Associations between competitive anxiety, athlete characteristics and sport context: evidence from a systematic review and meta-analysis

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Abstract

Background: There is a vast literature investigating the possible associations between competitive anxiety, athlete variables and sports context. As far as we are concerned, there is no study which has compiled such findings to produce more robust evidence on this topic. **Objectives:** The aim of the study was to conduct an exploratory systematic review of the literature followed by a meta-analysis in order to investigate possible associations between competitive anxiety, social-demographic characteristics, profile of the athlete and sports context. **Methods:** Systematic searches of PubMed, PsycInfo, Web of Science, Lilacs and SciELO electronic databases were performed to identify studies published between January 2006 and January 2018, including a manual search in the references of the selected studies. **Results:** A total of 59 studies were included for qualitative synthesis and 27 for meta-analysis. More robust associations were observed between competitive anxiety and female gender, lower age, and less experience time. **Discussion:** Knowing the variables which exert influence on competitive anxiety can be relevant to plan specific treatment and intervention programs, enabling the athlete´s development beyond technical and physical preparation.

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Keywords: Competitive anxiety, performance anxiety, athlete, sport, evaluation.

Introduction

Anxiety is an emotional response stimulated by the anticipation of a real or potential threat[1]. In sports, competition can be considered a source of threats as the athlete's image is usually associated with his or her performance, the final result is always uncertain, there is exposure to public opinion and judgement by third parties, among others[2,3].

Because this condition is potentially anxiogenic and usually experienced by athletes, studies show that high levels of anxiety are conversely associated with sport performance[4-6]. In addition, performance can be indirectly affected by different symptoms of anxiety, such as physiological (e.g. energetic expenditure and cardiovascular alterations), motor (e.g. impairment in co-ordination), cognitive (e.g. decrease in attention, concentration and decision-making capacity) and relational (e.g. increase in conflicts among staff members) changes[7,8].

Due to the peculiarities of this psychological phenomenon within the context of sports, the term "competitive anxiety" (CA) was coined to refer to the emotional reaction which regularly emerges before or during sports competitions[3]. This construct is shown to be partially correlated with general anxiety (r = 0.35 to 0.50), which justifies its assessment on a specific basis[9].

CA was initially understood one-dimensionally, but this approach was surpassed with the introduction of the Multidimensional Theory of Anxiety, which proposes the existence of somatic (SCA) and cognitive (CCA) dimensions correlating to each other positively despite being different[3,10,11].

SCA is characterised by symptoms such as muscle tension, tachycardia, facial reddening, tremors and sweating, whereas CCA involves preoccupations preoccupations with self-demand, poor performance, negative evaluations, social comparison, expectations and demands by technical commission, team, family and supporters. With regard to the impact on the athlete's performance, CCA tends to have a negative relationship and SCA, in turn, a U-inverted relationship[3].

In addition to the different CA dimensions from a symptomatic perspective, one should consider its state-trait type. State-CA is experienced transiently, whereas trait-CA is considered a relatively stable trend in individuals who perceive different situations to be threatening[12].

With regard to the factors influencing CA, a pioneer study by Martens *et al.*[3] found higher levels in female athletes as well as in solo athletes with little competition experience. Since then, researchers have been investigating the impact of these and other variables such as age, hormones and relationship with coach on the levels of CA because knowing these implications will contribute significantly to the design and guidance of prevention and intervention programs in the specific population.

Although extensive literature on this issue has been produced over the decades, as far as we know there is no study gathering findings to seek robust evidence. Therefore, we have aimed to conduct an exploratory systematic review followed by meta-analysis in order to investigate whether there are differences in the levels of CA between athletes in function of social-demographic characteristics, athlete's profile and sport context. The study of these variables was based on the fact that they were always present or already existing *a priori* in the athlete and in the context of competition.

Methods

Based on the Systematic Reviews and Meta-Analyses Guidelines[13], we have conducted systematic searches in the literature by using the electronic databases PubMed, PsycInfo, SciELO, Web of Science and Lilacs for the key-words "competitive anxiety" and "sports performance anxiety", including a manual search from the references cited in the selected studies.

The inclusion criteria for the studies were the following: a) written in English, Spanish or Portuguese; b) human samples with no age-group restrictions; c) quantitative methodology; d) published in the past 12 years (i.e. January 2006 to January 2018); e) objective of investigating the levels of CA in function of social-demographic characteristics, athlete's profile and sport context.

Exclusion criteria as well as selection flowchart for the studies are presented in Figure 1. This stage was conducted by two research

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psychologists in the field of mental healthcare, with any discrepancy being resolved through consensus.

The qualitative methodology used by the included studies was assessed by means of the using the Strengthening the Reporting of Observational Studies in Epidemiology – STROBE[14] and Consolidated Standarts of Reporting Trials – CONSORT[15], depending on their design. For each item of the checklist, the following scoring was applied: fully fulfilled (1 point), partially fulfilled (0.5 point) or not fulfilled (0 point). The index of methodological quality was obtained by adding the scores attributed to each item, with the total sum being divided by the total number of items applied to the study and then multiplied by 100.

The following information were extracted from the studies: sample size, age of the participants, sport modality, time of experience in the sport, recruitment source, study design, measurement instruments used, interest variables and outcomes. A global qualitative analysis of the outcomes of each study in function of the independent variables was conducted.

Then, meta-analyses were independently performed in function of the four most studied variables, namely: gender, age, experience and competitive level. We included the studies that described all the necessary gross data in the published material. The missing data were requested to the main authors of the studies. Of the 10 e-mail sent, only one returned with the information. The analyses were conducted according to the following parameters: a) SCA and CCA dimension, b) state-trait CA types.

Statistical analyses were performed using the Stats Direct software package. The heterogeneity was evaluated using Cochran's Q test. The studies were considered homogenous when the significance of the Cochran's Q test was > 0.05, in these cases, a fixed-effects method was used. In the case of heterogeneity among the studies (significance ≤ 0.05), a random-effects method was used[16]. Higgins and Thompson statistics were used for inconsistency (I^2), which was interpreted as follows: low (< 25%), moderate (26 to 75%) and high (> 75%)[17]. Egger's regression test was also used to assess the presence of publication bias. The test was rejected when the significance level was $p \geq 0.05$[18].

