



BRAZILIAN JOURNAL
of **SPORT PSYCHOLOGY**
& HUMAN DEVELOPMENT
BJSPhD

FAMILY, SPORTS TRAINING, PERSONALITY, AND AGGRESSIVENESS: predictive factors of athletes' anxiety

**FAMÍLIA, TREINAMENTO DESPORTIVO,
PERSONALIDADE E AGRESSIVIDADE: fatores
preditivos da ansiedade de atletas**

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ABSTRACT

This study investigated the predictive factors of competition anxiety in 179 athletes, analyzing variables related to personality, aggressiveness, family context, and sports training. The results, obtained through multiple regression, indicated that trait anxiety is a significant predictor of both physical and cognitive anxiety symptoms. Female athletes showed greater vulnerability to both types of symptoms. Competitive experience (competing for titles) acted as a protective factor against physical symptoms, while a higher frequency of weekly training reduced cognitive symptoms. Self-confidence was positively predicted by personality traits such as extraversion and neuroticism, and by the volume of daily training hours. The findings suggest the existence of two athlete profiles: a more anxious one, who benefits from experience and training frequency, and a more self-confident one, influenced by personality and daily training volume. The study concludes that personalized interventions, considering gender, personality, and training structure, are essential for managing anxiety and optimizing psychological performance in sports.

Keywords: Family; Sports training; Anxiety; Personality.

RESUMO

O presente estudo investigou os fatores preditivos da ansiedade de competição em 179 atletas, analisando variáveis de personalidade, agressividade, contexto familiar e treinamento desportivo. Os resultados, obtidos por meio de regressão múltipla, indicaram que o traço de ansiedade é um preditor significativo tanto para os sintomas físicos quanto cognitivos da ansiedade. O sexo feminino demonstrou maior vulnerabilidade a ambos os tipos de sintomas. A experiência competitiva (disputa de títulos) atuou como fator protetor contra sintomas físicos, enquanto a maior frequência de treinos semanais reduziu os

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sintomas cognitivos. A autoconfiança foi positivamente predita por traços de personalidade como extroversão e neuroticismo, e pelo volume de horas de treino diário. Os achados sugerem a existência de dois perfis de atletas: um mais ansioso, que se beneficia da experiência e da frequência de treinos, e outro mais autoconfiante, influenciado pela personalidade e pelo volume de treino diário. Conclui-se que intervenções personalizadas, considerando gênero, personalidade e a estruturação do treinamento, são fundamentais para o manejo da ansiedade e otimização do desempenho psicológico no esporte.

Palavras-Chave: Família; Treinamento esportivo; Ansiedade; Personalidade.

1 INTRODUCTION

Studying the psychological skills of athletes is an area of interest for researchers in the fields of sports and psychology. They seek to understand the relationship between these skills and the results achieved by athletes during competition.

This stems from the understanding that athletes respond in different ways to stimuli arising from competition; in other words, the athlete must be understood as an individual embedded in a sporting context full of alterations and changes.

A basic theoretical concept, which serves as a backdrop for understanding this relationship between the athlete and the disturbances of competition, is the concept of a system, originating from the bioecological perspective (Bronfenbrenner, 2011; Haywood; Getchell, 2010) . A system can be defined as a set of interacting elements (Bertalanffy, 1977) or as a complex unit consisting of subunits that cooperate systematically, preserving their integral structural configuration and tending to re-establish themselves after a non-destructive disturbance (Weiss, 1971) .

Systems can be classified as closed systems or open systems. Closed systems are those in which they neither gain nor lose anything from their environment; therefore, the only possible exchange is of their internal activities. Therefore, they tend towards states of maximum disorganization and entropy. Closed systems tend to reach time-independent states, that is, regardless of past and future conditions, they tend to maintain their characteristics and do not evolve.

In contrast, open systems are those that obtain, use, and exchange matter/energy and information with their environment, and therefore become more complex and elaborate (Bertalanffy, 1977) . Furthermore, through these exchanges, they can alter the content and organization of their contexts.

According to Kauffman (1997) , a critical distinction between a closed system and an open system is that in the former no information is exchanged with the environment and therefore the system's behavior is reversible, whereas in open systems, information is obtained and discarded into the environment, therefore the system's behavior is not reversible.

Based on the theoretical perspective, investigating the psychological skills of human beings in sports competitions is of paramount importance, as they can negatively interfere with an athlete's performance if they are unable to adapt to psychological factors.

