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ANXIETY OF STUDENTS PRACTISING COMPETITIVE SPORTS: PART OF A VICIOUS CIRCLE, OR NOT?

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ABSTRACT

The main objective of this study was to assess the presence and the level of anxiety in the case of students who practise competitive sports. There were 102 participants (27 females and 75 males) who were selected from within the students of the Faculty of Physical Education and Sports. At that time, all the students were practising sports at professional level. The Sport Competition Anxiety Test (SCAT) was applied and the results showed that the average level of anxiety in the group was low. It was not related to the athletes' experience or to the competition level, but to gender and/or type of sports. The female athletes presented a significantly higher level of anxiety (p=0.0011), and the athletes who practise individual sports were also more anxious compared to those who practise team sports (p=0.0355). Those involved in training performance athletes should apply specific methods of lowering anxiety, particularly, to these categories. When the anxiety level has a negative effect on one or more aspects of athletic performance, is the moment when anxiety steps into the vicious circle.

Keywords: Anxiety; Athletes; Competitive sports; SCAT; Students.

INTRODUCTION

Many athletes experience different feelings before a competition and anxiety could be one of these. Anxiety can be detrimental to athletes' performance (and failure could produce more anxiety, thrusting the athlete in a vicious circle), or, in contrast, can facilitate achieving performance (Brukner, 2012). An important topic in Sports Psychology is competitive anxiety, with its facilitating or debilitating effects on athletic performance (Brukner, 2012). When trained and conditioned athletes do not perform well in a competition, the cause could be anxiety (Kar, 2013). It is a mixture of nervous excitement, guilt, being afraid of failure or a lack of confidence, which most likely results in the incapacity to achieve the goal of overcoming obstacles. Anxiety, especially of the pre-competitive kind, plays an important role before, during and after the competition (Nayek & Chatterjee, 2013).

According to Mellalieu *et al*. (2006), competitive anxiety is a specific negative emotional response to competitive stressors, which are the environmental demands (stimuli) primarily and directly associated with competitive performance. According to the MAT theory (Multidimensional Anxiety Theory) proposed by Martens *et al*. (1990), there are three main dimensions involved in competitive anxiety: cognitive anxiety (mental component) caused by cognitive concerns, negative expectations or the possibility of failure; somatic anxiety (physical component), which shows individuals' perception of physiological responses; and negative appraisal and self-confidence (confidence in the ability to control oneself and the environment,

to manage the body emotionally and to control negative emotions that may arise and thereby prevent anxiety) (Hardy, 1996; Besharat & Pourbohlool, 2011). The first two components, according to Martens *et al*.(1990), have an inverted relationship with performance, while the third has a positive linear one.

The information published on this topic mainly suggests a negative association between cognitive anxiety and athletic performance, and a positive association between self-confidence and performance (Besharat & Pourbohlool, 2011; Ford *et al.,* 2017). Of the three main dimensions of competitive anxiety, it seems that sports performance is mainly linked to self-confidence (Robazza & Bortoli, 2007). The existence of the athlete's self-confidence before and during the competition results in a better performance by associating significant inverse correlation with competitive anxiety (Besharat & Pourbohlool, 2011). Self-confidence also increases perceived ability to emotion management (Koivula *et al*., 2002; Tsopani *et al*., 2011). When physical symptoms of anxiety and negative thoughts on performance and fear of failure are too high, they have a negative effect on sports performance (Kar, 2013).

In athletes, the most common type of anxiety is state-anxiety rather than trait-anxiety. State-anxiety reflects the psychological and physiological reactions related to adverse situations in a specific moment, while trait-anxiety refers to personality features and describes an individual tendency to present state anxiety (Leal *et al*., 2017).

Comparing competitive anxiety of individual and team athletes, Fernandes *et al.* (2013) confirmed that individual athletes have the perception that they have more control over what they can do during a competition, as opposed to those taking part in a team sport. However, anxiety is reported to be higher in individual sports than in team sports (Kar, 2013; Kerketta, 2015; Correia & Rosado*.,* 2019). According to Martens *et al.* (1990) and Mellalieu *et al.* (2004), athletes of individual sports have higher scores of cognitive anxiety and lower scores of self-confidence. Regarding experience, the athletes with a longer duration of sports practice have lower levels of cognitive and somatic anxiety and higher levels of self-confidence (Mellalieu *et al*., 2004). Hanton *et al.* (2007) found reflective practice was also identified as being important in generating knowledge concerning the interpretation and control of anxiety-related symptoms.