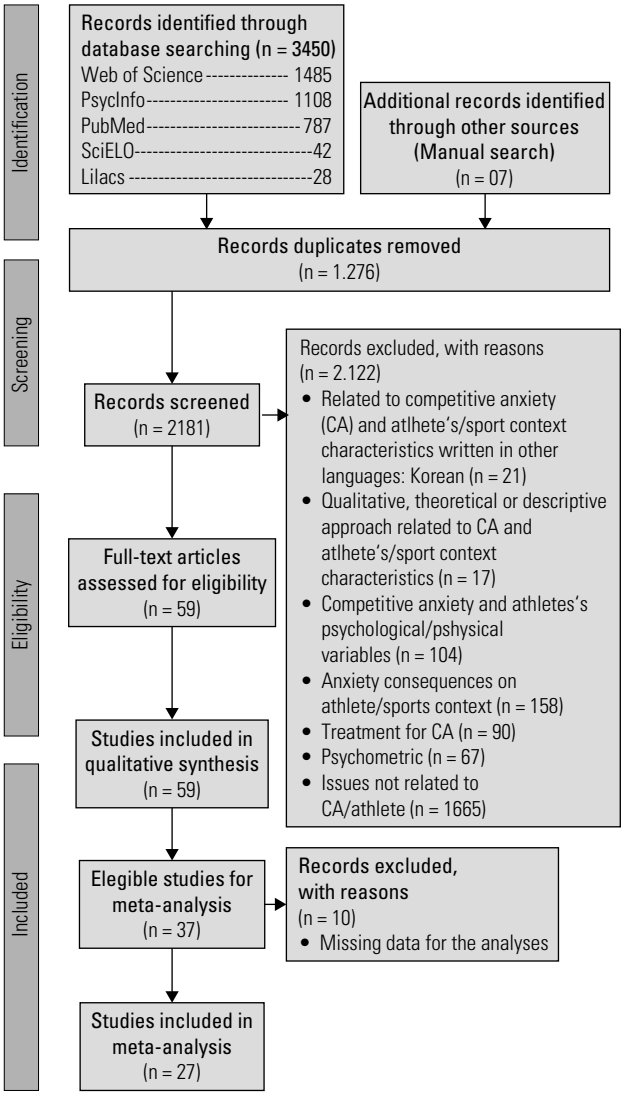

Figure 1. Inclusion and exclusion processes of studies based on PRISMA flowchart.

Results

A total of 3.457 studies have been identified. After application of exclusion criteria, 59 studies were included in the qualitative synthesis, and of these, 27 in the meta-analysis, as shown in Table 1.

With regard to the main characteristics of the studies, one can observe that sample size ranged from 9 to 1.038 athletes (totalizing = 8603 participants; mean = 145.8), the most used methodology was cross-sectional (n = 53; 89.8%), the main source of recruitment was local competition (n = 46; 78.0%), and the majority of the studies used multidimensional scales (n = 45; 76.3%) to evaluate the CA (for example, CSAI-2 and SAS-2).

With regard to methodological quality, the majority of the studies (n = 55; 93.2%) had indices equal or above 50% (mean = 58.9%). The most overlooked items in the studies were specification of measures aimed at preventing potential bias sources and calculation of sample size (Supplementary material available upon request to the author).

The independent variables assessed by the studies were distributed into three categories: a) socio-demographic characteristics (SG); b) athlete's profile (AT); and c) sport context (CO). Table 2 shows briefly the results of the qualitative synthesis regarding the influence of these variables on CA (Supplementary material available upon request to the author).

Qualitatively, higher levels of CA were observed in athletes who were female, younger and less competitively experienced as well as presenting previous poor experience, practicing individual sports, and competing in official events. These results were maintained even when studies using one-dimensional measurement or general anxiety assessment instruments were excluded.

The results of the meta-analysis are available in Table 3 (Supplementary material available upon request to the author).

Female athletes showed higher levels CA compared to males with small effect size in most of the analyses, however, this difference becomes more expressive in function of the trait-CA. There is evidence that younger athletes have higher levels of CA in the somatic dimension, and in the state condition, but the effect size effect is small. Although the difference was small, less experienced athletes have higher levels of CCA and state-CA compared to the more experienced. Finally, there were no differences between the athletes regarding the athlete's competitive level.

Discussion

The studies included in the present review have had, in general, moderate methodological quality. The weaknesses found are related to the lack of presentation of raw data, measures used to avoid potential bias sources and sample size calculation. Another negative point to be considered, despite the sound literature on the two-dimensionality of this psychological phenomenon[3,10,11], is the use of one-dimensional measurements of CA (SCAT) and others for measuring the general/global anxiety (STAI and BAI), suggesting that there may be an influence of other anxiety symptoms/characteristics other than competitive. This fact reinforces the importance of using specific anxiety scales in the sports context considering the multidimensionality of this phenomenon.