During competition, athletes must cope with high levels of stress and anxiety (psychological factors), for example, which denotes concern on the part of researchers and coaches regarding the preparation of athletes to withstand such demands. Therefore, in a competition, athletes must deal with different situations that modify their anxiety levels (Milavić; Jurko; Grgantov, 2013; Molina; Sandín; Chorot, 2014; Nogueira; Bara Filho; Lourenço, 2015) .

Until the 1970s, anxiety was understood as a relatively stable personality unit, influencing people's behavior (Lizuka et al., 2005) . However, according to systems theory, anxiety can be understood as a highly complex phenomenon (system evolution), an emotional response accompanied by cognitive and/or physiological changes, after understanding the context (energy exchange with the environment) and interpreting the situation as potentially threatening, with a probability of physical or psychological harm (Englert; Bertrams, 2012; Interdonato et al., 2010; Nogueira; Bara Filho; Lourenço, 2015) .

Anxiety is one of the most prevalent factors in competition, regardless of the athlete's performance level, skill level, or age. According to Englert and Bertrams (2012), the effect of anxiety is still a factor to be investigated in the sports environment, especially when using a bioecological perspective as a theoretical framework.

To understand the phenomenon of anxiety in competition, it can be classified into: trait anxiety and state anxiety (Lavoura; Machado, 2006; Rose Junior; Vasconcellos, 1997; Schmidt; Wrisberg, 2010; Weinberg; Gould, 2001) . Trait anxiety is understood as individual personality differences, characteristics that lead to a greater or lesser degree of anxiety in different situations. In contrast, state anxiety presents the individual's reactions to temporary situations, that is, an immediate emotional state associated with the activation of the autonomic nervous system that varies in intensity over time.

Regarding when anxiety can be measured, two periods can be observed: pre- and post-competition (Salles et al., 2015) . Pre-competitive anxiety refers to the level of anxiety

between one and two weeks before the competition, and post-competitive anxiety refers to the level of anxiety after the competition has ended (Weinberg; Gould, 2001).

And how to diagnose anxiety in sports? With this in mind, researchers such as Spielberg, Gorsuch, and Lushene (1970) developed the STAI (State-trait anxiety inventory), known in Brazil as IDATE – Inventory of State-Trait Anxiety (Biaggio; Natalício; Spielberger, 1977). The IDATE aims to measure anxiety as both a state and a trait.

Silva (2012) investigated state anxiety in futsal goalkeepers in school games. The instrument used was the STAI (State Anxiety Inventory). Ten male futsal athletes aged between 11 and 12 years old participated in the study. The results showed high levels of trait and state anxiety in the athletes during competition. The author concluded that the relationship between state anxiety and the performance of futsal goalkeepers was very high, potentially impairing the goalkeeper's performance during a game. However, its use was not widely accepted by researchers, as there was an interpretation that more specific measures for the sport were needed, which were not included in the STAI (Gonçalves; Belo, 2007).

Thus, Martens, Vealey, and Burton (1990) developed a sport-specific questionnaire, called the SCAT (Sport Competition Anxiety Test), based on the idea that a school of trait anxiety is the best way to predict state anxiety in competitive situations.

Using the SCAT, De Rose and Vasconcellos (1997) investigated the levels of competitive trait anxiety in track and field athletes. The study included 164 athletes of both sexes, aged between 10 and 16 years. The results showed that: female athletes had significantly higher levels of competitive trait anxiety than male athletes; however, there were no differences between different age groups within the same sex. Based on the results, the authors concluded that, despite the statistically significant differences, the levels of competitive trait anxiety can be considered moderate.

Detanico and Santos (2005) used the SCAT to identify pre-competitive trait anxiety levels in judokas and the influence of some variables on pre-competitive trait anxiety levels. The study included 122 judokas of both sexes, aged between 14 and 51 years. The results showed that women had higher anxiety levels. Regarding age, older judokas presented lower anxiety levels than younger ones. Practice time did not influence anxiety levels. The authors concluded that pre-competitive anxiety levels were not associated with practice time or the athletes' ranking in the competition; however, sex may influence pre-competitive trait anxiety levels.

