

Cross-sectional associations between competitive anxiety and individual characteristics among handball athletes

ADRIA MONIQUE MESQUITA DO NASCIMENTO¹, JHONATAN WÉLINGTON PEREIRA GAIA²,
RODRIGO WEYLL FERREIRA³, DANIEL ALVAREZ PIRES⁴

¹Faculty of Physical Education, Federal University of Pará, Pará, BRAZIL.

^{2,3,4} Graduate Program in Human Movement Sciences, Federal University of Pará, Pará, BRAZIL.

Published online: July 31, 2023

(Accepted for publication July 15, 2023)

DOI:10.7752/jpes.2023.07196

Abstract:

The psychological aspects of competitive sports, such as handball, has been the subject of many studies in recent years. However, there is still no consensus regarding the effects of competitive anxiety in this sport and the possible sociodemographic and individual aspects that influence this effect. This study aimed to investigate the association between time of practice, age, and sex variables on the perceptions of competitive anxiety among handball athletes. Participated 81 handball athletes (61% women) with a mean age of 25 ± 6 years and a mean practice time of 6 ± 4 years. The instrument used was the Competitive State Anxiety Inventory-2 Revised (CSAI-2R). We performed multiple linear regression analysis to investigate the association between the main variables. The t test and Spearman's correlation test (r) also was used. The main results showed that the time of practice was associated with the direction ($F(1, 78) = 4.807, p < 0.05$; adjusted $R^2 = 0.046$) and frequency of the somatic anxiety ($F(1, 78) = 4.220, p < 0.05$; adjusted $R^2 = 0.039$), as well as in relation to the frequency of self-confidence ($F(1, 78) = 6.387, p < 0.05$; adjusted $R^2 = 0.064$). The age of the athletes was associated only with the direction of self-confidence ($F(1, 78) = 5.093, p < 0.05$; adjusted $R^2 = 0.049$). There was no difference in the perception of competitive anxiety as a function of the sex ($p > 0.05$). In conclusion, the time of practice as an athlete can influence the direction and frequency of somatic anxiety, as well as the frequency of self-confidence. In addition, age may influence the perception of self-confidence for more experienced athletes. The sex variable is not a determinant for the perception of competitive anxiety among handball athletes.

Key Words: Self-confidence, sports experience, sports performance, team sport, sport psychology.

Introduction

Anxiety is an emotional phenomenon common to all individuals, defined as an emotional response stimulated by an anticipation of real or potential danger, capable of promoting a state of alert usually accompanied by feelings of worry and tension (Patel, Omar, & Terry, 2010; Rocha & Osório, 2018). This emotional state can be a stable component of personality or a transient emotional state, termed trait anxiety and anxiety state, respectively (Kemarat, Theanthong, Yeemin, & Suwankan, 2022). When its manifestations interfere with the normal development of an individual's activities (for example, causing an acceleration in the heart rate and difficulty concentrating), anxiety becomes a maladaptive and harmful manifestation to the individual (Patel et al., 2010).

In sports, some emotional and psychological changes caused by the competitive environment can have a significant impact on the performance of athletes. Among these aspects, competitive anxiety is one of the main variables that interferes with performance (Ford, Ildefonso, Jones, & Arvinen-Barrow, 2017) and has been the subject of several studies (Marín-González, Portela-Pino, Fuentes-García, & Martínez-Patiño, 2022; Paludo et al., 2022; Silva, Ferreira, Gaia, & Pires, 2022). Competitive anxiety has been investigated predominantly according to the multidimensional theory of anxiety (Martens, Vealey, & Burton, 1990), which classifies competitive anxiety into three dimensions: i) cognitive anxiety, which concerns the athlete's mental state and thoughts, such as worry and apprehension; ii) somatic anxiety, which refers to the physiological aspects, i.e., the degree of perceived physical activation; and iii) self-confidence, defined as the individual's ability to understand his or her abilities as positive to achieve an expected performance (Martens et al., 1990).