Table 1. Studies included in the systematic review and meta-analysis

Studies included		Sample					Methodological Aspects			
Ref.	Author (Year) Country	*n*	Age (Years) Mean (sd)/Range	Sport	Training (Years) Mean (sd)	Source of Recruitment	Design	Anxiety Instruments	Interest variables	Method Quality (%)
19	Bertuol & Valentini (2006) BRA	35♀ 33♂	12-16	A, V	< 1.0	CE	CS	SCAT	SG/AT/CO	50%
20	Carré *et al.* (2006) CAN	14♂	18.2 (1.48)	HK	NI	CE	CS	CSAI-2	CO	61%
21	Fernandes & Nunes (2006) BRA	9♂	27.8 (NI)	FT	> 5.0	CE	CS	STAI-S	CO	59%
22	Han *et al.* (2006) KOR	277♂	17.3 (2.99)	A, BB, CR, D, G, R, RG, J, JV, S, SW, TW, SW, WT	NI	NI	CS	STAI-ST	AT/CO	55%
23	Stavrou *et al.* (2006) GRC	52♀ 47♂	20.0 (4.5)	A, CC, ST, SW	> 7.9 (4.6)	CE	CS	CSAI-2D	CO	61%
24*	Gonçalves & Belo (2007) BRA	47♀ 58♂	15.2 (1.76)	F, H, SW, SSW, V	NI	LP	CS	SCAT	SG/AT/CO	61%
25	Haneishi *et al.* (2007) USA	18♀	18-24	S	NI	CE/LP	CS	SAS	AT	55%
26*	Vasconcelos-Raposo *et al.* (2007) BRA	529♂	23.0 (4.23)	S	11.21 (4.47)	LP	CS	CSAI-2	SG/AT/CO	55%
27*	Abrahamsen *et al.* (2008) NOR	89♀ 101♂	17.8 (5.7)	A, BD, G, O, SW, T	NI	CE	CS	SAS	SG	61%
28*	García *et al.* (2008) ESP	48♀ 49♂	14.7 (1.3)	J	NI	CE	CS	CSAI-2	SG	57%
29*	Géczi *et al.* (2008) HUN	52♂	U-18: 16.78 (NI) A-18: 27.21 (NI)	IHK	NI	LP	CS	CSAI-2	SG	50%
30*	Hanton *et al.* (2008) UK	97♀ 120♂	20.4 (2.92)	A, C, RG, T	NI	NI	CS	SAS-M CSAI-2M	AT	61%
31	Kaplan *et al.* (2008) TUR	22♂	22.6 (2.0)	S	10.8 (1.9)	CE	PL	STAI-S	CO	48%
32	Ramiro *et al.* (2008) ESP	18♀	24.0 (3.9)	HK	NI	CE	CS	STAI-S	AT	52%
33	Abenza *et al.* (2009) ESP	10♂	NI	B	NI	CE	CS	STAI-ST	CO	52%
34*	Filaire *et al.* (2009) FRA	8♀ 8♂	♀: 20.2 (1.0) ♂: 22.2 (2.8)	T	10.5 (3.2)	CE	CS	CSAI-2D	SG	55%
35*	Géczi *et al.* (2009) HUN	95♂	16-20	IHK	NI	CE	CS	CSAI-2	SG	57%
36*	Grossbard *et al.* (2009) USA	498♀ 540♂	11.5 (1.5)	BB, HK, S, V	NI	CE	CS	SAS-2	SG	64%
37	Guillén & Sánchez (2009) ESP	84♀	FD: 23.2 (4.0) NT: 24.9 (3.4)	B	> 5.3 (4.9)	CE	CS	STAI-ST	SG/CO	50%
38	Kim *et al.* (2009) KOR	12♂	EL: 16.2 (1.38) NEL: 15.8 (0.75)	G	NI	CE	CS	CSAI-2	AT	52%
39	Draper *et al.* (2010) NZL	9♂	20.3 (1.1)	CB	2.75 (1.75)	AS	E	CSAI-2R	CO	42%
40	Fernandes & Silva (2010) BRA	110♂ 151♂	JJ: 23.0 (5.06) SF: 18.1 (5.08)	JJ, SF	> 4.02 (4.08)	CE	CS	CSAI-2	SG/AT	57%
41	Ferreira *et al.* (2010) BRA	12♀	21.5 (2.9)	V	≥ 8.0	CE	CS	SCAT	SG/CO	34%
42	Interdonato *et al.* (2010) BRA	73♂	13.2 (1.88)	B, J, S, SW, V	3.43 (1.79)	LP	CS	SCAT	SG/AT/CO	57%
43*	Nicholls *et al.* (2010) UK	55♀ 252♂	21.3 (2.8)	VS	> 9.1 (5.2)	CE	CS	CSAI-2R	SG/AT/CO	52%
44	Aguirre-Loaiza & Bermúdez (2011) COL	93♂	17.4 (2.0)	S	7.7 (1.9)	CE	CS	STAI-S	SG/AT/CO	70%
45*	Kolayis & Sari (2011) TUR	44♀ 82♂	20.5 (2.93)	J	8.86 (3.84)	CE	CS	CSAI-2 STAI-S	SG/AT	50%
46*	León-Prados & García (2011) ESP	8♀ 8♂	♀: 10.6 (1.19) ♂: 20.6 (2.92)	AG	> 2.0	CE	CS	CSAI-2RD	SG/AT/CO	61%

Studies included			Sample					Methodological Aspects		
Ref.	Author (Year) Country	*n*	Age (Years) Mean (sd)/Range	Sport	Training (Years) Mean (sd)	Source of Recruitment	Design	Anxiety Instruments	Interest variables	Method Quality (%)
47*	Modroño & Guillén (2011) ESP	19♀ 60♂	24.7 (5.8)	W	NI	CE	CS	CSAI-2 SCAT	SG/AT	57%
48	Parry *et al.* (2011) AUT	3♀ 9♂	42.5 (3.6)	TH	> 5.0	CE	CS	CSAI-2	CO	50%
49	Radochonski *et al.* (2011) POL	132♀♂	20.5 (4.5)	A, K	NI	NI	CS	CSAI-2	CO	52%
50*	Vieira *et al.* (2011)BRA	28♀ 47♂	14-19	A	♀: 3.95 (2.45) ♂: 3.39 (2.12)	CE	CS	CSAI-2	SG	57%
51*	Borrego *et al.* (2012) PRT	44♀ 322♂	17.1 (1.6)	S	NI	CE	CS	CSAI-2	SG	57%
52	Singley *et al.* (2012) USA	8♀ 14♂	18-40	SD	NI	LP	CS	CSAI-2M	CO	64%
53*	Souza *et al.* (2012) BRA	18♀ 33♂	17.8 (2.85)	SW	> 4.11 (4.25)	CE	CS	CSAI-2 SCAT	SG/AT	64%
54	Villas Boas *et al.* (2012) BRA	48♂	12-13	F	NI	CE	CS	CSAI-2	AT/CO	45%
55	Asghar *et al.* (2013)	793♂	12-18	HK, S	NI	LP	CS	CSAI-2	SG	61%
56*	Fernandes *et al.* (2013) BRA	70♀ 233♂	24.2 (5.07)	B, F, H, J, JJ, K, R, S, SF, SW, T, V	9.03 (5.92)	NI	CS	CSAI-2R	SG/AT/CO	66%
57*	Ibarzábal (2013) ESP	40♀ 52♂	29.1 (5.61)	BB	11.02 (4.79)	CE	CS	CSAI-2	SG	57%
58	Jeong & Park (2013) KOR	9♀ 57♂	KR: 43.2 (NI) NKR: 33.5 (NI)	T	> 8.0	CE	CS	CSAI-2	SG	66%
59*	Morales *et al.* (2013) ESP	14♀ 10♂	NT: 22.3 (2.11) IT: 24.1 (1.78)	J	NI	CE	CS	CSAI-2R	AT/CO	57%
60	Parnabas & Mohamood (2013) MYS	147♀♂	NI	S	NI	CE	CS	CSAI-2	SG	57%
61	Ramis *et al.* (2013) ESP	422♀♀ 363♂	12.7 (2.20)	AG, B, H, SW, SSW, T, WP	NI	CE	CS	SAS-2	CO	55%
62*	Ruiz-Juan & Zarauz (2013) ESP	71♀ 330♂	♀: 45.7 (10.25) ♂: 47.9 (9.14)	A	NI	CE	CS	CSAI-2R	SG/AT/CO	52%
63	Arruda *et al.* (2014) BRA	24♂	17.8 (0.4)	B	NI	CE	CS	CSAI-2	CO	66%
64*	Fernandes *et al.* (2014) BRA	71♀ 196♂	24.3 (5.62)	B, H, F, FV, J, JJ, K, MC, R, S, SF, SW, V	10.03 (5.62)	CE	CS	CSAI-2R	AT	66%
65*	González & Fayos (2014) ESP	22♀ 90♂	27.4 (4.9)	SW, T, V	NI	LP	CS	STAI-ST	SG/AT/CO	68%
66	Han *et al.* (2014) KOR	33♀♂	NI	BS	NI	CE	CS	CSAI-2 STAI-T	AT	57%
67	Silva *et al.* (2014) BRA	13♀	16.3 (1.1)	V	4.7 (NI)	CE	PL	CSAI-2 BAI SSA	CO	59%
68*	Stenling *et al.* (2014) AUS	163♀ 152♂	♀: 19.4 (3.0) ♂: 20.6 (4.0)	FB, IHK	♀: > 10.1 ♂: > 12.1	CE	CS	CSAI-2R	SG	73%
69	Wolf *et al.* (2014) CAN	108♀ 144♂	20.32 (1.85)	B, IHK, V	> 10.03 (4.22)	CE	CS	CSAI-2D	SG/AT/CO	61%
70	Cunniffe *et al.* (2015) UK	24♂	26.2 (0.9)	RG	NI	CE	PL	CSAI-2R	AT/CO	55%
71	Fernandez-Fernandez *et al.* (2015) ESP	12♀	13.0 (0.3)	T	6.0 (2.8)	CE	PL	CSAI-2R	AT/CO	52%
72	Pesce *et al.* (2015) ITA	25♂	28.6 (5.34)	KB	NI	CE	PL	STAI-S	CO	59%
73*	Machado *et al.* (2016) BRA	24♀ 23♂	16.1 (0.34)	V	4.9 (1.99)	CE	CS	CSAI-2	SG/AT	84%
74*	Kurimay *et al.* (2017) USA	20♀ 80♂	10-60	TT	NI	CE	CS	CSAI-2R	SG	75%