Anxiety does not always have negative effects, so in situations requiring power/strength in athletes, a moderate level of anxiety has beneficial effects on performance, by achieving a certain level of physical growth and because of a low level of fear related to the level of performance (Kar, 2013; Kerketta, 2015). This is based on "inverted U theory", which states that an athlete will perform optimally when he/she has a medium level of anxiety, and the performance will deteriorate when the anxiety level is too low or too high (McNally, 2002; Kerketta, 2015).

Even though the topic of competitive anxiety and its effects on performance within competitive sports has been at the core of numerous published studies in the field of sports psychology, no unanimously recognised information has been obtained regarding the optimal level of anxiety and the mechanisms through which it might enhance performance.

PURPOSE OF RESEARCH

The purpose of this research is to assess the level of anxiety in students who practise competitive sports, and to discover possible correlations between the level of anxiety and the athletes' experience, gender, performance degree and/or sport's type.

METHODOLOGY

Participants

For the current study, 102 participants were selected, of whom 27 were female and 75 male, aged between 18 and 31, from among the students of Faculty of Physical Education and Sports at the West University of Timisoara. The selection criterion was that of practising sports at professional level at that moment.

The group was a heterogeneous one in terms of the level of competitiveness, as it comprised of athletes who are part of national lots and athletes that took part in the national league competitions or in the immediately inferior category. To quantify the students' level of performance, numerical values were assigned to them; thus, the top value (5) has been associated with the members of national and Olympic levels in such a way as following the decrease in the level of performance, the minimal value (1) was assigned to students who performed in minor leagues (at the local level).

The mean age of the participants was 20.66±2.19 years, while the average time frame of taking part in competitions was 8.84±3.86 years (with limits between 1 and 20 years). The sports practised by the selected participants were both individual (41 athletes, 40.20%), as well as team sports (61 athletes, 59.80%).

Data-gathering tool

The questionnaire applied to these students contained questions regarding age, gender, time frame in which they took part in competitions in the current sport, level of performance, and it also included the Sport Competition Anxiety Test (SCAT). All participants signed a written informed consent before participating in the study.

The *Sport Competition Anxiety Test* (SCAT) is a questionnaire developed in order to obtain athletes' responses to a series of statements about how they feel in a competitive situation; it has been widely applied to estimate anxiety in sports. The SCAT contains 15 items, 10 of which measure physical and mental symptoms associated with anxiety and 5 of which are filler items that do not provide scores, but which have been included in order to reduce the likelihood of an internal response-set bias. Each athlete's score was calculated and analysed according to SCAT score analysis rules. The score ranged between 10 and 30. A score below 17 indicates a low level of anxiety, between 17 and 24, an average level of anxiety and a score higher than 24 shows a high level of anxiety (Martens *et al.,* 1990). SCAT has high reliability and validity as a sport specific measure for competitive anxiety; it has a high test-retest reliability (M retest reliability=0.77) and an excellent internal consistency or Chronbach's α of 0.95-0.97 (Dunn, 2001). Evidence of the test convergent validity comes from studies which show that it is correlated with various general anxiety inventories (Lavallee, 2012).

Analysis of data

The statistical analysis was performed using Microsoft Office Excel 2007 and the graphs were made with GraphPad Prism 8. Descriptive statistics are presented as mean±standard deviation (SD). The statistical significance was determined on a probability level of 0.05. The comparison between certain categories of participants was realised with the Student t-test and, in order to establish the correlation between some of the variables, the Pearson coefficient.

Ethical considerations

The Ethical Committee of Physical Education and Sports Faculty from West University of Timisoara, Romania approved this study (Ethical Clearance no. 01_FEFS/2020) after the authors submitted the research proposal for analysis. Before applying the questionnaire, the participants were informed about the objectives and procedures of the study. Informed written consent for participation in the study was obtained for all participants.

RESULTS

The mean value of the SCAT score for the group is 16.25±4.61, which exhibits an overall low level of anxiety. The allocation of the number of athletes according to each level of anxiety is presented in Figure 1.