Based on the aforementioned study, Gonçalves and Belo (2007) aimed to investigate competitive trait anxiety in relation to gender, age group, and experience in

competitions and types of sports (individual and team) in young athletes, using the SCAT. The study included 105 athletes from Paraíba, Brazil, from different sports, aged between 11 and 20 years, of both sexes. The results indicated that women presented higher competitive trait anxiety than men, with no significant difference found between the other variables studied. The authors concluded that the study indicated some differentiated levels of competitive trait anxiety, demonstrating that anxiety is part of the daily lives of athletes and that it presents itself at different levels depending on the athlete's sex.

Salles et al. (2015) investigated the pre-competitive anxiety level in 65 university-level team sports athletes of both sexes, aged between 18 and 25 years. The instrument used was the SCAT. The results showed a medium level of trait anxiety. There was no significant relationship between anxiety level and sex, sport practiced, or final team ranking in the competition. The authors concluded that a medium level of trait anxiety was predominant, indicating good work by the coaches with their teams.

However, the SCAT was not considered the best scale for understanding state anxiety, so Martens et al. (1990) developed an instrument to measure trait anxiety and state anxiety in sport, based on the aforementioned assumptions about competitive anxiety, the CSAI-2 (Competitive State Anxiety Inventory – 2). This instrument is based on the assumption of measuring anxiety using three subscales: cognitive state anxiety, somatic state anxiety, and self-confidence.

Based on the instruments mentioned above, some research has been conducted with the aim of identifying trait anxiety and state anxiety in athletes in sports.

Hall, Kerr, and Matthews (1998) investigated trait and state anxiety in 119 school track and field athletes, with an average age of 14 years, of both sexes. The authors used the CSAI-2 instrument. The results show higher levels of trait anxiety in female athletes, with the difference becoming more pronounced with increasing age. The authors concluded that the results are influenced by individual differences related to various theoretical constructs.

Seeley et al. (2008) investigated pre- and during-game anxiety in volleyball athletes. The authors used the CSAI-2 as an instrument. Forty-two athletes of both sexes, aged between 10 and 45 years, participated in the study. The results showed no significant difference between sexes in anxiety levels during a volleyball match. The authors concluded that anxiety is related to the athlete's performance and experience.

Sonoo et al. (2010) analyzed trait anxiety and state anxiety in volleyball, in relation to pre-competitive and competitive performance. The instrument used was the CSAI-2. Nine female athletes aged between 12 and 14 years participated in the study. The results

indicated no significant differences for trait anxiety. Regarding state anxiety, the results showed significant differences for the cognitive component, with greater anxiety in the competitive measure compared to the pre-competitive measure. The authors concluded that anxiety can affect the performance of athletes in competitive situations in children's volleyball.

Vieira et al. (2011) investigated self-efficacy in relation to anxiety levels in track and field athletes. The authors used the CSAI-2 as an instrument. Seventy-five athletes with an average age of 16.76 years of both sexes participated in the study. The results showed no significant differences in anxiety levels by sex. For women, no significant differences were found between performance expectations and anxiety levels. For men, the results indicated a higher level of anxiety only for athletes with better results. The authors concluded that athletes with high performance expectations presented higher levels of cognitive and somatic anxiety and self-confidence.

Souza, Teixeira, and Lobato (2012) investigated the manifestation of competitive anxiety in the context of swimming. The authors used the CSAI-2 as an instrument. Fifty-one athletes aged between 14 and 20 years, of both sexes, participated in the study. The results showed significant differences in relation to age and experience for females; that is, younger and less experienced athletes presented greater state anxiety (somatic and cognitive measures). Regarding self-confidence, the results indicated greater self-confidence for athletes with more experience, for both sexes, and that women presented higher levels of trait competitive anxiety. The authors concluded that the levels of trait and state anxiety are considered moderate, not refuting other publications.

Fernandes et al. (2013) investigated competitive anxiety in different sports. The instrument used was the CSAI-2. The study included 303 athletes from different sports, aged between 18 and 40 years, of both sexes. The results showed significant correlations between the dimensions of anxiety and self-confidence. Female athletes and those in team sports presented higher levels of cognitive anxiety, while male athletes and those with more experience presented higher levels of self-confidence. The authors concluded that the sport itself does not influence anxiety, nor does the athlete's geographical location. What most interferes with anxiety is the level of experience and sex; male athletes tend to present lower levels of anxiety and higher levels of self-confidence.