Studies included			Sample				Methodological Aspects			
Ref.	Author (Year) Country	*n*	Age (Years) Mean (sd)/Range	Sport	Training (Years) Mean (sd)	Source of Recruitment	Design	Anxiety Instruments	Interest variables	Method Quality (%)
75*	Hagan *et al.* (2017)	E: 21♀ 26♂ SE: 14♀ 29♂	26.7 (5.29)	T	9.6 (5.12)	CE	CS	CSAI-2D	SG	89%
76*	Nikseresht *et al.* (2017)	14♂	11.7 (0.82)	SW	NI	CE	CS	SCAT	SG	77%
77	Arruda *et al.* (2017)	12♂	18.6 (0.50)	B	NI	CE	CS	CSAI-2	CO	77%

* = studies included in meta-analysis; ♀ = women; ♂ = men; A = Athletics; A-18 = above 18 years; AG = Artistic Gymnastics; AS = Artificial Situation; AT = Athlete's characteristics; AUS = Australia; AUT = Austria; B = Basketball; BAI = Beck Anxiety Inventory; BB = Bodybuilding; BD = Badminton; BRA = Brazil; BS = Baseball; C = Cricket; CAN = Canada; CB = Climbing; CC = Cycling; CE = Competitive Event; CO = Context characteristics; COL = Colombia; CR = Ci-reum; CS = Cross-sectional; CSAI-2 = Competitive State Anxiety Inventory-2(D = Direction; M = Modified by researchers; R = Revised); D = Discus; E = Experimental; EL = Elite; F = Futsal; FB = Floorball; FD = First Division; FRA = France; FT = Fistball; FV = Footvolley; G = Golf; GER = German; GRC = Greece; H = Handball; HK = Hockey; HUN = Hungary; IHK = Ice Hockey; IT = International; ITA = Italy; J = Judo; JJ = Jiu-Jitsu; JV = Javelin; K = Karate; KB = Kickboxing; KR = Korean; KOR = Republic of Korea (South Korea); LP = Local practice; MC = Motocross; MYS = Malaysia; *n* = Sample size; NEL = Non elite; NI = Not informed; NKR = Not Korean; NOR = Norway; NT = National; NZL = New Zealand; O = Orienteering; PL = Prospective longitudinal; POL = Poland; PRT = Portugal; R = Running; REF = Reference number; RG = Rugby; S = Soccer; SAS = Sport Anxiety Scale (-2: second version; M = Modified by researchers); SCAT = Sport Competition Anxiety Test; SD = Skydiving; SF = Surf; SG = Sociodemographic characteristic; SPA = Spain; SSA = Subjective Anxiety Scale; ST = Shooting; STAI = State-Trait Anxiety Inventory (S = only state subscale; T = only trait subscale; ST = both state and trait subscale); SW = Swimming; SSW = Synchronised Swimming; T = Tennis; TH = Triathlon; TUR = Turkey; TT = Table Tennis; TW = Taekwondo; UK = United Kingdom; USA = United States of America; U-18 = under 18 years; V = Volleyball; VS = Various sports; W = Windsurf; WP = Water Polo; WT = Wrestling.

Table 2. Qualitative synthesis of the results

Qualitative variables	n	At least one evidence of influence in competitive anxiety#	
Sociodemographic		**No**	**Yes***
Gender (Female x Male)	21	7 [19,45,46,47,50,69,73]	♀ >: 12 [24,27,34,36,43,51,53,56,62,65,68,74] | ♂ >: 2 [57,75]
Age (Younger x Older)	18	7 [24,35,42,44,46,58,76]	Younger >: 9 [26,28,29,40,41,45,47,53,62] | Older >: 2[19,36]
Nationality/Ethnics**	3	0	3 [55,58,60]
Educational Level (Higher x Lower)	2	1 [44]	Higher >: 1 [45]
Income (Higher x Lower)	1	0	Higher >: 1 [44]
Place of Birth (Interior x Capital)	1	1 [44]	0
Athletes' Profile		**No**	**Yes***
Experience (Less x More)	13	5 [40,56,64,69,73]	Less >: 7 [26,30,40,44,45,53,62] | More >: 1 [19]
Competition Level (Lower x Higher)	11	4 [24,32,46,47]	Lower >: 6 [26,30,38,53,59,65] | Higher >: 1 [43]
Previous Performance (Worse x Better)	4	0	Worse >: 3 [22,66,71] | Better >: 1 [69]
Status (Nonstarter x Starter)	5	5 [25,54,69,70,73]	0
Team Position**	4	3 [26,37,54]	1 [44]
Sport Context		**No**	**Yes***
Temporal Pattern (Pre x Post Competition)	8	2 [23,25]	Pre >: 5 [31,41,48,52,71] | Post >: 3 [31,71,72]
Type of Sport (Individual x Team)	6	1 [24]	Individual >: 4 [19,22,42,43] | Team >: 1 [56]
Sport Modality**	7	2 [39,42]	5 [22,49,61,62,65]
Place of Competition (Away x Home)	6	3 [63,67,70]	Away >: 3 [20,23,69]
Type of Competition (Official x Unofficial)	5	0	Official >: 5 [25,59,71,72,77]
Opponent´s Level (Higher x Lower)	3	1 [69]	Higher >: 2 [33,77]

* = Non exclusive category; ** = It was not possible to draw up categories for comparisons due to data's heterogeneity; # = number of the study as mentioned in Table 1; ♀ = Female; ♂ = Male; _ = studies that used one-dimensional or general scales to assess CA.

