the perception of psychological resilience of male participants was higher than the female participants. Codonhato et al. (2018) also found differences in resilience between males and females. Some studies found that male participants' perception of psychological resilience was higher than for females (Fountain, 2017; Karademir & Açak, 2019; Ortega et al., 2017; Özdemir, 2019; Ramirez-Granizo et al., 2020). In the studies conducted by Bingöl and Bayansalduz (2016) and Hosseini and Besharat (2010), it was found that psychological resilience does not differ by gender. On the other hand, according to the results obtained on our study, male participants' strategies for coping with stress were higher than those of females. Similarly, in some studies male participants were found to have high levels of coping with stress (Akman, 2019; Alıncak & Abakay, 2015). Çutuk et al. (2017), Turgut (2016) and Üstün et al. (2014), on the contrary, determined that female participants had high levels of coping with stress. In the study conducted by Arsan and Koroç (2009), it was determined that gender was an effective variable regarding strategies to cope with stress, and male and female participants used different ways to cope with stress. The differences between women's and men's emotional structure and roles in social life may have an impact on this finding.

The results obtained from this study showed that there was a positive and low-level relationship between experience and the perception of psychological resilience. Güvendi et al. (2018) found that wrestlers with less years of sport experience had higher mental endurance levels, while Yarayan, Yıldız and Gülşen (2018) concluded that athletes with more years of sport experience had higher mental endurance. Regarding coping with stress, and according to our results, as experience increases, the sub-dimension scores of *helpless approach* decreases. In the study conducted by Çutuk et al. (2017), no relationship was found between experience and psychological resilience. In the study conducted by Akman (2019), it was determined that, as sports experience increased, the use of strategies to deal with stress increased too. Due to the complex nature of the sport realm, athletes constantly face many physically and psychologically stressful situations. In this context, individuals who exercise for a longer period of time may gain more competition experience and face more such stressful situations. This can be thought to have made positive contributions for them to psychologically cope with stress.

We found a positive and middle significant relationship between age and psychological resilience. Similarly, in the study conducted by Karademir and Açak (2019), it was determined that age was effective on psychological resilience and the psychological resilience levels of those who were older were higher. On the other hand, Yarayan et al. (2018) concluded that older participants had higher levels of mental endurance. Contrary to these findings, studies by Fountain (2017) and Şahin and Güçlü (2018) did not find a relationship between age and psychological resilience. In addition, the study conducted by Çutuk et al. (2017) found that psychological resilience decreased according to age. Another finding obtained from our study is that there were no relationship between age and strategies to cope with stress. Similarly, there was no significant relationship between age and stress coping strategies in Alıncak and Abakay's (2015) study. In the study conducted by Turgut (2016), it was determined that the use of strategies to deal with stress increases with increasing age. This finding can be interpreted as the increase in life experience with the increase of age, as well as the strategies developed by people to overcome the difficulties they encounter, both increase their psychological resilience and allow them to cope more easily with stress.

A positive relationship was found between psychological resilience and style of coping with stress, specifically for the *self-confidence approach* and *optimism approach* sub-dimensions. Also, a negative correlation was found between psychological resilience and *helpless approach* sub-dimension. In the same line, Litwic-Kaminska (2013) found a positive relationship between participants' psychological resilience and ways of dealing with stress. In this context, it can be said that people who consider themselves to be psychologically resilient exhibit more confident attitudes in the face of problems, do not feel helpless and think more optimistically that they will always find a way out.



5. Conclusion

This study characterized the resilience and the coping with stress style in a sample of Turkish karateka, studied them according to participants' gender, age and experience, and analyzed their relationship. Our results add more evidence in this field which, at the moment, shows contrasting results. The fact that the sample group included in our study was relatively small can be considered its main limitation. In this context, it may contribute to the literature to include different and larger sample groups, athletes competing in different categories, and different sports modalities. In addition, designing the study in a mixed-methods approach, including qualitative research, could contribute to the interpretation of the results in more depth. In this way, it may be possible to have an idea about how people make sense of the concept of resilience, how they follow a way to improve themselves and how they reflect this to sport competition. Planning such studies could contribute to improve the athletes' psychological and physical performance.