Although evidence on the psychological aspects of handball has grown in recent years, due to its characteristic of invasion modality with high physical and psychological demand, there is still no consensus regarding the effects of competitive anxiety in this sport (Ivaskevych et al., 2019, 2020). Studies suggest that sociodemographic and contextual variables, such as level of experience, sex and age, can influence how athletes perceive competitive anxiety (Fernandes, Nunes, Raposo, & Fernandes, 2014; Hagan, Pollmann, & Schack, 2017; Marín-González et al., 2022; Rocha & Osório, 2018), and more experienced, older and male athletes are better able to control their concerns and to perceive competition in a more positive way, thus obtaining higher rates of self-confidence (Correia & Rosado, 2019; Fernandes et al., 2014; Rocha & Osório, 2018). In addition,

1599

the level of sports experience has been shown to influence athletes' perceptions of competition anxiety, with more experienced athletes generally reporting lower levels of cognitive and somatic anxiety and higher levels of self-confidence (Fernandes, Nunes, Vasconcelos-Raposo, & Fernandes, 2013)

Competitive anxiety, which includes cognitive and somatic aspects as well as self-confidence, has been recognized as an important variable affecting athletes' ability to cope with competitive environments. Gender differences have been observed in relation to competition anxiety, with male athletes tending to report lower levels of cognitive anxiety and higher levels of self-confidence than female athletes (Fernandes, Nunes, Vasconcelos-Raposo, et al., 2013). In addition, aspects of competitive anxiety are related to decision-making (Fortes, Fiorese, Andrade Nascimento-Júnior, Almeida, & Ferreira, 2019). Athletes with high levels of self-confidence tend to perceive anxiety dimensions as facilitators of their performance, and self-confidence also contributes to better regulation of group cohesion among athletes (Paes, Machado, Berbetz, & Stefanello, 2017).

However, the influence of these sociodemographic variables on competitive anxiety among handball athletes remains unclear. Handball is generally investigated together with other team sports, and few studies have specifically investigated handball athletes, even in the face of the growing popularity of the sport and the increase in the number of practitioners (Ford et al., 2017; Ivaskevych et al., 2019, 2020). Therefore, considering that competitive anxiety can negatively influence athletes' performance and well-being (Patel et al., 2010; Peng & Zhang, 2021), there is a need to verify which sociodemographic aspects interfere with the perception of competitive anxiety among handball athletes. In the context of handball players, understanding the impact of factors related to competition anxiety is particularly relevant for optimizing performance and overall well-being. This knowledge is required to strengthen their ability to deal with competitive pressure and ultimately improve their performance. The present study aims to address the research gap regarding the effects of competitive anxiety in handball athletes. Specifically, we seek to investigate the influence of sociodemographic variables on the perceptions of competitive anxiety. Given this, the objective of the present study was to investigate the influence of the time of practice, age and sex variables on the perceptions of competitive anxiety in handball athletes.

Materials & methods

This cross-sectional observational study was characterized as descriptive, inferential and quantitative (Ato, López, & Benavente, 2013), seeking to broaden the evidence on the influence of practice, age and sex on the perception of competitive anxiety among handball athletes. This study were carried out in accordance with the Declaration of Helsinki and International Conference on Harmonisation Good Clinical Practice and was reported according to the guidelines of The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement (von Elm et al., 2007).

Participants

A total of 84 Brazilian handball athletes participated in the study, 58 women and 26 men. The sample was selected by convenience, and the criteria for inclusion were i) athletes with at least one year of practice of the sport and ii) members of a team during the championship season. The exclusion criteria were i) nonparticipation in the games (registered for a team, but did not play in the games); ii) injured athletes; and iii) athletes with incomplete questionnaires. After the analysis of the questionnaires, three athletes were excluded for incomplete questionnaires (two females and one male). Thus, the final sample consisted of 81 athletes, 56 women and 25 men with a mean age of 25.12 ± 6.28 years and time in the sport of 6.78 ± 4.87 years.