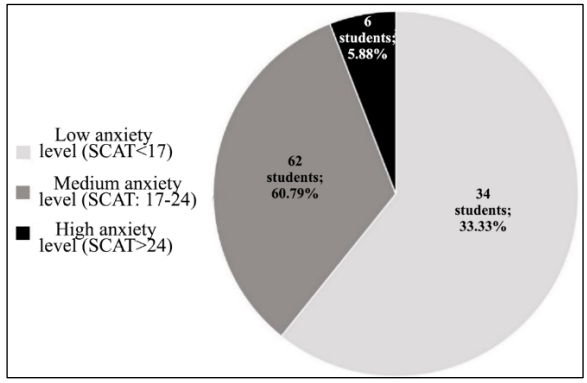

Figure 1. **ALLOCATION OF PARTICIPANTS TO LEVELS OF ANXIETY BASED ON SCAT SCORES**

By analysing the results according to the participants' gender, it is noticed that in the case of female participants, the mean value of the score was 18.55±5.77, which is higher than the one obtained by their male counterparts (15.42±3.82).

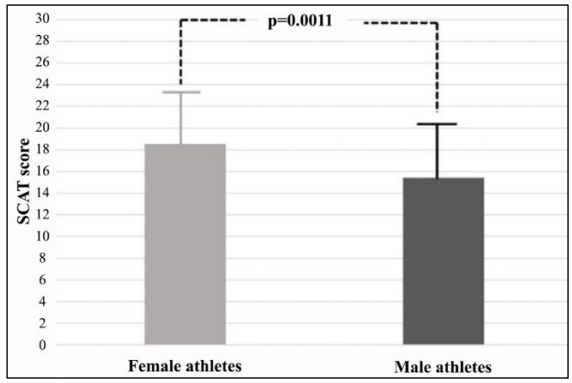

Figure 2. **SCAT VALUES OF STUDY GROUP FOR BOTH GENDERS**

Thus, in the case of female participants, the value is registered at a medium anxiety level, while a low anxiety level is present in the case of male participants. There is a significant difference between the two genders (p=0.0011) (Figure 2). In the case of individual sports (n=41), the average SCAT score was 17.31±4.38, while for team sports (n=61), it was 15.63±4.65. The comparison of scores between the two categories has produced a significant difference (p=0.0355) (Figure 3).

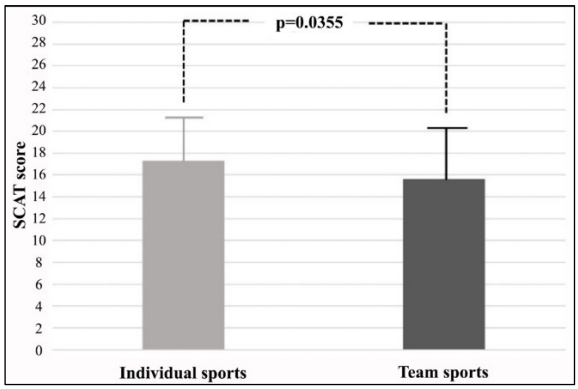

Table 1. **SCAT SCORES ACCORDING TO SPORT BRANCHES**

Sports	SCAT Score M±SD	Average anxiety level	Participants for each anxiety level		
			Low	Medium	High
Athletics (n=9)	16.88±3.58	low	5	4	–
Badminton (n=1)	14	low	1	–	–
Basketball (n=3)	15.67±1.25	low	3	–	–
Box (n=4)	16.25±3.27	low	2	2	–
CrossFit (n=2)	17.50±0.70	medium	–	2	–
Football (n=31)	15.13±3.26	medium	21	9	1
Handball (n=15)	15.53±3.36	low	11	3	1
Swimming (n=2)	19.5±3.53	medium	-	2	–
Kempo (n=1)	14	low	1	–	–
Kayak (n=3)	17.00±6.08	medium	2	1	–
Karate (n=7)	17.85±4.87	medium	2	4	1
Kickboxing (n=8)	18.62±2.99	medium	4	3	1
Footsall (n=1)	11	low	1	–	–
Rugby (n=3)	23.67±8.01	medium	1	–	2
Street dance (n=1)	11	low	1	–	–
Tennis (n=2)	18.00±4.24	medium	1	1	–
Table tennis (n=1)	21	medium	–	1	–
Volleyball (n=8)	15.50±4.81	medium	5	3	–

The analysis of the individual results obtained has shown a high level of anxiety only in the case of six respondents; two of them practise individual sports (karate and kickboxing), while the other four practice team sports (rugby - two individuals, handball and football, each of them with one individual); they have been practising sports at a competitive level between four and 15 years. Table 1 presents the SCAT scores for the participants divided according to sports branches.