References

- Akman, D. (2019). The relationship of mental toughness with imagery, self-talk, and coping strategies in adult athletes. Unpublished master thesis. Marmara University, İstanbul, Turkey.
- Alıncak, F. & Abakay, U. (2015). A comparison of stress management levels of individuals playing team sports and doing individual sports. *The Journal of Academic Social Science*, 3(16), 333-345. doi: [10.16992/ASOS.781](https://doi.org/10.16992/ASOS.781)
- Arsan, N. & Koruç, Z. (2009). Determining athletes' strategies of coping with stress. *Turkish Journal of Sport Medicine*, 44, 131-138.
- Arslan, Ş. (2016). Comparison of the styles of coping with stress among individual and team athletes. *Journal of Human Sciences*, 13(3), 4221-4228. doi: [10.14687/jhs.v13i3.4033](https://doi.org/10.14687/jhs.v13i3.4033)
- Aydın, İ., Öncü, E., Akbulut, V. & Küçük Kılıç, S. (2019). Psychological resilience and leisure boredom perception in pre-service teacher. *Atatürk University Journal of Physical Education and Sport Science*, 21(1), 39-53.
- Belem, I. C., Caruzzo, N. M., Nascimento Júnior, J. R. A., Vieira, J. L. L & Vieira, L. F. (2015). Impact of coping strategies on resilience of elite beach volleyball athletes. *Revista Brasileira de Cineantropometria & Desempenho Humano*, 16(4), 447-55. doi: [10.5007/1980-0037.2014v16n4p447](https://doi.org/10.5007/1980-0037.2014v16n4p447)
- Bingöl, E. & Bayansalduz, M. (2016). Evaluating the level of exercise dependence and psychological resilience of athletes from different branches. *Anthropologist*, 24(3), 827-835. doi: [10.1080/09720073.2016.11892079](https://doi.org/10.1080/09720073.2016.11892079)
- Boghrabadi, S. G., Arabameri, E. & Sheikh, M. (2015). A comparative study on resiliency and stress coping strategies among individual and team elite athletes and non-athletes. *International Journal of Review in Life Sciences*, 5(3), 566-572.
- Bonanno, G. A. (2004). Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist*, 59, 20-28. doi: [10.1037/0003-066X.59.1.20](https://doi.org/10.1037/0003-066X.59.1.20)
- Bonanno, G. A., Brewin, C. R., Kaniasty, K. & La Greca, A. M. (2010). Weighing the costs of disaster: Consequences, risks, and resilience in individuals, families, and communities. *Psychological Science in the Public Interest*, 11, 1-49. doi: [10.1177/2F1529100610387086](https://doi.org/10.1177/2F1529100610387086)
- Büyükköztürk, S. (2012). *Sosyal bilimler için veri analizi el kitabı*. [Manual of data analysis for social sciences]. Ankara: Pegem Akademi. (in Turkish).
- Campan, C. & Roberts, D. C. (2001). Coping strategies of runners: perceived effectiveness and match to pre-competitive anxiety. *Journal of Sport Behavior*, 24, 144-161.
- Çetin, E. (2019). Teachers psychological resistance and relationship between stress and coping styles. Unpublished master thesis, Marmara University, İstanbul, Turkey.
- Codnhato, R., Vissoci, J. R. N., Junior, J. R. A. D. N., Mizoguchi, M. V. & Fiorese, L. (2018). Impact of resilience on stress and recovery in athletes. *Revista Brasileira de Medicina do Esporte*, 24(5), 352-356. doi: [10.1590/1517-869220182405170328](https://doi.org/10.1590/1517-869220182405170328)
- Çutuk, S., Beyleroğlu, M., Hazar, M., Akkuş Çutuk, Z. & Bezci, Z. (2017). The investigation of the relationship between psychological resilience levels and anxiety levels of Judo athletes. *Niğde University Journal of Physical Education and Sport Sciences*, 11(1), 109-117.