Measures

Competitive State Anxiety Inventory (CSAI-2R)

To evaluate competitive anxiety, the present study used the Portuguese version of the *Competitive State Anxiety Inventory* (CSAI-2R) (Cox, Martens, & Russell, 2003). This instrument was translated, validated and has adequate psychometric properties for application in the Brazilian population (Fernandes, Vasconcelos-Raposo, & Fernandes, 2012). The questionnaire consists of three scales with 16 items each, which evaluate three dimensions of competitive anxiety (cognitive anxiety, somatic anxiety and self-confidence), answered on a Likert scale that varies according to the response dimension (frequency, direction and intensity). The responses of the frequency dimension contain a scale ranging from 1 (never) to 7 (always); the direction dimension has a scale from -3 (very easy) to +3 (very difficult); and the intensity dimension contains a scale ranging from 1 (not at all) to 4 (very). This questionnaire has been described as the main instrument for measuring competitive anxiety levels in athletes (Fernandes, Nunes, Raposo, Fernandes, & Brustad, 2013; Fernandes et al., 2012; Silva-Rocha, de Sousa, & Osório, 2019). A sociodemographic questionnaire was attached to the CSAI-2R with questions regarding sex, age, practice time, time as an athlete, and weekly training frequency.

Procedure

The present study was approved by the research ethics committee of the Federal University of Pará under registration code n° 33635220.3.0000.0018. The instruments were applied during the final competition period of the handball teams. The technical committee and the athletes were informed about all the research procedures and confirmed their willingness to participate in the study. Participants then completed the sociodemographic questionnaire and the CSAI-2R. The instructions and information were standardized and

given to all participants. The questionnaires were completed 30 minutes before the matches in a reserved and noise-free place. During all stages of the study, the researchers were present to answer any questions.

Statistical analysis

The verification of normality was performed using the Shapiro–Wilk test. As the data collected did not present a parametric distribution, the bootstrapping procedure was performed with a resampling of 1,000 corrected by the bias-corrected and accelerated (BCa) 95% CI to obtain greater reliability of the results, correct deviations from normality in the sample distribution and differences between group sizes (Haukoos & Lewis, 2005). A multiple linear regression analysis (backward method) was performed to investigate the extent to which age and time of practice as an athlete are associated with the dimensions of competitive anxiety (cognitive, somatic and self-confidence anxiety) on its three response scales (intensity, direction and frequency). The variance inflation factor (VIF) was not strong enough to indicate problems with multicollinearity (remaining at 1,000). These values show that the VIF remained below 5 or 10, which is considered acceptable (Hair Jr, Hult, Ringle, & Sarstedt, 2021). In addition, the independence between the residuals measured by the Durbin-Watson coefficient met the range of 1.5 to 2.5 for the analyses (ranging from 1.704 to 2.132). Finally, the residuals standardized in Z score (2 outlier = 5%), Cook's Distance (score below 1) and Mahalanobis Distance were met (Field, 2013).

The t test of independent samples was used to compare the dimensions of competitive anxiety between the groups according to the sex variable. The effect size was calculated using Cohen's *d* and its respective confidence intervals (95% CI) for the comparison between the groups, being classified as small effect (<0.20), moderate effect (between 0.21 and 0.79) and a large effect (>0.80) based on the criteria proposed by Cohen (1988). Estimates of effect size are useful in determining the practical or theoretical importance of a given effect (Fritz, Morris, & Richler, 2012). Regarding the analysis of the relationship between time of practice, age and the dimensions of competitive anxiety, Spearman's correlation (*r*) was used, considering a minimum critical value of $r \geq 0.40$ (Schober, Boer, & Schwarte, 2018). The analyses were performed using SPSS software version 26. The significance level was set at $p < 0.05$.

Results

Table 1 describes the results of the relationship between the variables time of practice, age and the dimensions of competitive anxiety. Our results suggest that there was a significantly inverse relationship between age and the direction of self-confidence ($r = -0.24$; $p = 0.02$). In addition, we observed a positive relationship between practice time and the direction of somatic anxiety ($r = 0.24$; $p = 0.03$), as well as a significantly inverse relationship with the frequency dimensions of somatic anxiety ($r = -0.22$; $p = 0.04$) and self-confidence ($r = -0.27$; $p = 0.01$). All of the significant relationships observed had a magnitude considered weak ($r < 0.40$).

Table 1. Relationship between time of practice, age and the dimensions of competitive anxiety.