A low anxiety level was present in the case of 62 athletes (60.79%), with a mean value of 13.25±1.76, of whom 19 practised individual sports with a mean score of 13.63±1.70, while 43 practised team sports with a mean score of 13.09±1.78. A medium anxiety level is present in the case of 34 athletes (33.33%), with a mean value of 19.64±2.15. Of these students, eight (8) practise football, five (5) kickboxing, four (4) athletics, karate three (3), handball three (3), swimming two (2), volleyball two (2), CrossFit two (2), and tennis, table tennis, kayak, boxing, basketball each with one (1). Six (6) participants (5.88%) had a high level of anxiety, with a mean SCAT score of 28±2.28. The participants who had high levels of anxiety practise rugby (two of them), and one practises each of the following sports: football, handball, karate and kickboxing.

By using the Pearson correlation coefficient calculated between the value of the SCAT scores and the age of the students (r1) and between SCAT value and the time frame since the moment when athletes started practising their relevant sport (r2), there was no correlation between age and the anxiety level (r1=0.1464) and neither between the period of competitions and SCAT (r2=-0.1495). These values showcase a negligible correlation while the level of athletic performance was not correlated with the anxiety level (r3=0.11).

DISCUSSION

Anxiety affects an athlete's performance in physiological, cognitive and behavioural ways (Khan *et al.,* 2017). Fear, poor concentration, sweating, increasing heart rate, shortness of breath, dizziness and shaking are some of the clinical manifestations of anxiety that could decrease the performance level (Kar, 2013; Ford *et al.,* 2017). It is known that there is a negative cycle that includes anxiety and decreasing performance. A high anxiety level induces a greater number of errors and negative thought patterns, which distract the athlete with internal thoughts. This would increase the number of errors and will induce a disruption in skill performance, due to a reduced capacity to make fast accurate decisions and/or muscular tension that will increase the anxiety level to further levels (Brukner, 2012).

Psychological factors, including anxiety, may contribute to some problems, such as inconsistency in performance, excess tiredness, recurrent injuries or illness, substance abuse, personality clashes with other players and officials, etc. (Khan *et al*., 2017). However, it has been found that a considerable individual variability in anxiety responses is present in athletes, while other studies indicated that performance tends to be better when anxiety is within the individually established optimal zone (Raglin & Hanin, 2000; Kar, 2013).

A negligible correlation found between the level of anxiety and the time devoted to practising a certain competitive sport shows that the presence of anxiety is not significantly correlated with the competitive experience or with age progression, but perhaps with other individual parameters. Moreover, according to this study, the level of athletes' anxiety is not related to the competitive experience and is, probably, the result of a personal perception of the competitive event.

According to this study, even within the same sport, the perception of psychological changes is very different. Both for the team and the individual sports considered in the study with more participants (football, handball, volleyball, karate, athletics, kickboxing, tennis), values concerning all levels of anxiety were found. These issues lead to an individualised approach of this phenomenon, as it is otherwise evident in other studies (Rastogi & Katiyar, 2014; Kristjánsdóttir *et al*., 2018).

Extending this study to a larger group of athletes, with an individualised orientation toward establishing optimal functioning zone in relation to the level of anxiety, could be of benefit in terms of achieving the desired competitive results. The way anxiety affects performance is one of the classic problems addressed in sports psychology (Brukner, 2012). A correlation between performance and anxiety level could not be evaluated, given the heterogeneity of the study group. It was not possible to correlate the level of sports performance with a generally valid numeric value for all participants. It is intended to continue studying homogeneous groups (practitioners of the same sport, possibly the same position in the team) and to provide a valid method to quantify performance levels. A recent research, where the SCAT was used in order to study the level of anxiety in basketball and aerobic gymnastics, showed similar findings regarding the relation between gender, age and anxiety level (Petreanu *et al.,* 2017).

