

<https://doi.org/10.48047/AFJBS.6.Si4.2024.5249-5260>



African Journal of Biological Sciences

Journal homepage: <http://www.afjbs.com>



Research Paper

Open Access

The Impact of Gender and Experience on Pre-Competitive Anxiety in tunisian Karate Athletes

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Volume 6, Issue Si4, Aug 2024

Received: 15 June 2024

Accepted: 25 July 2024

Published: 15 Aug 2024

doi: [10.48047/AFJBS.6.Si4.2024.5249-5260](https://doi.org/10.48047/AFJBS.6.Si4.2024.5249-5260)

Abstract:

Background:

This study investigates the anxiety experienced by karate athletes participating in competitions. Karate competitions are popular events that allow athletes to showcase their skills and compete for rewards. However, these competitions can also be a source of anxiety for athletes (Baker et al., 2000). Traditionally, karate was an art of war where a single blow could determine the outcome of a fight. Today, karate competitions are governed by safety regulations, making them a healthy sporting activity. However, the competitive nature of these events can still lead to anxiety in participants (Andreato et al., 2022). Despite the potential impact of anxiety on performance, there is a limited body of research on this topic in the context of karate competitions. This study aims to address this gap in the literature by examining the factors that contribute to anxiety in karate athletes and exploring potential strategies for managing it.

Methods:

Forty young karatekas (M=16, SD=1.44), including 20 females and 20 males with experience levels of 7 ± 1.2 or 3 ± 0.42 years, participated in a rank-ranking competition. Pre-competitive anxiety was assessed using the CSAI-2R questionnaire administered approximately 15-20 minutes before competition start.

Results:

Mann-Whitney U tests revealed no significant differences in pre-competitive anxiety dimensions based on gender or experience level among Karatekas. These findings suggest that these demographic factors do not influence the perception of pre-competitive anxiety in this population.

Conclusion:

The study demonstrated that gender and experience level do not influence the perception of pre-competitive anxiety.

Key words: Karate, Pre-competitive anxiety, Gender, Experience, Psychological factors, Sports performance, Well being.

Introduction:

Pre-competitive anxiety, a ubiquitous psychological phenomenon among athletes, can profoundly influence performance outcomes (Mehrsafar et al., 2020; Petrocchi et al., 2017; Zarrinabadi et al., 2024). While often considered a normal physiological response to challenging situations, excessive anxiety can significantly impair an athlete's ability to concentrate, execute skills effectively, and ultimately achieve desired goals (Ayuso-Moreno et al., 2020; Ficarra et al., 2023; Mehrsafar et al., 2019). Karate, a discipline that demands both physical prowess and mental fortitude, is particularly susceptible to the effects of pre-competitive anxiety (Lipowski et al., 2019; Mahmoud et al., 2010; Samira Akbari Niaz et al., 2023). Despite the growing body of research examining pre-competitive anxiety in various sports, the specific context of karate has been relatively understudied. Most research has focused on traditional sports, overlooking the unique pressures and demands inherent to martial arts. Furthermore, the impact of demographic factors, such as gender and experience level, on pre-competitive anxiety within the karate domain remains largely unexplored (Abrahamsen et al., 2008; Robazza et al., 2021).

This study aims to address these knowledge gaps by investigating the level of pre-competitive anxiety experienced by karatekas undergoing a grade change. Specifically, it explores the relationship between different dimensions of anxiety – somatic, cognitive, and self-confidence – and their influence on performance (McNeil et al., 2024; Parfitt & Pates, 1999). Additionally, the study examines the effects of gender and experience level on the manifestation of pre-competitive anxiety among karatekas (Ivanović & Ivanović, 2023). By illuminating the complex interplay between anxiety, gender, experience, and karate performance, this research seeks to contribute to the existing body of knowledge on pre-competitive anxiety in martial arts and provide valuable insights for coaches, athletes, and sports psychologists. Ultimately,

the findings of this study will inform the development of targeted interventions designed to enhance mental preparation and optimize performance in karate athletes.