Variable	Intensity			Direction			Frequency		
	CA	SA	SC	CA	SA	SC	CA	SA	SC
Age	-0.01	-0.0	0.02	0.06	0.13	-0.24*	-0.14	0.02	-0.05
TPA	0.02	-0.18	-0.08	0.05	0.24*	-0.16	-0.20	-0.22*	-0.27*
<i>M</i>	2.36	1.97	3.04	-0.76	-0.43	1.34	3.00	2.42	4.71
<i>SD</i>	0.74	0.67	0.60	2.00	0.70	1.18	1.34	1.25	1.34
α	0.82	0.79	0.83	0.78	0.78	0.82	0.90	0.89	0.87

Note: TPA = time of practice as an athlete; CA = cognitive anxiety; SA = somatic anxiety; SC = self-confidence; M = mean; SD = standard deviation; α = Cronbach's alpha coefficient * = $p < 0.05$.

The results of the regression analysis are described in **Table 2**. Age and time of practice as an athlete did not have a significant influence on the dimensions of cognitive anxiety ($F(2, 77) = 0.049$, $p > 0.05$; adjusted $R^2 = -0.024$), somatic anxiety ($F(2, 77) = 1.924$, $p > 0.05$; adjusted $R^2 = 0.023$) and self-confidence ($F(2, 77) = 0.656$, $p > 0.05$; adjusted $R^2 = -0.009$) for the intensity dimension.

Regarding the direction of competitive anxiety, the results showed a significant influence of the time of practice as an athlete on somatic anxiety for the direction dimension ($F(1, 78) = 4.807$, $p < 0.05$; adjusted $R^2 = 0.046$), explaining approximately 5% of the outcome. The variable age, in turn, did not have a significant impact on direction of somatic anxiety ($B = 0.001$, $t = 0.009$, $p = 0.993$). The age of the athletes showed an influence on direction of self-confidence ($F(1, 78) = 5.093$, $p < 0.05$; adjusted $R^2 = 0.049$), explaining approximately 5% of the outcome. The practice time, in turn, had no impact on direction of self-confidence ($B = -0.034$, $t = -0.256$, $p = 0.798$). There was no influence of age or time of practice as an athlete on direction of cognitive anxiety ($F(2, 77) = 0.190$, $p > 0.05$; adjusted $R^2 = -0.021$).

Regarding the frequency of competitive anxiety, the time of practice as an athlete showed an influence on frequency of somatic anxiety ($F(1, 78) = 4.220, p < 0.05$; adjusted $R^2 = 0.039$), explaining approximately 4% of the outcome. The variable age, in turn, had no significant impact on frequency of somatic anxiety ($B = 0.218, t = 1.649, p = 0.103$). The time of practice as an athlete showed an influence on self-confidence for frequency ($F(1, 78) = 6.387, p < 0.05$; adjusted $R^2 = 0.064$), explaining the outcome in 6%. Age, in turn, did not have a significant impact on self-confidence for frequency ($B = 0.143, t = 1.081, p = 0.283$). Finally, cognitive anxiety in the frequency dimension ($F(2, 77) = 1.749, p > 0.05$; adjusted $R^2 = 0.019$) was not significantly influenced by age or time of practice as an athlete.

Table 2. Multiple linear regression analysis of the association between time of practice, age and competitive anxiety.

<i>Parameter Estimated</i>	R ² adjusted	<i>F</i>	<i>p</i>	Predictive variables	
				Practice Time	Age
				β	β
Intensity					
<i>Cognitive anxiety</i>	-0.024	0.08	0.91	-0.05	0.04
<i>Somatic anxiety</i>	0.023	1.92	0.15	-0.26	0.14
<i>Self-confidence</i>	-0.00	0.65	0.52	-0.15	0.11
Direction					
<i>Cognitive anxiety</i>	0.021	0.19	0.82	0.02	0.05
<i>Somatic anxiety</i>	0.046	4.80	0.03	0.24*	0.00
<i>Self-confidence</i>	0.049	5.09	0.02	-0.03	-0.24*
Frequency					
<i>Cognitive anxiety</i>	0.019	1.74	0.18	-0.18	-0.04
<i>Somatic anxiety</i>	0.039	4.22	0.04	-0.22*	0.21
<i>Self-confidence</i>	0.064	6.38	0.01	-0.27*	0.14

Note: β = Standardized Coefficients *Beta*; * = $p < 0.05$.

The data regarding the difference in the perception of competitive anxiety between women and men are described in **Table 3**. According to the results, there was no difference in relation to sex for the perception of the dimensions of competitive anxiety ($p > 0.05$). The observed effect sizes vary from small to moderate ($d = 0.08, 0.46$).