From a qualitative point of view, it was observed the influence of some variables on the CA levels: female, younger and less competitively experienced as well as presenting previous poor experience, individual sports, and official events.

Meta-analyses have been conducted to seek more robust results by using SCA/CCA dimensions and type of trait-state anxiety as moderating variables. With regard to gender, it was found that female athletes had a higher level of anxiety compared to male counterparts. This fact was corroborated by the meta-analysis, showing significant differences in all dimensions, mainly in the trait-CA. In the neurological perspective of the psychopathology, these findings are supported by the literature showing a higher prevalence of anxiety symptoms and disorders in females due to the fact that the oscillating levels of gonadal hormones occur more often clinically in women than in men, which increases the susceptibility of the former to stress and anxiety[78-81].

However, sports specialists argue that female athletes are more anxious than male ones due to the influence of other factors, such as honesty to speak about feelings/emotions[27], susceptibility to external stimuli[53], commitment to the sports practicing[62], susceptibility to pressures from sports environment[82] and greater focus on the risk of failure rather than on achieving success[83].

With regard to age, the levels of CA tend to be higher in groups of young athletes. Quantitative analysis indicated a small effect size between the groups in the SCA and state-CA. Previous studies associated these findings to the fact that young age is directly related to factors such as feelings of insecurity, emotional dependency and use of less elaborated strategies for coping with physiological responses[28,36,41,47,53].

Similarly, qualitative analyses indicated that less experienced athletes were those with higher levels of CA, but in meta-analysis, differences with small effect size were found in the CCA and state-CA. Martens *et al.*[3] believe that experienced athletes have more capacity to control their concerns, whereas other authors support the hypothesis that experienced athletes tend to perceive the competition from a more positive perspective[30] as they are more exposed to competitions and reflect

positively on self-effectiveness, which in turn increases self-confidence during the contests[53] and favours the development of more effective coping strategies to deal with criticism from oneself and others[26,84].

Qualitative analysis has shown that the levels of CA tend to be higher in athletes with low competitive level, but these results were not confirmed in the quantitative analysis as no significant differences were found between the groups assessed. This leads to the questioning of the hypothesis that less competitive athletes tend to use less coping strategies and consequently they are more likely to experience anxiety symptoms[26,30].

The findings of the qualitative analysis indicate higher levels of CA in athletes who practice individual sports compared to those who practice team sports. Studies reporting that athletes who practice individual sports are more anxious during competitions because of the responsibility for achieving results which depend exclusively on one person only, whereas those practicing team sports would share this responsibility with other members of the team[19].

With regard to competition, qualitative analysis has shown that the levels of CA tend to increase before and during official competitions and in contests played away from home. The proximity of competition increases the athlete's level of anxiety because of a threatening competitive environment, since important values and goals are at stake[79]. In addition, away contests would be influenced by travel, poor familiarity with venue, away supporters, referee bias and absence of family and social support[20,70].

Other evidence found has to do with the athlete's previous performance. Qualitative analysis has shown the 75% of the studies reported that poor performance tends to increase the levels of CA, a fact which may be attributed to the low level of self-confidence among athletes following a defeat. Unfortunately, this finding cannot be quantitatively analysed as the selected studies using this variable did not list all raw data needed.

With regard to team status, quantitative analysis has shown no difference in the levels of CA between starting and reserve athletes. However, there are a few studies focusing on this issue, which limits robust conclusions to be drawn. It is believed that the absence of difference may be associated with the fact that starting and reserve athletes are usually submitted to the same routine, level of demand and sports results, which would have a similar impact on their experience of CA.

Despite the reduced number of studies and heterogeneity of the groups studied, the qualitative results indicate influence of nationality/ethnics on the levels of CA. The role of sports and the preference for a specific modality can reveal important characteristics of a country's culture, norms and customs. Experience and manifestation of anxiety may be influenced by ethnical and cultural factors due to beliefs on mental diseases, including social context and norms to which an individual is exposed[85].

With regard to team position, despite the specificities of each sports modality, the qualitative analysis has shown no differences in the levels of CA in football, futsal and basketball athletes. As for country of birth, education level, income level and opponent's status, one can highlight the presence of exploratory data with heterogeneous and inconclusive results, thus requiring further investigations on their impact on CA.

Despite the efforts made to cover all the scientific studies on the theme available in the past twelve years, we also have to emphasise that there are limitations in the present work: 1) low number of studies included in the quantitative analyses, despite the effort to contact the authors; 2) exclusion of studies written in Korean due to lack of domain of the language, warning that possible specificities of this population should be explored.

For a better understanding of the construct CA, it is suggested that new systematic reviews should be performed in order to seek evidence of associations with other psychological (i.e. personality traits, coping skills, motivation, self-esteem, self-confidence), physiological (i.e. injuries, hormonal changes) and relational (i.e. relationship with coach, family, teammates) variables. Knowing these aspects and those addressed by our study will contribute to the development of a more integrative view of athletes and better management of their symptoms of CA.

In view of the results obtained, one can conclude that CA is a phenomenon occurring in the sports context which deserves attention as it is closely related to the athlete's quality of life and performance, being more significantly associated with female, younger and less experienced athletes.