The subsequent sections will delve deeper into the theoretical framework underpinning the study, the research methodology employed, and a comprehensive review of the relevant literature. By establishing a strong foundation, this study will provide a robust analysis of pre-competitive anxiety in karatekas and its implications for athletic performance.

Material and methods:

Table 1: Anthropometric characteristics of the sample:

Variables	Group 1			Group 2		
	Mean	Standard deviation	Asymmetry	Mean	Standard deviation	Asymmetry
Age	16	1,44	0	15,90	1,37	0,05
Size	163	2,89	0	162,90	2,64	0,09
Body mass	67	1,30	0,06	66,57	1,43	0,51
BMI	22,95	1,24	-0,07	23,61	1,56	-1,02

Forty karatekas aged 15 to 17, with a mean age of 16 ±1.44 years, participated in a rank-ranking competition organized by the Tunisian Karate Federation. This group consisted of 20 female and 20 male athletes practicing Shotokan karate. Their experience levels were divided into two groups: 20 athletes with 7 ± 1.2 years of experience and 20 athletes with 3 ± 0.42 years of experience.

Measurement tools (CSAI-2R):

To assess the perception of pre-competitive anxiety in our participants, we used the Arabic-Tunisian version of the Sports Competition State Anxiety Inventory (Hajji & Elloumi, 2017). This questionnaire consists of 16 items, including three scales that measure intensity, direction and frequency. This version was created to measure the level of intensity, direction and frequency of cognitive and somatic anxiety, as well as the level of situational self-confidence of the athlete when specifically confronted with a sports competition.

Procedure:

Organizers were informed of the study around two months before the competition. Procedural agreements were drawn up regarding the experiment and the collaboration of parents. On the morning of the event, the person in charge of the research was introduced to everyone involved in the competition (coaches, volunteers, parents and athletes) to explain the experimental procedure. The experiment began just before the first grade exams. The questionnaire was administered at roll call for each category (a category of competitors is differentiated by age, belt color and weight). Subjects completed the questionnaire individually, in an adjacent room where the competition was taking place. As soon as a category was called, the athletes went there and received instructions from the experimenter. The time required to complete the strategy anxiety questionnaire was around 15 to 20 minutes, and the tests began 15 to 30 minutes later. This procedure was suggested by Martens (1977) in order to obtain results that accurately reflect competition anxiety.

Statistical analysis:

The statistical analysis used were :

Descriptive statistics to describe the level of perception of pre-competitive anxiety in our participants through the mean and standard deviation. Inferential statistics to examine the effect of level of experience and gender on the pre-competitive perception of karatekas. At this stage we carried out the following statistical tests:

Normality test: to analyses the distribution of our data

Non-parametric test: chosen because the distribution followed the abnormal distribution of the data received; in this context, we were obliged to apply the non-parametric test to compare the means of two independent samples: Mann-Whitney U test.

Results:

Table 2: The effect of gender on Pre-Competitive Anxiety

	ACI	ASI	CSI	ACD	ASD	CSD	ACF	ASF	CSF
U Mann-Whitney	196,00	199,50	206,00	204,00	204,00	203,50	207,00	208,50	170,50
W Wilcoxon	406,00	409,50	416,00	435,00	414,00	413,50	417,00	439,50	401,50
Z	-,40	-,30	-,12	-,18	-,18	-,17	-,08	-,04	-1,00
Asymptotic significance (bilateral)	,68	,75	,90	,85	,85	,86	,93	,96	,27
Grouping criteria: GENDER									

Note : * $P > 0.001$.