Table 3. Descriptive and inferential data of the dimensions of competitive anxiety for the female and male groups.

	Women (n=56) <i>M (SD)</i>	Men (n=25) <i>M (SD)</i>	<i>p</i>	<i>d</i>	IC95%
Intensity					
<i>Cognitive anxiety</i>	2.3 (0.77)	2.5 (0.64)	0.23	0.27	(-0.20, 0.75)
<i>Somatic anxiety</i>	2.0 (0.68)	1.8 (0.66)	0.43	0.29	(-0.77, 0.38)
<i>Self-confidence</i>	3.1 (0.58)	2.9 (0.65)	0.16	0.33	(-0.81, 0.44)
Direction					
<i>Cognitive anxiety</i>	-0.62 (-1.08)	-1.07 (3.30)	0.57	0.22	(-0.70, 0.25)
<i>Somatic anxiety</i>	-0.50 (0.77)	-0.26 (0.47)	0.10	0.34	(-0.13, 0.82)
<i>Self-confidence</i>	1.5 (1.17)	0.96 (1.14)	0.06	0.46	(-0.94, 0.51)
Frequency					
<i>Cognitive anxiety</i>	2.9 (1.31)	3.1 (1.42)	0.51	0.14	(-0.33, 0.62)
<i>Somatic anxiety</i>	2.4 (1.21)	2.3 (1.34)	0.68	0.08	(-0.55, 0.39)
<i>Self-confidence</i>	4.6 (1.32)	4.8 (1.41)	0.61	0.14	(-0.33, 0.62)

Note: M = mean; SD = standard deviation; d = effect size; * = $p < 0.05$.

Dicussion

The objective of this study was to investigate the influence of the variables time of practice, age and sex on the perceptions of competitive anxiety among handball athletes. The main results showed that the time of practice was associated with the direction and frequency of somatic anxiety and the frequency of self-confidence. The age of the athletes was associated only with the direction of self-confidence. There was no difference in the perception of competitive anxiety according to the sex variable.

Our results showed that the time of practice was related to a lower frequency of somatic anxiety. In fact, athletes with greater competitive experience tend to report lower levels of somatic anxiety (Fernandes, Nunes, Vasconcelos-Raposo, et al., 2013; Rocha & Osório, 2018) than athletes with less competitive experience. In addition, we observed that the time of practice was related to a better perception of the direction of somatic

anxiety. This ability to target competitive anxiety is one of the main components to be considered within the multidimensional theory of anxiety (Martens et al., 1990), and interpretations of competitive anxiety symptoms as facilitators or debilitates can directly influence the performance of athletes (Peng & Zhang, 2021).

However, although sociodemographic and contextual variables are related to competitive anxiety (Fernandes et al., 2014; Hagan et al., 2017; Rocha & Osório, 2018), we observed that the time of practice explained only 4% and 5% of somatic anxiety in the dimensions of direction and frequency, respectively. Therefore, it is likely that other factors act together in the changes observed in competitive anxiety. For example, individual characteristics may also be related to competitive anxiety (Kemarat et al., 2022; Marín-González et al., 2022). Personality factors such as neuroticism, extraversion, openness to experience, kindness and awareness can predict, together, approximately 22% of the changes in the competitive anxiety of athletes (Kemarat et al., 2022).

In addition, we observed an association between the time of practice and the frequency of self-confidence, indicating that sports experience can also influence the way athletes perceive self-confidence, explaining approximately 6% of this outcome. More experienced athletes who evaluate anxiety as a facilitator of performance tend to report higher levels of self-confidence frequency (Fernandes et al., 2014; Hagan et al., 2017) and low levels of cognitive and somatic anxiety (Fernandes et al., 2014; Silva et al., 2022). However, the perception of anxiety as a generator of difficulty in obtaining performance can cause a decrease in the perception of self-confidence (Fernandes et al., 2014). The relationship between self-confidence and the dimensions of cognitive and somatic anxiety seems to occur in a bidirectional manner. Thus, analysing the perception of competitive anxiety considering its response dimensions (intensity, direction and frequency) provides a more integrative assessment of athletes and the influence of anxiety on sports (Fernandes et al., 2014; Rocha & Osório, 2018).