Numerous theories and models have attempted to explain the influence of anxiety on the level of performance. Even though anxiety is generally considered to be a negative emotion, which we usually try to avoid, is has been confirmed that, within certain circumstances, the situations which induce anxiety or fear can be motivating (Zhang *et al.,* 2018). There is evidence that a high level of anxiety could alter cortical dynamics and could degrade the precision of cognitive-motor performance (Lo *et al.,* 2019). Consequently, the presence of anxiety, especially a low-level one, can be considered, in some cases, to be a step towards obtaining performance and does not necessarily require a therapeutic approach. On the other hand, according to some recent studies, the psychological interventions should be related to these specific stress-induced modifications, as it can have an important effect on reducing the number of injuries in sport population (Tranaeus *et al.,* 2015; Cagle *et al.,* 2017; Li *et al*., 2017).

Following the model put forward by Jones (1995), it has been demonstrated that, when there is control over the stress factors, it might determine facilitating influences over performance (the ability to cope and goal attainment). In the absence of this control, anxiety determines the appearance of symptoms that negatively influence performance (Ford *et al*., 2017).

The individual differences mentioned by Jones (1995), that may influence the effect of stress on the athlete, have been grouped by Mellalieu *et al.* (2006) into trait anxiety, cognitive bias, positive and negative affect, self-confidence, neuroticism and extraversion, hardiness, coping strategies, psychological skills, achievement motivation, competitiveness and gender. The situational variables are under the subsections of skill level, competitive experience, sport type, cohesion, locus of control and performance level (Mellalieu *et al.,* 2006). With the result such a complex group of factors are required, besides the data collected for this study, a thorough analysis of each athlete in order to highlight the individual differences in the context of competitive level and experience. In the case of athletes with high levels of competitive anxiety, a family history of anxiety apparently plays an important role (Kendler *et al.,* 2002; Kar, 2013). Furthermore, a parental over-involvement among young athletes could be the cause of a mental health problem, objectified through anxiety (Salla & Michel, 2014).

There are studies that confirm the idea that anxiety has a negative impact on beginner athletes' secondary task (such as backward counting or auditory tone monitoring), but not on that of experimented athletes. Moreover, it can be stated that the latter group allocate more

resources towards increasing attention within a context that implies a higher level of anxiety, as opposed to novices, who use more resources when completing the primary task and are then unable to maintain secondary task performance in the same conditions (Alder *et al.,* 2018). In the case of the current study, a correlation between the experience gained through practising the sport and the athlete's level of anxiety could not be found.

Regarding the relation between the level of anxiety, the athletes' gender and the type of sport practised, Correia and Rosado (2019) have encountered the same significant differences as the ones resulted from this study in the case of a study group structure similar to this study. Even other similar studies have confirmed the fact that female athletes and those who practise individual sports experience a higher level of anxiety (Martens *et al.,* 1990; Ramis *et al.,* 2010), in spite of the fact that there is research available which proves the contrary (Ichraf *et al.,* 2013).

One could argue that, in the majority of cases, those who practise individual sports feel a significantly higher level of responsibility when it comes to performance which, in their case, is not the result of performing on the field in the company of other athletes. The contrary results may be explained by the fact that those who practise team sports depend on the other members of the team, as far as obtaining performance is concerned. This might be the cause of a higher anxiety level, especially when the level of expectation is significant. In other words, the value of the team members and the way in which they interact can decisively influence a state of individual anxiety experienced by a member of the team.

As far as the differences between genders is concerned, when it comes to competitive anxiety, in the case of women there is a higher level of anxiety correlated, in certain studies, with a lower performance (Parnabas, 2015). It has been established that men have a lower level of somatic anxiety and a higher self-confidence, while women develop higher cognitive anxiety. Still, there is evidence that confirm that not the gender, but the cognitive orientation style, which is the best predictor of pre-competition anxiety (Wilson *et al.,* 2002).