ACI=cognitive anxiety intensity , ASI=somatic anxiety intensity , CSI=self-confidence intensity ,ACD=cognitive anxiety direction ,ASD=somatic anxiety direction, CSD=self-confidence direction, ACF=cognitive anxiety frequency, ASF=somatic anxiety frequency, CSF=self-confidence frequency

The statistical analysis of the Mann-Whitney U test confirms that the gender factor has no effect on the perception of different dimensions of pre-competitive anxiety in the Karatekas

. $P > 0.05$: (ACI : $P = 0.67$; ASI $P = 0.75$; CSI $P = 0.90$; ACD $P = 0.85$; ASD $P = 0.85$; CSD $P = 0.86$; ACF $P = 93$;ASF $P = 96$; CSF $P = 27$

Table 3: Effect of level of experience on Pre-Competitive Anxiety

	ACI	ASI	CSI	ACD	ASD	CSD	ACF	ASF	CSF
U Mann-Whitney	194,50	209,00	180,00	206,50	186,00	185,00	194,00	208,00	195,50
W Wilcoxon	384,50	399,00	433,00	396,50	439,00	438,00	447,00	461,00	385,50
Z	-,42	,00	-,89	-,07	-,70	-,65	-,42	-,02	-,37
Asymptotic significance (bilateral)	,67	1,00	,37	,93	,48	,55	,67	,97	,71
Grouping criteria: level of experience									
Note : * P> 0.001.									

ACI=cognitive anxiety intensity , ASI=somatic anxiety intensity , CSI=self-confidence intensity ,ACD=cognitive anxiety direction ,ASD=somatic anxiety direction, CSD=self-confidence direction, ACF=cognitive anxiety frequency, ASF=somatic anxiety frequency, CSF=self-confidence frequency

Statistical analysis using the Mann-Whitney U test confirms that the level of experience factor has no effect on the perception of different dimensions of pre-competitive anxiety in the Karatekas $P > 0.05$: (ACI : $P= 0.67$; ASI $P=1.00$; CSI $P=37$; ACD $P=0.93$; ASD $P=0.48$; CSD $P=0.51$; ACF $P=67$;ASF $P=97$; CSF $P=71$).

Discussion:

This study attempts to evaluate the level of anxiety in athletes taking part in a karate grade change according to different criteria associated with karatekas. The main aim of this study is to determine the effect of gender and experience on pre-competitive anxiety.

The results of our study reveal that the more the dimensions of somatic anxiety in karatekas. According to the scales of intensity of direction and frequency, the results obtained corroborate with the work of (Kruger, 2020; Tinkler, 2021), who recently demonstrated that the intensity of cognitive and somatic precompetitive anxiety had a negative impact on the direction of

cognitive and somatic precompetitive anxiety in rugby players. For their part, (Conde-Ripoll et al., 2024; Netto et al., 2024) indicated that the intensity of cognitive and somatic precompetitive anxiety had a negative influence on the direction of cognitive and somatic precompetitive anxiety. On the other hand, (Estes, 2024; Косьмій, 2024), found that the level of direction of cognitive and somatic precompetitive anxiety is very high.

This discrepancy dissipates when the level of intensity of cognitive and somatic precompetitive anxiety is moderate or high. On the other hand, (Tossici et al., 2024), demonstrated that when the level of intensity of cognitive precompetitive anxiety is stable, the intensity of somatic precompetitive anxiety increases. However, the frequency and direction of both cognitive and somatic pre-competitive anxiety increased as the competition approached.

The effect of gender and level factors on the perception of anxiety:

The results revealed by this study confirm that the factors gender and level of experience as independent variables, have no effect on the manifestation of different dimensions of pre-competitive anxiety in our participants.

Our results confirm the absence of a significant effect of gender and level of experience on the manifestation of cognitive, somatic and self-confidence anxiety according to the intensity, direction and frequency scales. These results diverge with the work of (Hajji et al., 2021) and with the work of (Fernández et al., 2020; Ferreira et al., 2021)

Conclusion:

The results of this study highlight the crucial importance of mental preparation in karate performance, regardless of the gender or level of experience of practitioners. Although pre-competitive anxiety is a common phenomenon among karatekas, our results indicate that it does not appear to be significantly influenced by gender or number of years of practice.

However, the absence of specific mental preparation in the training of many athletes limits our understanding of the mechanisms underlying performance and anxiety management. These results highlight the need to systematically integrate mental preparation into karate training programs, in order to optimize athletes' performance and well-being. Future research should further explore the interactions between physical, technical, tactical and psychological factors, as well as the effects of different mental preparation interventions on performance and anxiety perception in karatekas.