Regarding the age of the athletes, we observed that this variable explained approximately 5% of the direction of self-confidence, indicating that age can influence the perception of athletes in relation to their ability to cope with the stressful demands of competition. Studies have suggested that young age is usually associated with factors such as feelings of insecurity and the use of less efficient strategies to deal with situations that cause anxiety (Rocha & Osório, 2018; Sagar & Jowett, 2012). Younger athletes tend to perceive demands as negative, while more experienced athletes tend to rely more on their ability to respond to the challenges imposed during the competition and have higher levels of self-confidence (Sagar & Jowett, 2012).

Although previous studies have reported that female athletes have lower levels of self-confidence and higher levels of cognitive and somatic anxiety (Correia & Rosado, 2019; Marín-González et al., 2022; Rocha & Osório, 2018), our results did not show an influence of the sex variable on the perception of competitive anxiety. Considering that athletes at lower competitive levels tend to perceive less self-confidence (Marín-González et al., 2022; Rocha & Osório, 2018), it is likely that the athletes in this study have a higher competitive level and that may have influenced the results. Athletes at a high competitive level may be more psychologically prepared due to their experience in competitions (Marín-González et al., 2022). This can increase self-confidence and produce similar levels of competitive anxiety among men and women (Silva et al., 2022) due to the greater ability of these athletes to manage and interpret the symptoms of competitive anxiety (Marín-González et al., 2022).

Strengths and limitations

This study has several limitations. First, the cross-sectional design made it impossible to make inferences about causality between the variables analysed. In addition, the competition phase during which the data were collected may have influenced the results, considering that the research was conducted in the final phase of the championship. The stage of competition may influence the perception of physiological aspects related to competitive anxiety (e.g., increased heart rate variability) (Paludo et al., 2022), and the final phase of the competition can be considered a contextual stressor for athletes (Paludo et al., 2022). Nevertheless, these results provide preliminary information on the influence of sociodemographic and individual variables (time of practice, age and sex) on the perception of competitive anxiety among handball athletes, which can be a reference for researchers and handball coaches.

Regarding the practical application of the present study, the results indicate the possibility of using sociodemographic data to individualize the psychological preparation of athletes. The identification of profiles based on the sociodemographic information of athletes can contribute to the development of more focused and personalized interventions for the management of competitive anxiety (Marín-González et al., 2022). For example, interventions aimed at improving task orientation and decreasing ego orientation of less experienced athletes can positively influence motor performance and promote the establishment of strategies these athletes can use to deal with competitive anxiety (Peng & Zhang, 2021).

Conclusions

Results indicate that the time of practice as an athlete influences the direction and frequency of somatic anxiety and self-confidence. In addition, it is likely that age may influence the perception of self-confidence for more experienced athletes. Finally, sex is not a determining factor for the perception of competitive anxiety in

handball athletes. These findings provide evidence of a specific relationship between sociodemographic variables and the perception of competitive anxiety in handball athletes. These results improve our understanding of the factors that may influence athletes' performance and mental health. Considering practice time, professionals and coaches can adapt psychological interventions according to individual athletes' needs. Based on these findings, personalized strategies to improve confidence and the ability to deal with competition anxiety can be developed. Furthermore, understanding how age and sex influence the perception of competitive anxiety allows for the development of specific approaches for different groups of athletes. This personalized approach can positively impact athletic performance and the mental well-being of athletes.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflicts of interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Author contributions

All authors provided substantial contributions to the study. Conceptualization: Adria M.M Nascimento & D.A. Pires.; Data collection: Adria M.M Nascimento; Analysis and data interpretation: Rodrigo W. Ferreira & Jhonatan W.P Gaia.; Drafting manuscript: Adria M.M Nascimento & Jhonatan W.P Gaia; Critical review: Rodrigo W. Ferreira; Jhonatan W.P Gaia & Daniel A. Pires. Supervision: Jhonata W.P Gaia & Daniel A. Pires. All authors contributed, read, and approved the final manuscript.