LIMITATIONS

The present study has certain limitations. The study group was not very large and is somewhat disproportionate as regard the participants' gender allocation. This is why, in order to better draw attention to these differences and the eventual correlations between the anxiety level and certain parameters connected to the athletes (experience, gender or of the practised individual or team sport, it would be preferable for a similar study to be conducted with larger groups of athletes, who practise the same sport, at the same competitive level and in similar conditions of stress. Another limitation of this study is that participants were not asked questions about coping strategies, possible presence of anxiety in family history or a parental over-involvement.

The optimal level of anxiety that is the beneficial one for performance remains. It is the opinion of the researchers that a topic of high interest remains and involves, besides the athlete's evaluation, the permanent reference to his/her achievements and taking decisions that will result in the optimal level of anxiety to enhance the accomplishment of objectives. These aspects require an effective collaboration between athletes, the coach and, of course, the psychologist. On the other hand, the psychological preparation of the student-athletes is rarely done by professionals, so the coach has an important role to play in this area of training too. There is evidence that certified athletic trainers interact with sport teams that use professional psychology services or are mentored by senior trainers with knowledge in sport psychology (Zakrajsek *et al*., 2018). But this does not always qualify them as the most suitable people to evaluate and take measures for the management of the mental state of athletes.

Regarding the applied questionnaire, one of its limitations is the fact that it evaluates anxiety only on a global perspective, not being able to offer more detailed information concerning its components. Sports performance, and hence its competitive aspect, involves a level of anxiety that is not always adequately monitored and controlled. Recent studies made by Sanader *et al.* (2019) confirmed that a new and extended form of SCAT, with three individual subscale scores (somatic, cognitive and self-confidence), named SCATe, has an acceptable internal consistency and factorial validity for successful evaluation of competitive trait anxiety. The data suggest that SCATe could be applied in the near future as an alternative test to SCAT and could, therefore, contribute to a much more complex psychological evaluation of athletes.

In order to respond to the question in the title, it can be confirmed that anxiety can become a component of a vicious circle when it reaches a level where it has a negative effect on the abilities for obtaining performance. This level is different from one athlete to another, as it is not correlated with their experience or the performance degree, but with the individual response to stress, which is determined by the competition.

PRACTICAL APPLICATION

The response to the psychological stress induced by a competitive sport could be influenced, according to this study, by the gender of the athlete and/or by their participation in an individual sport or a team sport. Even if the level of anxiety becomes decisive for a series of unwanted changes that are inter-conditioned, it is believed that psychology offers solutions to modify the way in which one perceives and acts upon this possible vicious circle, and to maintain this level between optimal parameters for an athlete.

CONCLUSIONS

The results of this study show that the level of anxiety is not related to athletes' experience or to the competition level, but is related to their gender and/or type of sport (individual or team). Thus, those involved in the training of performance athletes should apply specific methods of lowering anxiety, especially as far as these categories are concerned. The pressure of competition requires, in direct relation to its perception (and not necessarily with its level), a psychological support to improve performance and set the optimal individualised level of anxiety for achieving the desired performance. This takes into account both the negative and the positive effects induced by anxiety over competitive behaviour.

Conflict of interest

The authors report no potential conflict of interest.

REFERENCES

ALDER, D.B; FORD, P.R.; CAUSER, J. & WILLIAMS, A.M. (2018). The effect of anxiety on anticipation, allocation of attentional resources, and visual search behaviours. *Human Movement Science,* 61(July): 81-89.

BESHARAT, M.A. & POURBOHLOOL, S. (2011). Moderating effects of self-confidence and sport self-efficacy on the relationship between competitive anxiety and sport performance. *Psychology,* 2(7): 760-765.

BRUKNER, P. (2012). Maximizing sporting performance: Psychology principles for clinicians. In P. Brukner, K.M. Khan, R. Bahr, S. Blair, J.L. Cook, K. Crossley, J. McConnell, P.R. McCrory, T. Noakes (Eds.), *Bruckner and Kahn's Clinical Sports Medicine* (4th edition) (pp.717-724). Sydney, Australia: McGraw-Hill.

CAGLE, J.A.; OVERCASH, K.B.; ROWE, D.P. & NEEDLE, A.R. (2017). Trait anxiety as a risk factor for musculoskeletal injury in athletes: A critically appraised topic. *International Journal of Athletic Therapy and Training*, 22(3): 26-31.