Bibliographic references :

- Abrahamsen, F. E., Roberts, G. C., & Pensgaard, A. M. (2008). Achievement goals and gender effects on multidimensional anxiety in national elite sport. *Psychology of Sport and Exercise*, 9(4), 449-464.
<https://doi.org/https://doi.org/10.1016/j.psychsport.2007.06.005>
- Andreato, L. V., Santos, M. G. d., & Andrade, A. (2022). What do we know about the effects of mental training applied to combat sports? A systematic review. *Psychology of Sport and Exercise*, 63, 102267.
<https://doi.org/https://doi.org/10.1016/j.psychsport.2022.102267>
- Ayuso-Moreno, R., Fuentes-García, J. P., Collado-Mateo, D., & Villafaina, S. (2020). Heart rate variability and pre-competitive anxiety according to the demanding level of the match in female soccer athletes. *Physiology & Behavior*, 222, 112926.
<https://doi.org/https://doi.org/10.1016/j.physbeh.2020.112926>
- Baker, J., Côté, J., & Hawes, R. (2000). The relationship between coaching behaviours and sport anxiety in athletes. *Journal of Science and Medicine in Sport*, 3(2), 110-119.
[https://doi.org/https://doi.org/10.1016/S1440-2440\(00\)80073-0](https://doi.org/https://doi.org/10.1016/S1440-2440(00)80073-0)
- Conde-Ripoll, R., Escudero-Tena, A., & Bustamante-Sánchez, Á. (2024). Pre and post-competitive anxiety and self-confidence and their relationship with technical-tactical

- performance in high-level men's padel players. *Frontiers in Sports and Active Living*, 6, 1393980.
- Estes, S. M. (2024). *Mindfulness, Competitive State Anxiety and Injury in Adolescent Female Swim Athletes* California State University, Fresno].
- Fernández, M. M., Brito, C. J., Miarka, B., & Díaz-de-Durana, A. L. (2020). Anxiety and emotional intelligence: Comparisons between combat sports, gender and levels using the trait meta-mood scale and the inventory of situations and anxiety response. *Frontiers in Psychology*, 11, 130.
- Ferreira, S. C., Navarro, D. N., de Araújo, M. L., da Silva Caldas, E., da Silva, D. M. B., & Navarro, A. C. (2021). Comparison of pre-competitive anxiety between futsal players of sub-16 and sub-19 category. *Research, Society and Development*, 10(7), e5510716189-e5510716189.
- Ficarra, G., Caccamo, D., Rottura, M., Bitto, A., Trimarchi, F., & Di Mauro, D. (2023). Testosterone:cortisol ratio as a predictor of podium in adolescent rowing athletes. *Heliyon*, 9(11), e22315. <https://doi.org/https://doi.org/10.1016/j.heliyon.2023.e22315>
- Hajji, J., Bettayeb, A., Fekih, S., Guerchi, M., Bragazzi, N., Azaiez, F., & Elloumi, A. (2021). The coping strategies used by young Tunisian athletes in individual and collective sports. *Psychiatry International*, 2(3), 277-286.
- Hajji, J., & Elloumi, A. (2017). Validation of the Tunisian version of the French version of the competitive state anxiety inventory-2 revised (CSAI-2R), including frequency and direction scales. *International Journal of Emergency Mental Health*, 19(2), 1-7.
- Ivanović, M., & Ivanović, U. (2023). DEPRESSION, ANXIETY AND STRESS AS DETERMINANTS OF PROCRASTINATION IN JUNIOR KARATEKAS. *Sport Scientific And Practical Aspects: International Scientific Journal of Kinesiology*, 20(2), 19-26. <https://doi.org/10.51558/1840-4561.2023.20.219>

Kruger, A. (2020). *Cognition, personality and emotional intelligence among South African rugby union players: an exploratory study* North-West University (South-Africa)].