References:

- Ato, M., López, J. J., & Benavente, A. (2013). A classification system for research designs in psychology. *Anales de Psicología / Annals of Psychology*, 29(3), 1038–1059. <https://doi.org/10.6018/analesps.29.3.178511>
- Cohen, J. (1988). Statistical Power Analysis for the Behavioural Science (2nd Edition). In *Statistical Power Analysis for the Behavioral Sciences*.
- Correia, M., & Rosado, A. (2019). Anxiety in athletes: Gender and type of sport differences. *International Journal of Psychological Research*, 12(1), 9–17.
- Cox, R. H., Martens, M. P., & Russell, W. D. (2003). Measuring Anxiety in Athletics: The Revised Competitive State Anxiety Inventory-2. *Journal of Sport and Exercise Psychology*, 25(4), 519–533. <https://doi.org/10.1123/jsep.25.4.519>
- Fernandes, M. G., Nunes, S. A. N., Raposo, J. V., & Fernandes, H. M. (2014). Efeitos da experiência nas dimensões de intensidade, direção e frequência da ansiedade e autoconfiança competitiva: Um estudo em atletas de desportos individuais e coletivos. *Motricidade*, 10(2), 81–89. [https://doi.org/10.6063/motricidade.10\(2\).2930](https://doi.org/10.6063/motricidade.10(2).2930)
- Fernandes, M. G., Nunes, S. A. N., Vasconcelos-Raposo, J., & Fernandes, H. M. (2013). Factors influencing competitive anxiety in Brazilian athletes. *Revista Brasileira de Cineantropometria & Desempenho Humano*, 15(6), 705–714. <https://doi.org/10.5007/1980-0037.2013v15n6p705>
- Fernandes, M. G., Nunes, S. A., Raposo, J. V., Fernandes, H. M., & Brustad, R. (2013). The CSAI-2: An Examination of the Instrument's Factorial Validity and Reliability of the Intensity, Direction and Frequency Dimensions with Brazilian Athletes. *Journal of Applied Sport Psychology*, 25(4), 377–391. <https://doi.org/10.1080/10413200.2012.744780>
- Fernandes, M. G., Vasconcelos-Raposo, J., & Fernandes, H. M. (2012). Propriedades Psicométricas do CSAI-2 em Atletas Brasileiros Psychometric Properties of the CSAI-2 in Brazilian Athletes. *Psicologia: Reflexão e Crítica*, 25(4), 679–687.
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics*. sage.
- Ford, J. L., Ildefonso, K., Jones, M. L., & Arvinen-Barrow, M. (2017). Sport-related anxiety: current insights. *Open Access Journal of Sports Medicine, Volume 8*, 205–212. <https://doi.org/10.2147/oaajsm.s125845>
- Fortes, L. de S., Fiorese, L., Andrade Nascimento-Júnior, J. R., Almeida, S. S., & Ferreira, M. E. C. (2019). Efeito da Ansiedade Competitiva sobre a Tomada de Decisão em Jovens Atletas de Voleibol. *Psicologia: Teoria e Pesquisa*, 35, 1–8. <https://doi.org/10.1590/0102.3772e3538>
- Fritz, C. O., Morris, P. E., & Richler, J. J. (2012). Effect size estimates: Current use, calculations, and interpretation. *Journal of Experimental Psychology: General*, 141(1), 2–18. <https://doi.org/10.1037/A0024338>
- Hagan, J. E., Pollmann, D., & Schack, T. (2017). Interaction between gender and skill on competitive state anxiety using the time-to-event paradigm: What roles do intensity, direction, and frequency dimensions play? *Frontiers in Psychology*, 8(MAY), 1–13. <https://doi.org/10.3389/fpsyg.2017.00692>
- Hair Jr, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage publications.