CORREIA, M. & ROSADO, A. (2019). Anxiety in athletes: Gender and type of sport differences. *International Journal of Psychological Research*, 12(1): 9-17.

DUNN, A.L.; TRIVEDI, M.H. & O'NEAL, H.A. (2001). Physical activity dose-response effects on outcomes of depression and anxiety. *Medicine and Science in Sports and Exercise*, 33(6 Suppl): S587-S597.

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* [trans.: *Brazilian Journal of Cineanthropometry & Human Performance*], 15(6): 705-714.

FORD, J.L.; ILDEFONSO, K.; JONES, M.L. & ARVINEN-BARROW, M. (2017). Sport-related anxiety: Current insights. *Journal of Sports Medicine,* 8(October): 205-212.

HANTON, S.; CROPLEY, B.; NEIL, R.; MELLALIEU, S.D. & MILES, A. (2007). Experience in sport and its relationship with competitive anxiety. *International Journal of Sport and Exercise Psychology*, 5(1): 28-53.

HARDY, L. (1996). Testing the predictions of the cusp catastrophe model of anxiety and performance. *Sport Psychologist*, 10(2): 140-156.

ICHRAF, A.; ALI, B.M.; KHALED, T.; LIWA, M. & ALI, E. (2013). Effect of gender and type of sport on anxiety and self-esteem. *International Journal of Humanities and Social Science Invention*, 3(2): 55-61.

JONES, G. (1995). More than just a game: Research developments and issues in competitive anxiety in sport. *British Journal of Psychology*, 86(4): 449-478.

KAR, S. (2013). Measurement of competition level anxiety of college level athletes by using SCAT. *Measurement,* 2(3): 367-375.

KENDLER, K.S.; JACOBSON, K.C.; MYERS, J. & PRESCOTT, C.A. (2002). Sex differences in genetic and environmental risk factors for irrational fears and phobias. *Psychological Medicine,* 32(2): 209-217.

KERKETTA, I. (2015). A comparative study of sports competition anxiety between district levels male volleyball and soccer players. *International Journal of Physical Education, Sports and Health,* 1(3): 53-55.

KHAN, M.K.; KHAN, A.; KHAN, S.U. & KHAN, S. (2017). Effects of anxiety on athletic performance. *Research and Investigations in Sports Medicine,* 1(1): 19-23.

KOIVULA, N.; HASSMÉN, P. & FALLBY, J. (2002). Self-esteem and perfectionism in elite athletes: Effects on competitive anxiety and self-confidence. *Personality and Individual Differences*, 32(5): 865-875.

KRISTJÁNSDÓTTIR, H.; ERLINGSDÓTTIR, A.V.; SVEINSSON, G. & SAAVEDRA, J.M. (2018). Psychological skills, mental toughness and anxiety in elite handball players. *Personality and Individual Differences,* 134(November): 125-130.

LAVALLEE, D.; KREMER, J.; MORAN, A. & WILLIAMS, M. (2012). *Sport Psychology: Contemporary Themes*. London, UK: Macmillan International Higher Education.

LEAL, P.C.; GOES, T.C.; DA SILVA, L.C.F. & TEIXEIRA-SILVA, F. (2017). Trait vs. state anxiety in different threatening situations. *Trends in Psychiatry and Psychotherapy*, 39(3): 147-157.

LI, S.H. & GRAHAM, B.M. (2017). Why are women so vulnerable to anxiety, trauma-related and stress-related disorders? The potential role of sex hormones. *The Lancet Psychiatry*, 4(1): 73-82.

LO, L.C.; HATFIELD, B.D.; WU, C.T.; CHANG, C.C. & HUNG, T.M. (2019). Elevated state anxiety alters cerebral cortical dynamics and degrades precision cognitive-motor performance. *Sport, Exercise and Performance Psychology*, 8(1): 21-37.

MARTENS, R.; BURTON, D.; VEALEY, R.S.; BUMP, L.A. & SMITH, D.E. (1990). Development and validation of the Competitive State Anxiety Inventory. In R. Martens, R.S. Vealey, D. Burton (Eds.), *Competitive Anxiety in Sport* (pp.117-190). Champaign, IL: Human Kinetics.