In summary, regardless of the instrument used (STAI, SCAT, or CSAI-2) to measure state and trait anxiety, experience is a good indicator of anxiety. More experienced athletes tend to have lower levels of trait or state anxiety and greater self-confidence (Detanico;

Santos, 2005; Fernandes et al., 2013; Gonçalves; Belo, 2007; Hall; Kerr; Matthews, 1998; Rose Junior; Vasconcellos, 1997; Salles et al., 2015; Seeley et al., 2008; Souza; Teixeira; Lobato, 2012, etc.) . However, given that all the instruments used have limitations and do not use a bioecological perspective as a theoretical framework, further questions need to be asked: To what extent does anxiety manifest in athletes at different levels of psychological ability? Can family and personality factors influence the manifestation of competitive anxiety?

Therefore, the aim of this study is to investigate the associations between personality, aggression, family, and training variables with competitive anxiety. At the same time, it sought to explore which of these factors are most relevant in predicting competitive anxiety.

2 METHOD

2.1 Participants

The study was conducted with 179 athletes of both sexes, with 59.2% being male. Ages ranged from 15 to 35 years, with a mean of 20 (SD=4.21). Educational levels ranged from elementary school (4.5%) to doctoral level (0.6%), with most subjects (64.2%) having incomplete university education. Also, 58.7% of the participants worked and practiced the sport. Regarding the sports practice, these were basketball (14%), soccer (25.7%), handball (21.8%), combat sports (karate, jiu-jitsu, judo) (12.8%), tennis (5.6%), and volleyball (20.1%). The research was carried out in various clubs in the interior of São Paulo state.

Most of these athletes (71.5%) trained three to five days a week, as well as two to three hours a day (76%). Regarding competing for sports titles, 91.6% reported having competed at some point in their lives.

Also, 90.5% felt encouraged by their parents to participate in sports, with 58.7% of parents attending their children's competitions. Furthermore, most people reported that their parents do not demand results (55.9%) and praise their performance in competitions (78.2%).

2.2 Instruments

2.2.1 Competitive state anxiety inventory-2 (CSAI-2)

This instrument presents 27 items that describe behaviors related to physical and cognitive anxiety, basically indicating concern about competitive situations and self-confidence. All behaviors are evaluated on a four-point scale, ranging from none (1), somewhat (2), moderate (3) to very (4), indicating the intensity with which the participant presents any of the symptoms described in the items. There is no time limit for completing the test.

2.2. 2 Big five (Hutz; cols, 1998)

The person being evaluated will be presented with a list of 64 adjectives, which they should rate according to the intensity with which that adjective characterizes them on a five-point scale, ranging from: 1 Strongly disagree, 2 Somewhat disagree, 3 Neither agree nor disagree, 4 Somewhat agree, 5 Strongly agree. Factor I informs about the Socialization trait, and the indicators that characterize it are: Affable, Docile, Sociable, Pleasant, Generous, Romantic, Gentle, Kind, Understanding, Friendly, Cold, Kind, Passionate, Sympathetic, Sentimental, and Delicate.

Factor II relates to Extroversion, and its indicators are Shy, Extroverted, Communicative, Outgoing, Introverted, Embarrassed, Timid, Quiet, Inhibited, and Silent. In turn, Factor III contains information about Achievement (Scrupulousness), and the adjectives that characterize it are Honorable, Responsible, Dedicated, Hardworking, Studious, Honest, Disorganized, Efficient, Careful, Methodical, Organized, Meticulous, Diligent, and Focused.

Factor IV concerns Neuroticism and its items are: Pessimistic, Happy, Bored, Assertive, Selfish, Unhappy, Depressed, Insecure, Unfriendly, Lonely, Anxious, and Sad. Finally, Factor V informs about Openness and the characteristic adjectives are: Curious, Funny, Creative, Philosophical, Courageous, Energetic, Adventurous, Audacious, Imaginative, Intellectual, Artistic, and Impulsive. The scoring is done by summing the responses given in the indicators for each factor, providing the scores for each one.

Hutz et al (1998) conducted a survey with 976 students of both sexes from universities in Southern Brazil to investigate the adequacy of a list of adjectives used in personality descriptions, based on the Big Five model, with the aim of validating the scale. Factor analysis demonstrated the existence of five factors.

The first factor was sociability, followed by extroversion, conscientiousness, neuroticism, and openness to experience, with the scales showing Cronbach's alpha coefficients between 0.78 and 0.88. The variance explained by the factors was approximately 44%, and multivariate analyses of variance (MANOVA) indicated significant sex differences in all factors except neuroticism.