- Doğan, T. (2015). Adaptation of the brief resilience scale into Turkish: A validity and reliability study. *The Journal of Happiness & Well-Being*, 3(1), 93-102.
- Dugdale, J. R., Eklund, R. C. & Gordon, S. (2002). Expected and unexpected stressors in major international competition: Appraisal, coping, and performance. *The Sport Psychologist*, 16(1), 20-33. doi: [10.1123/tsp.16.1.20](https://doi.org/10.1123/tsp.16.1.20)
- Erim, V. & Küçük, H. (2015). A comparison of psychological resilience of female national boxes in different categories. *Kastamonu Education Journal*, 25(1), 147-154.
- Fletcher, D. & Sarkar, M. (2012). A grounded theory of psychological resilience in Olympic champions. *Psychology of Sport and Exercise*, 13, 669-678. doi: [10.1016/j.psychsport.2012.04.007](https://doi.org/10.1016/j.psychsport.2012.04.007)
- Fletcher, D. & Sarkar, M. (2013). Psychological resilience: A review and critique of definitions, concepts and theory. *European Psychologist*, 18, 12-23. doi: [10.1027/1016-9040/a000124](https://doi.org/10.1027/1016-9040/a000124)
- Folkman, S. & Lazarus, R. S. (1980). An analysis of coping in a middle-aged community sample. *Journal of Health and Social Behavior*, 21(3) 219-239. doi: [10.2307/2136617](https://doi.org/10.2307/2136617)
- Fountain, H. E. (2017). An investigation into the nature of psychological resilience in junior athletes. Unpublished doctoral dissertation. Edinburgh Napier University, Scotland.
- Galli, N. & Gonzalez, S. P. (2015). Psychological resilience in sport: A review of the literature and implications for research and practice. *International Journal of Sport and Exercise Psychology*, 13(3), 243-257. doi: [10.1080/1612197X.2014.946947](https://doi.org/10.1080/1612197X.2014.946947)
- Galli, N. & Vealey, R. S. (2008). "Bouncing back" from adversity: Athletes' experiences of resilience. *The Sport Psychologist*, 22, 316-335. doi: <https://psycnet.apa.org/doi/10.1123/tsp.22.3.316>
- García, C. R., Vallarino, V. T. & Montero, F. J. O. (2014). Resilience, optimism and burnout in competitive judokas in Uruguay. *Revista iberoamericana de psicología del ejercicio y el deporte*, 9(2), 19-31.
- Garnezy, N. (1991). Resiliency and vulnerability to adverse developmental outcomes associated with poverty. *American Behavioral Scientist*, 34(4), 416-430. doi: [10.1177/0002764291034004003](https://doi.org/10.1177/0002764291034004003)
- Greco, G., Cataldi, S. & Fischetti, F. (2019). Karate as anti-bullying strategy by improvement resilience and self-efficacy in school-age youth. *Journal of Physical Education and Sport*, 19, 1863-1870. doi: [10.7752/jpes.2019.s5276](https://doi.org/10.7752/jpes.2019.s5276)
- Greco, G., Fischetti, F., Cataldi, S. & Latino, F. (2019). Effects of Shotokan Karate on resilience to bullying in adolescents. *Journal of Human Sport and Exercise*, 14(4proc), 890-899. doi: [10.14198/jhse.2019.14.Proc4.52](https://doi.org/10.14198/jhse.2019.14.Proc4.52)
- Güvendi, B., Türksoy, A., Güçlü, M. & Konter, E. (2018). Examination of the level courage and mental toughness of professional wrestlers. *International Journal of Sports Exercise & Training Sciences*, 4(2), 70-78. doi: [10.18826/useeabd.424017](https://doi.org/10.18826/useeabd.424017)
- Hammermeister, J. & Burton, D. (2004). Gender differences in coping with endurance sport stress: Are men from Mars and women from Venus? *Journal of Sport Behavior*, 27, 148-164.
- Hassmen, P., Koivula, N. & Uutela, A. (2000). Physical exercise and psychological well-being: A population study in Finland. *Preventive Medicine* 30(1), 17-25. doi: [10.1006/pmed.1999.0597](https://doi.org/10.1006/pmed.1999.0597)
- Hosseini, S. A. & Besharat, M. A. (2010). Relation of resilience with sport achievement and mental health in a sample of athletes. *Procedia Social and Behavioral Sciences*, 5, 633-638. doi: [10.1016/j.sbspro.2010.07.156](https://doi.org/10.1016/j.sbspro.2010.07.156)
- Jacelon, C. S. (1997). The trait and process of resilience. *Leading Global Nursing Research*, 25(1), 123-129. doi: [10.1046/j.1365-2648.1997.1997025123.x](https://doi.org/10.1046/j.1365-2648.1997.1997025123.x)
- Jin, L. & Wang, C. D. (2018). International students' attachment and psychological well-being: The mediation role of mental toughness. *Counselling Psychology Quarterly*, 31(1), 59-78. doi: [10.1080/09515070.2016.1211510](https://doi.org/10.1080/09515070.2016.1211510)
- Johnson, J. (2015). Participation in sports and the development of resilience in adolescents. Unpublished educational specialist thesis. Brigham Young University, Provo, Utah, United States.
- Karademir, T. & Açak, M. (2019). Investigating the psychological endurance levels of university athletes. *Kahramanmaraş Sütçü İmam University Journal of Social Sciences*, 16(2), 803-816. doi: [10.33437/ksusbd.566577](https://doi.org/10.33437/ksusbd.566577)
- Kararımak, Ö. (2006). Psychological resilience, risk factors and protective factors. *Turkish Psychological Counseling and Guidance Journal*, 3(26), 129-142.