Table 3. Gross results of the meta-analysis

Independent Variables	Moderator Analysis	Effect Size (95% CI)	Cochran Q	I2 (95% CI)	Egger (95% CI)
	Somatic dimension (SCA)	0.24 (0.02 to 0.45)	84.43 (df = 15); p < 0.0001	82.2% (71.6% to 87.7%)	1.60 (-0.74 to 3.95); p = 0.17
GENDER	Cognitive dimension (CCA)	0.26 (0.10 to 0.43)	119.09 (df = 19); p < 0.0001	84.0% (76.5% to 88.3%)	1.04 (-1.18 to 3.26); p = 0.34
♀ x ♂ (Ref.)	State-CA	0.25 (0.10 to 0.41)	141.41 (df = 30); p < 0.0001	78.8% (70.0% to 84.1%)	-0.78 (2.89 to 1.33); p = 0.46
	Trait-CA	0.78 (0.35 to 1.21)	217.91 (df = 6); p < 0.0001	97.2% (96.3% to 97.8%)	10.38 (3.77 to 16.99); p = 0.01
	Somatic dimension (SCA)	0.29 (0.02 to 0.55)	24.14 (df = 7); p = 0.0011	71.0% (24.0% to 84.3%)	1.55 (-0.64 to 3.73); p = 0.13
AGE	Cognitive dimension (CCA)	0.11 (-0.13 to 0.36)	44.71 (df = 8); p < 0.0001	82.1% (64.6% to 88.9%)	1.85 (-0.77 to 4.50); p = 0.14
Younger x Older (Ref.)	State-CA	0.38 (0.16 to 0.60)	28.78 (df = 11); p = 0.0025	61.8% (13.1% to 78.1%)	1.31 (-0.57 to 3.18); p = 0.15
	Trait-CA	-0.08 (-0.25 to 0.10)	20.30 (df = 6); p = 0.0024	70.4% (13.0% to 84.7%)	0.86 (-2.09 to 3.82); p = 0.48
	Somatic dimension (SCA)	0.23 (-0.05 to 0.50)	18.32 (df = 4); p = 0.0011	78.2% (26.6% to 89.1%)	3.14 (-5.16 to 11.45); p = 0.32
EXPERIENCE	Cognitive dimension (CCA)	0.25 (0.03 to 0.47)	7.20 (df = 3); p = 0.0659	58.3% (0% to 84.1%)	3.55 (3.17 to 3.90); p = 0.001
Less x More (Ref.)	State-CA	0.21 (0.03 to 0.40)	24.07 (df = 7); p = 0.0011	70.9% (23.6% to 84.2%)	3.19 (-0.10 to 6.47); p = 0.05
	Trait-CA*	--	--	--	--
	Somatic dimension (SCA)	0.29 (-0.37 to 0.94)	19.01 (df = 4); p = 0.0008	79.0% (31.2% to 89.4%)	5.13 (-3.87 to 14.12); p = 0.17
COMPETITIVE LEVEL	Cognitive dimension (CCA)	0.21 (-0.31 to 0.73)	57.30 (df = 6); p < 0.0001	89.5% (80.8% to 93.2%)	-0.32 (-6.11 to 5.50); p = 0.90
Lower x Higher (Ref.)	State-CA	0.22 (-0.23 to 0.67)	73.27 (df = 10); p < 0.0001	86.4% (77.2% to 90.8%)	0.17 (-3.21 to 3.55); p = 0.91
	Trait-CA*	--	--	--	--

* Unrealized analysis due to small number of avaliable studies; CA = Competitive Anxiety; CI = Confidence Interval; I^2 = Inconsistency; MQI = Methodological quality index.

Although the effect size has been small, our findings contribute to the relevance of considering these vulnerabilities in the prevention and intervention programs aimed at managing environmental stimuli, arousal and negative thoughts by means of visualisation, relaxing, breathing and self-dialogue techniques, thus stimulating the athlete's development beyond technical and physical preparation[86].

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Author contributions statement

Both authors contributed equally to this work.

Conflict of interest statement

There is no conflict of interest.