The authors emphasize that only the opening showed significantly higher averages for women; in the other factors, men showed a higher incidence of traits. However, the differences are small, and considering the large sample size, it cannot be stated with certainty that differentiated norms are necessary.

2.2.3 Aggressiveness Scale in Competition (EAGRESSCOMP) (Bartholomeu; Machado, 2008)

This test was initially developed based on Baron's (1977) definition of aggression as any form of conduct aimed at causing injury or harm to another person. Thus, not only physical aggression, but also intimidation was considered an indicator, provided it was directed at causing harm to another. Sixty-three items describing aggressive behaviors in sports were created, with closed-ended Likert-style responses, offering three possible levels of evaluation where the athlete had to indicate the frequency of occurrence: always (2 points), sometimes (1 point), and never (0 points). These indicators were subjected to content analysis by experts to exclude those that were too similar and to correct others for clarity. The final scale consisted of 54 items.

The study was conducted with 172 professional athletes of both sexes, with 61.6% being male. Ages ranged from 14 to 58 years on average. Under these conditions, 26 items remained distributed across three factors, explaining 44.31% of the variance. The first factor, named Intimidating Behaviors, had 10 items and explained 17.94% of the variance. Its indicators suggest behaviors performed in matches with the aim of embarrassing and intimidating opponents, where the damage caused is not physical, but emotional.

The second factor, Overt Aggressive Behavior, had 12 items and explained 16.98% of the variance. Most of its items suggest conduct aimed at causing some type of physical

or material harm to the opponent, in addition to presenting a significant component of irritability. Finally, the third factor, with 4 items, was named Covert Aggressiveness and explained 9.38% of the variance, reporting on behaviors designed to distort and manipulate situations for one's own benefit, harming opponents without anyone noticing.

Based on these data, the internal consistency coefficients of the factors were calculated using Cronbach's Alpha and Spearman-Brown's double halves. The precision data from these two methods indicated satisfactory indices for the factors Intimidating Conduct and Overt Aggressive Behavior (indices between 0.86 and 0.83).

The last factor, Covert Aggressiveness, presented low precision indices (coefficients of 0.55 and 0.60) (below the minimum indicated by the Psychology Council of 0.60) (Bartholomeu; Machado, 2008). Also, we investigated whether there were differences between sports modalities in measures of aggressiveness. The ANOVA test indicated no significant differences (level of 0.05) in any of the variables studied [Intimidating Behaviors, $H(4, 153) = 1.42$; $r = 0.230$; Overt Aggressive Behavior, $H(4, 153) = 0.535$; $r = 0.710$; Covert Aggressiveness, $H(4, 153) = 1.48$; $r = 0.210$; Overall Aggressiveness, $H(4, 153) = 0.66$; $r = 0.623$].

2.2.4 STAI-T - State-Trait Anxiety Inventory – Trait (Spielberger; Gorsuch; Lushene, 1970)

This test was initially developed to measure traits and state anxiety, these being the two forms of the test. In this study, the version that assesses anxiety as a trait was adopted. This version presents 20 items that the person must answer regarding how they generally feel in relation to anxiety symptoms. The possible answers are 1 (almost never), 2 (sometimes), 3 (frequently), and 4 (almost always). In the scoring, these points are added item by item, providing the total score which can range from 20 a80 points. It is worth noting that the score was reversed in items 1, 6, 7, 10, 13, 16, and 19 to be added.

Cronbach's alpha coefficients obtained by the authors when constructing their study with diverse samples, ranging from secondary school students to psychiatric patients and incarcerated youth, varied from 0.92. Also, by test-retest, at a one-hour interval the coefficients varied from 0,86 a0.84. With a 20-day interval, 0,76 ait varied from 0,76 a0.86. Finally, at a 104-day interval, it varied from 0,73 a0.77. The manual also presents correlations with other anxiety tests such as the TMAS (Taylor Manifest Anxiety Scale) and the IPAT (Cattell et al. Anxiety Scale). With the former, the coefficients were 0.79 and 0.80

for university students and 0.83 in neuropsychiatric cases. In the case of the IPAT, they were between 0.75 and 0.76 in the first condition and 0.77 in the second. In this version, the factorial structure of this instrument was not presented, which was only demonstrated in the Spanish version of this instrument that has already been mentioned.