- Koçak, M., Atlı Özbaş, A. & Gürhan, N. (2017). Identification of psychological resilience and self-efficacy levels of physical education-sport students. *Journal of Physical Education and Sport Science*, 11(2), 129-135.
- Lazarus, R. S. & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.
- Litwic-Kaminska, K. (2013). Resiliency and stress experience among judo and taekwondo athletes. *Journal of Combat Sports and Martial Arts*, 2(2), 4, 167-172. doi: [10.5604/20815735.1090669](https://doi.org/10.5604/20815735.1090669)
- Luthans, F. (2002). The need and meaning of positive organizational behavior. *Journal of Organizational Behavior*, 23, 695-706. doi: [10.1002/job.165](https://doi.org/10.1002/job.165)
- Martin-Krumm, C. P., Sarrazin, P. G., Peterson, C. & Famose, J. (2003). Explanatory style and resilience after sports failure. *Personality and Individual Differences*, 35(7), 1685-95. doi: [10.1016/S0191-8869\(02\)00390-2](https://doi.org/10.1016/S0191-8869(02)00390-2)
- Montero, I. & León, O. G. (2007). A guide for naming research studies in psychology. *International Journal of Clinical and Health Psychology*, 7(3), 847-862.
- Moran, P. B. & Eckenrode, J. (1992). Protective personality characteristics among adolescent victims of maltreatment. *Child Abuse and Neglect*, 16, 743-754. doi: [10.1016/0145-2134\(92\)90111-4](https://doi.org/10.1016/0145-2134(92)90111-4)
- Mummery, W. K., Schofield, G. & Perry, C. (2004). Bouncing back: The Role of coping style, social support and self-concept in resilience of sport performance. *Athletic Insight*, 6(3), 1-18.
- Ortega, F. Z., Santos, E. O. Z., Moral, P. V., Fernández, S. R., Sánchez, M. C. & Molina, J. J. M. (2017). Analysis of resilience, self-concept and motivation in Judo as gender. *Revista de Psicología del Deporte*, 26, 71-82.
- Özdamar, K. (2002). *Paket programlarla istatistiksel veri analizi-1*. [Statistical data analysis with package programs]. Eskişehir: Kaan Kitabevi. (in Turkish).
- Özdemir, N. (2019). The investigation of elite athletes' psychological resilience. *Journal of Education and Training Studies*, 7(10), 47-57. doi: [10.11114/jets.v7i10.4323](https://doi.org/10.11114/jets.v7i10.4323)
- Özdevecioğlu, M. & Yalçın, Y. (2010). The effect of sports satisfaction on stress and aggression levels in sportsman. *Niğde University Journal of Physical Education and Sport Sciences*, 4(1), 63-76.