References

1. Gross C, Hen R. The developmental origins of Anxiety. Nat Rev Neurosci. 2004;5(7):545-52.
2. Frischnecht P. A influência da ansiedade no desempenho do atleta e do treinador. Treino Desportivo. Lisboa: II série. 1990;15:21-8.
3. Martens R, Vealey RS, Burton D. Competitive Anxiety in Sport. Champaign, IL: Human Kinetics; 1990.
4. Judge LW, Urbina LJ, Hoover DL, Craig BW, Judge LM, Leitzelar BM, et al. The impact of competitive trait anxiety on collegiate powerlifting performance. J Strength Cond Res. 2016;30(9):2399-405.
5. Milavić B, Jurko D, Grgantov Z. Relations of competitive state anxiety and efficacy of young volleyball players. Coll Antropol. 2013;37(suppl 2):83-92.
6. Mottaghi M, Atarodi A, Rohani Z. The relationship between coaches' and athlete's competitive anxiety, and their performance. Iran J Psychiatry Behav Sci. 2013;7(2):68-76.
7. Mesquita RM, Todt NS. A especialização esportiva precoce e a maturação biológica: investigando a base do Olimpismo. Rev Perfil. 2000;4(4):83-7.
8. Weinberg RS, Gould D. Fundamentos da Psicologia do Esporte e do Exercício. Porto Alegre: Artmed; 2001.
9. Fernandes MG, Vasconcelos-Raposo J, Fernandes HM. Propriedades psicométricas do CSAI-2 em atletas brasileiros. Psicologia: Reflexão e Crítica. 2012;25(4):679-87.
10. Burton D. Measuring competitive state anxiety. In: Duda JL (Ed.). Advances in sport and exercise psychology measurement. Morgantown, WV: Fitness Information Technology; 1998.
11. Smith RE, Smoll FL, Cumming SP, Grossbard JR. Measurement of Multidimensional Sport Performance Anxiety in Children and Adults: The Sport Anxiety Scale-2. J Sport Exerc Psychol. 2006;28:479-501.
12. Spielberger CD, Gorsuch RL, Lushene RE. Manual for the State-Trait Anxiety Inventory. Paolo Alto, California, Consulting Psychologists Press; 1970.
13. Liberati A, Altman DG, Tetzlaff J, Mulrow C, Gøtzsche P, Ioannidis JPA, et al. The PRISMA Statement for Reporting Systematic Reviews and Meta-Analyses of Studies That Evaluate Health Care Interventions: Explanation and Elaboration. BMJ. 2009;339:b2700.
14. von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP, et al. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. J Clin Epidemiol. 2008;61(4):344-9.
15. Schulz KF, Altman DG, Moher D. CONSORT 2010 Statement: Updated Guidelines for Reporting Parallel Group Randomized Trials. BMJ. 2010;340:c332.
16. Lau J, Ioannids JP, Schmid CH. Summing up evidence: one answer is not always enough. Lancet. 1998;351(9096):123-7.
17. Higgins JP, Thompson SG, Deeks JJ, Altman DG. Measuring inconsistency in meta-analyses. BMJ. 2003;327(7414):557-60.
18. Egger M, Smith GD, Schneider M, Christoph M. Bias in meta-analysis detected by a simple, graphical test. BMJ. 1997;315:629-34.
19. Bertuol L, Valentini C. Ansiedade competitiva de adolescentes: gênero, maturação, nível de experiência e modalidades esportivas. Rev Educ Fís Maringá. 2006;17(1):65-74.
20. Carré J, Muir C, Belanger J, Putnam SK. Pre-competition hormonal and psychological levels of elite hockey players: relationship to the "home advantage". Physiol Behav. 2006;89(3):392-8.
21. Fernandes MG, Nunes SAN. Ansiedade pré-competitiva e home advantage. Rev Saúde. 2006;2(1):21-9.
22. Han DH, Kim JH, Lee YS, Bae SJ, Bae SJ, Kim HJ, et al. Influence of temperament and anxiety on athletic performance. J Sports Sci Med. 2006;5(3):381-9.
23. Stavrou NA, Psychountaki M, Zervas Y. Intensity and direction dimensions of competitive state anxiety: a time-to-event approach. Percept Mot Skills. 2006;103(1):91-8.
24. Gonçalves MP, Belo RP. Ansiedade-traço competitiva: diferenças quanto ao gênero, faixa etária, experiência em competições e modalidade esportiva em jovens atletas. Psico-USF. 2007;12(2):301-7.
25. Haneishi K, Fry AC, Moore CA, Schilling BK, Li Y, Fry MD. Cortisol and stress responses during a game and practice in female collegiate soccer players. J Strength Cond Res. 2007;21(2):583-8.
26. Vasconcelos-Raposo J, Coelho EM, Mahl AC, Fernandes HM. Intensidade do Negativismo e Autoconfiança em Jogadores de Futebol Profissionais Brasileiros. Motricidade. 2007;3(3):7-15.
27. Abrahamsen FE, Roberts GC, Pensgaard AM. Achievement goals and gender effects on multidimensional anxiety in national elite sport. Psychol Sport Exerc. 2008;9(4):449-64.
28. García RH, Zafra AO, Toro EO. Ansiedad y autoconfianza de jóvenes judokas en situaciones competitivas de alta presión. Análise Psicológica. 2008;26(4):689-96.
29. Géczi G, Bognár J, Tóth L, Sipos K, Fügedi B. Anxiety and Coping of Hungarian National Ice Hockey Players. Int J Sports Sci Coach. 2008;3(2):277-85.
30. Hanton S, Neil R, Mellalieu SD, Fletcher D. Competitive experience and performance status: an investigation into multidimensional anxiety and coping. Eur J Sport Sci. 2008;8(3):143-52.
31. Kaplan T, Taskin H, Altin M, Erkmen N. Examination of the level of state anxiety points of the soccer player during the tournament. Selcuk Universitesi Sosyal Bilimler Enstitusu Dergisi. 2008;20:447-57.
32. Ramiro EMD, Valdehita RS, García JM, Moreno LL. Rendimiento deportivo en jugadoras de élite de hockey hierba: diferencias en ansiedad y estrategias cognitivas. eduPsykhé. 2008;7(1):23-41.
33. Abenza L, Piñar MI, Ureña N, López FA. Relationship between the anxiety and performance of a basketball team during competition. Rev Psicología del Deporte. 2009;18(Suppl):409-13.
34. Filaire E, Alix D, Ferrand C, Verger M. Psychophysiological stress in tennis players during the first single match of a tournament. Psychoneuroendocrinology. 2009;34(1):150-7.
35. Géczi G, Tóth L, Sipos K. Psychological profile of Hungarian national young ice hockey players. Kinesiology. 2009;41(1):88-96.
36. Grossbard JR, Smith RE, Smoll FL, Cumming SP. Competitive anxiety in young athletes: differentiating somatic anxiety, worry, and concentration disruption. Anxiety Stress Coping. 2009;22(2):153-66.
37. Guillén F, Sánchez R. Competitive anxiety in expert female athletes: sources and intensity of anxiety in National Team and First Division Spanish basketball player. Percept Mot Skills. 2009;109(2):407-19.
38. Kim KJ, Chung JW, Park S, Shin JT. Psychophysiological stress response during competition between elite and non-elite Korean junior golfers. Int J Sports Med. 2009;30(7):503-8.
39. Draper N, Jones GA, Fryer S, Hodgson C, Blackwell G. Physiological and psychological responses to lead and top rope climbing for intermediate rock climbers. Eur J Sport Sci. 2010;10(1):13-20.
40. Fernandes MG, Silva LH. Relação entre ansiedade competitiva e experiência em atletas de jui-jitsu e surfe. Rev Digital-Efdeportes.com. 2010;15(145):1-7.
41. Ferreira JS, Leite LPR, Nascimento CMC. Relação entre níveis de ansiedade-traço competitiva e idade de atletas de voleibol e análise destes níveis pré e pós-competição. Motriz: Rev Educ Fís. 2010;16(4):853-7.
42. Interdonato GC, Oliveira AR, Luiz Júnior CC, Greguol M. Análise da ansiedade traço competitiva em jovens atletas. Conexões: Revista da Faculdade de Educação Física da Unicamp. 2010;8(3):1-9.
43. Nicholls AR, Polman R, Levy AR. Coping self-efficacy, pre-competitive anxiety, and subjective performance among athletes. Eur J Sport Sci. 2010;10(2):97-102.