2.2.5 Procedure

The application of this test was collective, always carried out before sports training in each of the modalities by a psychologist or a duly trained physical education teacher. Only subjects who were authorized or authorized by their parents participated in the research, in the case of underage athletes. The application did not take more than 10 minutes, and the instrument was applied, on all occasions, in rooms previously provided by the clubs, in order to ensure the standardization of procedures.

3 RESULTS

The following presents the results of multiple regression analyses conducted to investigate predictors of physical symptoms of anxiety, cognitive symptoms of anxiety, and self-confidence in athletes.

Table 1 - Predictors of physical symptoms of anxiety in athletes

Variable	B	Standard Error	Beta	t	p
Trait Anxiety Present	0.074	0.017	0.372	4,251	,000
Manipulation	0.131	0.078	0.147	1,678	,097
Extroversion	-0.288	0.141	-0.177	-2.045	0.044
Sex	0.666	0.182	0.315	3,650	,000
Has already competed for titles	-0.833	0.349	-0.208	-2,387	019
Parents encourage	0.511	0.276	0.160	1,850	0.067

Source: prepared by the authors, 2025

Note. Dependent variable: physical symptoms of anxiety

Table 2 - Predictors of cognitive symptoms of anxiety in athletes

Variable	B	Standard Error	Beta	t	P
Trait Anxiety Present	0.112	0.015	0.575	7,239	,000
Sex	0.407	0.171	0.192	2,387	019
Training days/week	-0.153	0.058	-0.214	-2,648	,009

Source: prepared by the authors, 2025

Note. Dependent variable: cognitive symptoms of anxiety

Table 3 - Predictors of self-confidence in athletes

Variable	B	Standard Error	Beta	t	P
Absent Anxiety	-0.105	0.029	-0.335	-3,600	,001
Intimidation	0.030	0.018	0.141	1,683	096
Extroversion	0.289	0.148	0.167	1,948	0.054
Neuroticism	0.714	0.210	0.316	3,405	,001
Training hours/day	0.152	0.061	0.211	2,482	015

Source: prepared by the authors, 2025

Note. Dependent variable: self-confidence

The results indicated that present trait anxiety was one of the main predictors of physical and cognitive anxiety symptoms, confirming the relevance of dispositional factors in the emotional response during competitions (Martens et al., 1990; Weinberg; Gould, 2017).

Furthermore, it was observed that females presented a higher incidence of anxiety symptoms, both physical and cognitive, which is consistent with studies suggesting greater vulnerability of women to competitive stress (Kristjánsdóttir et al., 2018; Dias et al., 2010). Competitive experience (competing for titles) proved to be a protective factor, in line with evidence that experiencing high-pressure situations favors the development of more effective coping strategies (Gould; Maynard, 2009).

Similarly, higher training frequency was associated with a reduction in cognitive symptoms (Hanton; Neil; Mellalieu, 2008). Regarding self-confidence, personality traits such as extroversion and neuroticism, as well as the volume of daily training, were found to be relevant, indicating that this variable depends on stable personality characteristics (Eysenck, 1998; Woodman; Hardy, 2003).

In general, the findings suggest two athlete profiles: (1) those who are more anxious, who benefit from competitive experience and higher training frequency, and (2) those who are more self-confident, whose performance is enhanced by personality traits and higher training volume. These results reinforce the importance of personalized interventions by sports psychologists and coaches, including cognitive restructuring and the development of social skills (Crocker; Graham, 1995; Vealey; Chase, 2016).

4. DISCUSSION

Anxiety is understood to be one of the factors that contributes to explaining the physical and cognitive symptoms, also confirming the influence of personal attributes. Females showed greater vulnerability, while competitive experience and the frequency of weekly training acted as protective factors, reducing anxiety symptoms.

Based on the study, it was possible to identify two athlete profiles: those who are more anxious and try to compensate for their performance with more discipline in training, and those who are more self-confident, where personality traits that lead to self-confidence were identified and associated with regularity in training. Self-confidence was associated with personality traits (extroversion and neuroticism) and the willingness to train daily, suggesting that both personal characteristics and variables influence psychological performance.

The results are replicable, however, there are points of attention that should be considered as variables in this study. It is essential to consider variables such as physiological factors, like sleep quality, nutritional status and hydration, fatigue level and muscle recovery, and hormonal changes, especially in females, identified in the study as the greatest point of vulnerability, since physiological variables related to the menstrual cycle play a relevant role in female athletic performance.