- Radochonski, M., Cynarski, W. J., Perenc, L. & Siorek-Maslanka, L. (2011). Competitive anxiety and coping strategies in young martial arts and track and field athletes. *Journal of Human Kinetics*, 27, 180-189. doi: [10.2478/v10078-011-0014-0](https://doi.org/10.2478/v10078-011-0014-0)
- Ramirez-Granizo, I. A., Sánchez-Zafra, M., Zurita-Ortega, F., Puertas-Molero, P., González-Valero, G. & Ubago-Jiménez, J. L. (2020). Multidimensional self-concept depending on levels of resilience and the motivational climate directed towards sport in schoolchildren. *International Journal of Environmental Research and Public Health*, 17, 534-545. doi: [10.3390/ijerph17020534](https://doi.org/10.3390/ijerph17020534)
- Rew, L., Taylor-Seehafer, M., Thomas, N. Y. & Yockey, R. D. (2001). Correlates of resilience in homeless adolescents. *Journal of Nursing Scholarship*, 33(1), 33-40. doi: [10.1111/j.1547-5069.2001.00033.x](https://doi.org/10.1111/j.1547-5069.2001.00033.x)
- Ruiz, R., de la Vega, R., Poveda, J. Rosado, A. & Serpa S. (2012). Psychometric analysis of the resilience scale in the sport of football. *Revista de Psicología del Deporte*, 21(1), 143-151.
- Ruiz-Barquín, R., del Campo Vecino, J. & de la Vega Marcos, R. (2015). Resilience in athletic coaches high performance. *Revista iberoamericana de psicología del ejercicio y el deporte*, 10(1), 69-76.
- Ruiz-Barquín, R., García Remis, M. P. & Gutiérrez-García, C. (2018, October). Psychological profile of competitive combat sports athletes: Comparison between mixed martial arts and other combat sports. In W. J. Cynarski & G. Szajna (Eds.), 4th World Scientific Congress of Combat Sports and Martial Arts and 7th IMACSSS International Conference 2018, Rzeszów, Poland: Proceedings, (pp. 77-79).
- Ruiz-Barquín, R., Plura Maldonado, A. & Gutiérrez-García, C. (2019). Psychological characteristics of developing excellence in mixed martial arts athletes. *Revista de Artes Marciales Asiáticas*, 14(2s), 37-39. doi: [10.18002/rama.v14i2s.6005](https://doi.org/10.18002/rama.v14i2s.6005)
- Ruiz-Barquín, R., Robles, J. J., García, S. & Gutiérrez-García, C. (2018, October). Judo competitors' resilience levels at the 2017 Inter-Army Spanish Championship. In W. J. Cynarski & G. Szajna (Eds.), 4th World Scientific Congress of Combat Sports and Martial Arts and 7th IMACSSS International Conference 2018, Rzeszów, Poland: Proceedings, (pp. 75-77).
- Şahin, N. H. & Durak, A. (1995). Stress coping scale: Adaptation for university students. *Turkish Journal of Psychology*, 10(34), 56-73.