MCNALLY, I.M. (2002). Contrasting concepts of competitive state-anxiety in sport: Multidimensional anxiety and catastrophe theories. *Athletic Insight: The Online Journal of Sport Psychology*, 4(2): 10-22.

MELLALIEU, S.D.; HANTON, S. & O'BRIEN, M. (2004). Intensity and direction of competitive anxiety as a function of sport type and experience. *Scandinavian Journal of Medicine and Science in Sports*, 14(5): 326-334.

MELLALIEU, S.D.; HANTON, S. & FLETCHER, D. (2006). A competitive anxiety review: Recent directions in sport psychology research. In S. Hanton & S.D. Mellalieu (Eds.), *Literature Review in Sport Psychology* (pp. 1-45). New York, NY: Nova Science Publishers.

NAYEK, B. & CHATTERJEE, K. (2013). Comparative study on pre-competitive anxiety between national and state level women athletes. *Journal of Sports and Physical Education*, 1(2): 33-36.

PARNABAS, V. (2015). Identifying the gender differences on the level of competitive state anxiety and sport performance among track and field athletes. *International Journal of Indian Psychology*, 2: 23-29.

PETREANU, M.; PETREANU, A.; BUTU, I.M. & MEZEI, M. (2017) Analysis of the competitive anxiety level in basketball and aerobic gymnastic. *European Proceedings of Social and Behavioural Sciences*, icSEP, XXIV: 43-50. http://dx.doi.org/10.15405/epsbs

RAGLIN, J. & HANIN, Y.L. (2000). Competitive anxiety and athletic performance. In Y.L. Hanin (Ed.), *Emotions in Sport* (pp. 93-112). Champaign, IL: Human Kinetics.

RAMIS, Y.; TORREGROSA, M.; VILADRICH, C. & CRUZ, J. (2010). Adaptación y validación de la versión española de la Escala de Ansiedad Competitiva SAS-2 para deportistas de iniciación [*trans*.: Validation of adapted version in Spanish of the Competitive Anxiety Scale SAS-2 for beginner athletes]. *Psicothema*, 22(4): 1004-1009.

RASTOGI, N.K. & KATIYAR, V. (2014). A comparative study of sports competition anxiety test between college level chess and cricket players. *International Journal of Physical Education, Fitness and Sports,* 3(3): 22-25.

ROBAZZA, C. & BORTOLI, L. (2007). Perceived impact of anger and anxiety on sporting performance in rugby players. *Psychology of Sport and Exercise*, 8(6): 875-896.

SALLA, J. & MICHEL, G. (2014). Parental sport over-involvement and anxiety among youth tennis athletes. *Science and Sports,* 29(Supplement October): S40. https://doi.org/10.1016/j.scispo. 2014.08.079

SANADER, A.; BACANAC, L.; KNEZEVIC, O.M.; IVKOVIC, I. & UGARKOVIC, D. (2019). Factorial validity of extended sport competitive anxiety test evaluated with young athletes, *South African Journal for Research in Sport, Physical Education and Recreation*, 41(1): 121-132.

TRANAEUS, U.; IVARSSON, A. & JOHNSON, U. (2015). Evaluation of the effects of psychological prevention interventions on sport injuries: A meta-analysis. *Science and Sports*, 30(6): 305-313.

TSOPANI, D.; DALLAS, G. & SKORDILIS, E.K. (2011). Competitive state anxiety and performance in young female rhythmic gymnasts. *Perceptual and Motor Skills,* 112(2): 549-560.

WILSON, G.S.; RAGLIN, J.S. & PRITCHARD, M.E. (2002). Optimism, pessimism, and precompetition anxiety in college athletes. *Personality and Individual Differences*, 32(5): 893-902.

ZAKRAJSEK, R.A.; FISHER, L.A. & MARTIN, S.B. (2018). Certified athletic trainers' experiences with and perceptions of sport psychology services for student-athletes. *Sport Psychologist*, 32(4): 300-310.

ZHANG, S.; WOODMAN, T. & ROBERTS, R. (2018). Anxiety and Fear in Sport and Performance. In *Oxford Research Encyclopedia of Psychology*. Hyperlink: [https://oxfordre.com/psychology/view/10.1093/acrefore/9780190236557.001.0001/acrefore-9780190236557-e-162]. Retrieved on 20 February 2020.

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