Hormonal fluctuations, especially of estrogen and progesterone, influence the energy, mood, and perceived exertion of female athletes (David et al., 2009). During the luteal phase, there is a greater tendency towards fatigue, irritability, and mood swings, which can impact concentration and performance.

Furthermore, dysmenorrhea, or menstrual cramps, can reduce physical capacity and increase cognitive distraction. The presence of premenstrual syndrome (PMS) is also associated with increased symptoms of anxiety, tension, and lower self-confidence, factors that can compromise athletic performance and overall health.

Psychological factors, including intrinsic and extrinsic motivation, personality traits (e.g., conscientiousness, extroversion), levels of self-confidence and self-efficacy, mood and emotional well-being, and social/contextual factors, such as support from family, coaches and colleagues, team climate, and social recognition, can all influence the performance of these athletes. These findings reinforce the need for personalized interventions, adapted to the athlete's psychological profile, considering gender, personality traits, competitive experience, and cultural background.

From a bioecological perspective, the athlete is a subject embedded in a dynamic context, responding in different ways to the stimuli of competition. The findings of this study corroborate this view, demonstrating how personality variables, experience, and training routine interact to modulate anxiety responses.

One of the main findings was the confirmation of trait anxiety as a significant predictor of both the physical and cognitive symptoms of competitive anxiety. This data reinforces the idea that trait anxiety, understood as a relatively stable personality characteristic, predisposes the individual to interpret competitive situations as more or less threatening.

This finding aligns with the premise of Martens, Vealey, and Burton (1990), who developed the SCAT based on the idea that trait anxiety would be the best way to predict state anxiety in competitions.

The results also indicated that females presented a higher incidence of anxiety symptoms, both physical and cognitive. This finding is consistent with a significant portion of the literature, which has repeatedly found significantly higher levels of competitive trait anxiety in female athletes. Studies such as those by De Rose and Vasconcellos (1997), Detanico and Santos (2005), and Gonçalves and Belo (2007) had already pointed out this gender difference.

Although Salles et al. (2015) did not find such a relationship in university athletes, and other studies with the CSAI-2 have also presented divergent results, our data, in a diverse sample, reinforce the trend of greater female vulnerability. It is important to consider, as pointed out in the literature, that physiological factors, such as hormonal fluctuations of the menstrual cycle, can influence energy and mood, contributing to this greater susceptibility.

Competitive experience, measured by the pursuit of titles, emerged as a protective factor, reducing the physical symptoms of anxiety. This data validates the synthesis of several previous investigations, which, regardless of the instrument used, indicate that more experienced athletes tend to present lower levels of anxiety and greater self-confidence. Research such as that of Souza, Teixeira and Lobato (2012) and Fernandes et al. (2013) had already highlighted the role of experience in modulating anxiety and increasing self-confidence.

Interestingly, the training routine demonstrated a differential effect. Higher weekly training frequency (days per week) was associated with a reduction in cognitive symptoms of anxiety, while higher daily volume (hours per day) was a predictor of self-confidence.

This suggests that training consistency (frequency) can help athletes better cope with worries and fears, while training intensity (volume) seems to strengthen belief in their own abilities. Although Detanico and Santos (2005) did not find an influence of practice time on anxiety levels, our results indicate that the way training is structured is a crucial variable.

5 CONCLUSION

Finally, self-confidence was positively predicted by personality traits such as extroversion and neuroticism. Athletes with higher self-confidence appear to possess stable personal characteristics that help them maintain an optimal state of activation. This finding is in line with Vieira et al. (2011), who noted that athletes with higher outcome expectations

exhibited greater self-confidence, but also greater anxiety, and with Fernandes et al. (2013), who observed higher levels of self-confidence in male and more experienced athletes.

In summary, the data suggests the existence of at least two athlete profiles: one characterized by anxious traits, more prone to physical and cognitive symptoms, for whom experience and training frequency act as anxiety reducers; and another more self-confident profile, influenced by personality traits and the volume of daily training. These findings respond to the literature's call for investigations that consider the complexity of the anxiety phenomenon from a bioecological perspective, reinforcing the need for personalized interventions that consider gender, personality, and training structure to optimize the athlete's psychological performance.

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