- Şahin, T. & Güçlü, M. (2018). The effect of psychological resilience on athletes emotion regulation skills: Sample of Turkey's major league of protected football players. *Spormetre*, 16(3), 204-216. doi: [10.1501/Sporm_0000000388](https://doi.org/10.1501/Sporm_0000000388)
- Sarkar, M. & Fletcher, D. (2014). Psychological resilience in sport performers: A review of stressors and protective factors. *Journal of Sport Sciences*, 32(15), 1419-1434. doi: [10.1080/02640414.2014.901551](https://doi.org/10.1080/02640414.2014.901551)
- Sarkar, M. (2017). Psychological resilience: Definitional advancement and research developments in elite sport. *International Journal of Stress Prevention and Wellbeing*, 1(3).
- Scully, D., Kremer, J., Meade, M. M., Graham, R. & Dudgeon, K. (1998). Physical exercise and psychological well being: A critical review. *British Journal of Sports Medicine*, 32(2), 111-120. doi: [10.1136/bjism.32.2.111](https://doi.org/10.1136/bjism.32.2.111)
- Secades, X. G., Molinero, O., Salguero, A., Ruiz-Barquín, R., de la Vega, R. & Marquez, S. (2016). Relationship between resilience and coping strategies in competitive sport. *Perceptual and Motor Skills*, 122, 336-349. doi: [10.1177/00131512516631056](https://doi.org/10.1177/00131512516631056)
- Sheard, M. (2013). *Mental toughness: The mindset behind sporting achievement* (2nd Ed.). East Sussex: Routledge.
- Smith, B. W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P. & Jennifer-Bernard, J., (2008). The brief resilience scale: Assessing the ability to bounce back. *International Journal of Behavioral Medicine*, 15, 194-200. doi: [10.1080/10705500802222972](https://doi.org/10.1080/10705500802222972)
- Solomon, G. B. (2015). Mental toughness among college athletes. *Journal of Applied Sports Science*, 5(3), 171-175.
- Tazegül, Ü. (2015). Investigating the relationship between types of personalities and way of coping with stress of elite athlete. *International Journal of Social Science*, 40, 453-461. doi: [10.9761/IASSS3102](https://doi.org/10.9761/IASSS3102)
- Terte, I. & Stephens, C. (2014). Psychological resilience of workers in high-risk occupations. *Stress and Health*, 30(5), 353-355. doi: [10.1002/smi.2627](https://doi.org/10.1002/smi.2627)
- Tugade, M. M. & Frederickson, B. L. (2004). Resilient individuals use positive emotions to bounce back from negative emotional experiences. *Journal of Personality and Social Psychology*, 86(2), 320-333. doi: [10.1037/0022-3514.86.2.320](https://doi.org/10.1037/0022-3514.86.2.320)
- Turgut, E. (2016). Investigating of secondary education studying Karetka of stress coping. Unpublished master thesis. Bartın University, Bartın, Turkey.
- Üstün, Ü. D., Gümüşgöl, O., Demirel M. & Göral, M. (2014) . Ways of coping with stress: A study on taekwondo trainers in Turkey. *International Journal of Multidisciplinary Thought*, 4(4), 519-529.
- Yarayan, Y. E., Yıldız, A. B. & Gülşen, D. B. A. (2018). Examination of mental toughness levels of individual and team sports players at elite level according to various variables. *The Journal of International Social Research*, 11(57), 992-999. doi: [10.17719/jisr.2018.2509](https://doi.org/10.17719/jisr.2018.2509)
- Yeltepe, H. (2007). *Spor ve egzersiz psikolojisi*. [Sports and exercise psychology]. İstanbul: Epsilon Yayınevi. (in Turkish).
- Yi, J. P., Smith, R. E. & Vitaliano, P. P. (2005). Stress-resilience, illness, and coping: A person-focused investigation of young women athletes. *Journal of Behavioral Medicine*, 28(3), 257-65. doi: [10.1007/s10865-005-4662-1](https://doi.org/10.1007/s10865-005-4662-1)
- Yoo, J. (2001). Coping profile of Korean competitive athletes. *International Journal of Sport Psychology*, 32, 290-303.

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