Lipowski, M., Krokosz, D., Łada, A., Sliżik, M., & Pasek, M. (2019). Sense of Coherence and Connectedness to Nature as Predictors of Motivation for Practicing Karate. *International journal of environmental research and public health*, 16(14).

<https://doi.org/10.3390/ijerph16142483>

Mahmoud, S., Mehdi, S., Ashraf, A., & Reza, G. (2010). Current Talent Identification Models, Development of a New Model for Karate in Iran Based on Physical and Mental Readiness. 56-45, (1)2, رشد و یادگیری حرکتی ورزشی.

McNeil, D. G., Fell, M., Loi, N. M., Chambers, T. P., & Cosh, S. M. (2024). Exploring jump experience, risk perception, anxiety and self-confidence in skydiving: A mixed methods approach. *Psychology of Sport & Exercise*, 73.

<https://doi.org/10.1016/j.psychsport.2024.102649>

Mehrsafar, A. H., Rosa, M. A. S., Zadeh, A. M., & Gazerani, P. (2020). A feasibility study of application and potential effects of a single session transcranial direct current stimulation (tDCS) on competitive anxiety, mood state, salivary levels of cortisol and alpha amylase in elite athletes under a real-world competition. *Physiology & Behavior*, 227, 113173. <https://doi.org/https://doi.org/10.1016/j.physbeh.2020.113173>

Mehrsafar, A. H., Strahler, J., Gazerani, P., Khabiri, M., Sánchez, J. C. J., Moosakhani, A., & Zadeh, A. M. (2019). The effects of mindfulness training on competition-induced anxiety and salivary stress markers in elite Wushu athletes: A pilot study. *Physiology & Behavior*, 210, 112655.

<https://doi.org/https://doi.org/10.1016/j.physbeh.2019.112655>

- Netto, F. N., Nunes, S., Menuchi, M., & Fernandes, M. (2024). Relationship between frequency of use of psychological skills and competitive anxiety in elite athletes. *Psicologia Argumento*, 42(116).
- Parfitt, G., & Pates, J. (1999). The effects of cognitive and somatic anxiety and self-confidence on components of performance during competition. *Journal of sports sciences*, 17(5), 351-356.
- Petrocchi, N., Piccirillo, G., Fiorucci, C., Moscucci, F., Di Iorio, C., Mastropietri, F., Parrotta, I., Pascucci, M., Magrì, D., & Ottaviani, C. (2017). Transcranial direct current stimulation enhances soothing positive affect and vagal tone. *Neuropsychologia*, 96, 256-261. <https://doi.org/https://doi.org/10.1016/j.neuropsychologia.2017.01.028>
- Robazza, C., Ruiz, M. C., & Bortoli, L. (2021). Psychobiosocial experiences in sport: Development and initial validation of a semantic differential scale. *Psychology of Sport and Exercise*, 55, 101963. <https://doi.org/https://doi.org/10.1016/j.psychsport.2021.101963>
- Samira Akbari Niaz, A., Amin, A., & Reza, A. (2023). The Effect of Mental and Physical Training on Meta Cognitive Beliefs and Sports Performance of Elite Karate Athletes. *International Journal of Motor Control and Learning*, 5(2), 35-45.
- Tinkler, N. (2021). *The relationship between emotional intelligence, anxiety, coping skills and psychological skill levels in South African female field-hockey players North-West University (South-Africa)]*.
- Tossici, G., Zurloni, V., & Nitri, A. (2024). Stress and sport performance: a PNEI multidisciplinary approach. *Frontiers in Psychology*, 15, 1358771.
- Zarrinabadi, N., Arandian, P., & Yaghoubinejad, H. (2024). Investigating the mediating role of positive and negative beliefs about competition and competitive orientation in the

relationship between language mindsets and emotions. *System*, 125, 103395.

<https://doi.org/https://doi.org/10.1016/j.system.2024.103395>

Косъмій, М. М. (2024). Pre-competition expectation profiles among junior athletes in the context of altered sporting conditions.