44. Aguirre-Loaiza HH, Bermúdez SR. Ansiedad-estado y variables sociodemográficas en futbolistas juveniles colombianos durante competencia. Diversitas: Perspectivas en Psicología. 2011;7(1):239-51.
45. Kolayis H, Sari I. Anxiety, self-esteem and competition ranking of judokas. Arch Budo. 2011;7(1):11-5.
46. León-Prados JA, García IF, Lluch AC. Ansiedad estado y autoconfianza precompetitiva en gimnastas. Rev Int Cienc Deporte. 2011;7(23):76-91.
47. Modroño C, Guillén F. Anxiety Characteristics of Competitive Windsurfers: Relationships with Age, Gender, and Performance Outcomes. J Sport Behav. 2011;34(3):281-94.
48. Parry D, Chinnasamy C, Papadopoulou E, Noakes T, Micklewright D. Cognition and performance: anxiety, mood and perceived exertion among Ironman triathletes. Br J Sports Med. 2011;45(14):1088-94.
49. Radochonski M, Cynarski WJ, Perenc L, et al. Competitive Anxiety and Coping Strategies in Young Martial Arts and Track and Field Athletes. J Hum Kinet. 2011;27:181-90.
50. Vieira L, Teixeira C, Vieira J, Oliveira Filho A. Autoeficácia e nível de ansiedade em atletas jovens do atletismo paranaense. Rev Bras Cineantropom Desempenho Hum. 2011;13(3):183-8.
51. Borrego CC, Cid L, Silva C. Relationship between group cohesion and anxiety in soccer. J Hum Kinet. 2012;34:119-27.
52. Singley KI, Hale BD, Russell DM. Heart rate, anxiety, and hardiness in novice (tandem) and experienced (solo) skydivers. J Sport Behav. 2012;35(4):453-69.
53. Souza MAP, Teixeira RB, Lobato PL. Manifestação da ansiedade pré-competitiva em nadadores amadores. Rev Educação Física UEM. 2012;23(2):195-203.
54. Villas Boas MS, Coelho RW, Vieira LF, Fonseca PHS, Kuczynski KM. Análise do nível de ansiedade de jovens atletas da modalidade de futsal. Conexões: Revista da Faculdade de Educação Física da Unicamp. 2012;10(3):77-86.
55. Asghar E, Wang X, Linde K, et al. Comparisons between Asian and German male adolescent athletes on goal orientation, physical self-concept, and competitive anxiety. J Sport Exerc Psychol. 2013;11(3):229-43.
56. Fernandes MG, Nunes SAN, Vasconcelos-Raposo J, Fernandes HM. Factors influencing competitive anxiety in Brazilian athletes. Rev Bras Cineantropom Desempenho Hum. 2013;15(6):705-14.
57. Ibarzábal FA. Fisicoculturismo: diferencias de sexo en el estado de ánimo y la ansiedad precompetitive. Rev Psicología del Deporte. 2013;22(2):353-60.
58. Jeong I, Park S. Participation motivation and competition anxiety among Korean and non-Korean wheelchair tennis players. J Exerc Rehabil. 2013;9(6):520-5.
59. Morales J, Garcia V, García-Massó X, Salvá P, Escobar R, Buscà B. The use of heart rate variability in assessing precompetitive stress in high-standard judo athletes. Int J Sports Med. 2013;34(2):144-51.
60. Parnabas VA, Mahamood Y. Cognitive and Somatic Anxiety among Football Players of Different Ethnics Groups in Malaysia. Procedia Soc Behav Sci. 2013;85:258-66.
61. Ramis Y, Torregrosa M, Cruz J. Revisitando a Simon & Martens: La ansiedad competitiva en deportes de iniciación. Revista de Psicología del Deporte. 2013;22(1):77-83.
62. Ruiz-Juan F, Zarauz A. Análisis de la ansiedad en el atlestismo; un estudio con veteranos. Rev Int Cienc Deporte. 2013;33(9):222-35.
63. Arruda AF, Aoki MS, Freitas CG, Drago G, Oliveira R, Crewther BT, et al. Influence of competition playing venue on the hormonal responses, state anxiety and perception of effort in elite basketball athletes. Physiol Behav. 2014;130:1-5.
64. Fernandes MG, Nunes SAN, Vasconcelos-Raposo J, Fernandes HM. 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. 2014;10(2):81-9.
65. González J, Fayos EJG. Diferencias individuales e indicadores de ansiedad como estrategias adaptativas de autoeficacia en el desportista. Ansiedad y Estrés. 2014;20(1):51-9.
66. Han DH, Kim BN, Cheong JH, Kang KD, Renshaw PF. Anxiety and attention shifting in professional baseball players. Int J Sports Med. 2014;35(8):708-13.
67. Silva MMF, Vidual BP, Afonso RO, Yoshida HM, Borin JP, Fernandes PT. Ansiedade e desempenho de jogadoras de voleibol em partidas realizadas dentro e fora de casa. Rev Educação Física UEM. 2014;25(4):585-96.
68. Stenling A, Hassmén P, Holmström S. Implicit beliefs of ability, approach-avoidance goals and cognitive anxiety among team sport athletes. Eur J Sport Sci. 2014;14(7):720-9.
69. Wolf SA, Eys MA, Kleinert J. Predictors of the precompetitive anxiety response: Relative impact and prospects for anxiety regulation. J Sport Exerc Psychol. 2015;13(4):344-58.
70. Cunniffe B, Morgan KA, Baker JS, Cardinale M, Davies B. Home Versus Away Competition: Effect on Psychophysiological Variables in Elite Rugby Union. Int J Sports Physiol Perform. 2015;10(6):687-94.
71. Fernandez-Fernandez J, Boullosa DA, Sanz-Rivas D, Abreu L, Filaire E, Mendez-Villanueva A. Psychophysiological stress responses during training and competition in young female competitive tennis players. Int J Sports Med. 2015;36(1):22-8.
72. Pesce M, Fratta IL, Ialenti V, Patruno A, Ferrone A, Franceschelli S, et al. Emotions, immunity and sport: Winner and loser athlete's profile of fighting sport. Brain Behav Immun. 2015;46:261-9.
73. Machado TA, Paes MJ, Alquiere SM, Osiecki ACV, Lirani LS, Stefanello JMF. Ansiedade estado pré-competitiva em atletas de voleibol infanto-juvenis. Rev Bras Educ Fis Esporte (São Paulo). 2016;30(4):1061-67.
74. Kurimay D, Pope-Rhodius A, Kondric M. The relationship between stress and coping in table tennis. J Hum Kinetics. 2017;55:75-81.
75. Hagan Jr JE, Pollmann D, Schack T. Interaction between gender and skill on competitive state anxiety using the time-to-event paradigm: what roles do intensity, direction, and frequency dimensions play? Front Psychol. 2017;8:692.
76. Nikseresht A, Yabande AA, Rahmanian K, Jahromi AS. Pre-competition anxiety score among elite boy swimmers in Iran. MEJFM. 2017;15(6):65-70.
77. Arruda AFS, Aoki MS, Paludo AC, Moreira A. Salivary steroid response and competitive anxiety in elite basketball players: effect of opponent level. Physiol Behav. 2017;177:291-6.
78. American Psychiatric Association – APA. Manual diagnóstico e estatístico de transtornos mentais: DSM-V. Porto Alegre: Artmed; 2014.
79. Altemus M, Sarvaiya N, Epperson CN. Sex differences in anxiety and depression clinical perspectives. Front Neuroendocrinol. 2014;35(3):320-30.
80. Maeng LY, Milad MR. Sex differences in anxiety disorders: interactions between fear, stress, and gonadal hormones. Horm Behav. 2015;76:106-17.
81. Marques AA, Bevilaqua MCN, Fonseca AMP, Nardi AE, Thuret S, Dias GP. Gender differences in the neurobiology of anxiety: focus on hippocampal neurogenesis. Neural Plast. 2016;2016:1-14.
82. Stefanello JMF. Ansiedade competitiva e os fatores de personalidade de adolescentes que praticam voleibol: um estudo casual–comparativo. Rev Kinesis. 1990;6(2):202-24.
83. Morris RL, Kavussanu M. Antecedents of approach-avoidance versus task and ego goals in enjoyment and cognitive anxiety in youth sport. Int J Sport Exerc Psychol. 2009;7:185-202.
84. Lazarus RS, Folkman S. Stress, appraisal and, coping. New York: Erlbaum; 1984.
85. Hofmann SG, Asnaani A. Cultural aspects in social anxiety and social anxiety disorder. Depress Anxiety. 2010;27(12):1117-27.
86. Tobar BU. Evaluación de la efectividad del entrenamiento de estrategias de afrontamiento en el nivel de ansiedad precompetitiva en tenimesistas. Rev Psicol Deport. 2014;23(1):67-74.