- Haukoos, J. S., & Lewis, R. J. (2005). Advanced statistics: Bootstrapping confidence intervals for statistics with “difficult” distributions. *Academic Emergency Medicine*, 12(4), 360–365.
<https://doi.org/10.1197/j.aem.2004.11.018>
- Ivaskevych, D., Borysova, O., Fedorchuk, S., Tukaiev, S., Kohut, I., Marynych, V., ... Mihăila, I. (2019). Gender differences in competitive anxiety and coping strategies within junior handball national team. *Journal of Physical Education and Sport*, 19(2), 1242–1246. <https://doi.org/10.7752/jpes.2019.02180>
- Ivaskevych, D., Fedorchuk, S., Petrushevskyi, Y., Borysova, O., Ivaskevych, O., Kohut, I., ... Tukaiev, S. (2020). Association between competitive anxiety, hardiness, and coping strategies: A study of the national handball team. *Journal of Physical Education and Sport*, 20(1), 359–365.
<https://doi.org/10.7752/jpes.2020.s1051>
- Kemarat, S., Theanthong, A., Yeemin, W., & Suwankan, S. (2022). Personality characteristics and competitive anxiety in individual and team athletes. *PLOS ONE*, 17(1), e0262486.
<https://doi.org/10.1371/JOURNAL.PONE.0262486>
- Marín-González, F. H., Portela-Pino, I., Fuentes-García, J. P., & Martínez-Patiño, M. J. (2022). Relationship between Sports and Personal Variables and the Competitive Anxiety of Colombian Elite Athletes of Olympic and Paralympic Sports. *International Journal of Environmental Research and Public Health* 2022, Vol. 19, Page 7791, 19(13), 7791. <https://doi.org/10.3390/IJERPH19137791>
- Martens, R., Vealey, R. S., & Burton, D. (1990). *Competitive anxiety in sport*.
- Paes, M. J., Machado, T. D. A., Berbetz, S. R., & Stefanello, J. M. F. (2017). Frequency, Intensity and Direction of Anxiety and its Relationship with Group Cohesion in a Male Children's Volleyball Team. *Revista Brasileira de Psicologia Do Esporte*, 6(3), 46–56. <https://doi.org/10.31501/rbpe.v6i3.7276>
- Paludo, A. C., Woodman, T., Owen, J. A., Rabelo, F. N., Bernaciková, M., & Simões, A. C. (2022). Pre-competitive anxiety and autonomic responses in professional U-20 futsal players: Effect of the competition phase and game location. *Physiology & Behavior*, 254, 113903.
<https://doi.org/10.1016/J.PHYSBEH.2022.113903>
- Patel, D. R., Omar, H., & Terry, M. (2010). Sport-related Performance Anxiety in Young Female Athletes. *Journal of Pediatric and Adolescent Gynecology*, 23(6), 325–335.
<https://doi.org/10.1016/j.jpag.2010.04.004>
- Peng, F., & Zhang, L. W. (2021). The Relationship of Competitive Cognitive Anxiety and Motor Performance: Testing the Moderating Effects of Goal Orientations and Self-Efficacy Among Chinese Collegiate Basketball Players. *Frontiers in Psychology*, 12, 1965.
<https://doi.org/10.3389/FPSYG.2021.685649/BIBTEX>
- Rocha, V. V. S., & Osório, F. de L. (2018). Associations between competitive anxiety, athlete characteristics and sport context: Evidence from a systematic review and meta-analysis. *Revista de Psiquiatria Clinica*, 45(3), 67–74. <https://doi.org/10.1590/0101-60830000000160>
- Sagar, S. S., & Jowett, S. (2012). The Effects of Age, Gender, Sport Type and Sport Level on Athletes' Fear of Failure: Implications and Recommendations for Sport Coaches. *International Journal of Coaching Science*, 6(2).
- Schober, P., Boer, C., & Schwarte, L. A. (2018). Correlation coefficients: appropriate use and interpretation. *Anesthesia & Analgesia*, 126(5), 1763–1768.
- Silva-Rocha, V. V., de Sousa, D. A., & Osório, F. L. (2019). Psychometric properties of the Brazilian version of the Sport Anxiety Scale-2. *Frontiers in Psychology*, 10(MAR), 1–9.
<https://doi.org/10.3389/fpsyg.2019.00806>
- Silva, L. G. da S., Ferreira, R. W., Gaia, J. W. P., & Pires, D. A. (2022). Ansiedade Pré-Competitiva em Atletas de Voleibol Amador. *Retos*, 46, 574–580.
- von Elm, E., Altman, D. G., Egger, M., Pocock, S. J., Gøtzsche, P. C., & Vandenbroucke, J. P. (2007). The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. *Lancet (London, England)*, 370(9596), 1453–1457.
[https://doi.org/10.1016/S0140-6736\(07\)61602-X](https://doi.org/10.1016/S0140-6736(07)61602-X)