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# Competitive anxiety and performance in competing sailors
# Ansiedad competitiva y rendimiento en deportistas de vela

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**Abstract**. In this study we analyze the connection between competitive anxiety (its cognitive and somatic factors) and performance in sailing sport. It has been typically accepted that anxiety is detrimental to sports performance. However, it is currently being intensively investigated whether the anxiety levels are always harmful to sports performance, as the data yielded by recent studies are contradictory. A data collection was carried out, involving 69 federated sailors from the Balearic Islands (Spain) with a mean age of 26.38 years ranging from 10 to 64 years. In order to analyze the psychological variables, athletes were given the adapted Spanish version of the Sports Anxiety Scale (SAS-2) and the performance of the sailors was evaluated. The results show that no differences are found in the anxiety levels between the high and low performance groups.
**Keywords**: Competitive anxiety, Sailing, Performance.

**Resumen**. En este estudio analizamos la relación entre la ansiedad competitiva (en sus componentes cognitivos y somáticos) y el rendimiento en el deporte de la vela. Clásicamente se ha aceptado que la ansiedad es perjudicial para el rendimiento deportivo. Actualmente se investiga intensamente sobre si los niveles de ansiedad son siempre perjudiciales para el rendimiento deportivo, debido a que los datos hallados en recientes estudios son contradictorios. Para ello, se realizó una recogida de datos, donde participaron 69 deportistas federados en vela de las Islas Baleares con una edad media de 26.38 años y un rango de entre 10 y 64 años. Para analizar las variables psicológicas a los deportistas se les administró la versión española adaptada de la Escala de Ansiedad en el Deporte (SAS-2) y se evaluó el rendimiento de los regatistas. Los resultados muestran que no se encuentran diferencias en los niveles de ansiedad entre los grupos de alto y bajo rendimiento.
**Palabras clave:** Ansiedad competitiva, Vela, Rendimiento.

## Foreword

Anxiety in competition athletes has been defined as an immediate emotional state characterized by the apprehension and tension (Martens, 1977; Spielberger, 1966). It seems to be clear that the anxiety level perceived by a person at each moment doesn't depend only upon the stress generating situation, but upon the perception by the individual of that situation as challenging, potentially dangerous or harmful (Smith, 1989; Spielberger, 1971; Zarauz & Ruiz, 2013). In sports that definition has been completed by establishing the existence of an activation of the organism that includes a physical component called somatic anxiety, and a thinking component, or cognitive anxiety (Ramis, Torregrosa, Viladrich & Cruz, 2010; Weinberg & Gould, 2010).

The somatic anxiety is thought to affect more the driving force component of the sports conduct, while the cognitive anxiety would have more impact on the attention, the concentration and the decisions making of the athlete (Smith, Smoll & Schutz, 1990). This cognitive component has two levels: first one refers to the preoccupation about the potentially negative consequences associated with the performance; second one refers to the lack of concentration, that is, the difficulty to focus on the key aspects of competition (Grossbard, Smith, Smoll & Cummings, 2009).

Young people who show a high level of competitive anxiety are often more worried about making mistakes, not playing well or losing than athletes who have a lower level of anxiety. They are also more worried about how they will be evaluated by their coaches, their colleagues or their parents and often believe that failure will lead to their criticism (Gould & Horny Spreemann, 1983; Passer, 1983).

Classic studies on anxiety have considered the difference between individual and team sports. It has been established that individual athletes perceive higher levels of anxiety than those in team sports, when it comes to competition. It is known that athletes in contact sports and those which are subjectively assessed experience more cognitive anxiety than the athletes in sports which are objectively assessed and non-contact sports. Other studies have not found any difference based on gender, age or between different sports disciplines (Guillén & Álvarez-Macho, 2010; Hanton, Cropley & Lee, 2009; Pozo, 2007).

The relation between anxiety and performance has been widely studied using different models like the «inverted U» by Yerkes and Dodson (1908) or the IZOF model by Kamata, Tenenbaum and Hanin (2002). It must be taken into account that it hasn't always been possible to prove that connection.

It has not always been found that anxiety has a negative impact in sports performance, since some studies have found no effect at all, while some others have even found positive effects (Cervelló, Santos-Rosa, Jiménez, Nerea & García, 2002 & González Campos, G., Valdivia-moral, P., Zagalaz, J. C., Ortega, F. Z., & Romero-ramos, O., 2017). Nevertheless, most studies point at the blocking effect of competitive anxiety in the performance and the enjoyment of sports, as well as its effect on the increase of sports dropping (Scanlan, Babkes & Scanlan, 2005).

Another aspect that they have lately begun to study the motivational atmosphere effect upon anxiety has been recently studied (García-Mas, Fuster, Ponseti, Palou, Olmedilla & Cruz, 2015; Mora, Sousa & Cruz, 2014; García-Más, et all., 2011 & Gutiérrez, M., Tomás, J. M., Calatayud, P., & España, U. D. V., 2017), and it has been proven that motivation and motivation atmosphere have a powerful effect

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upon the appearance of competitive anxiety. Particularly, as per the cognitive anxiety, it has been found that its lack of concentration component depends to a great extent in a very straightforward way upon the athlete predisposition to ego, with no other variables in between. It has been also proven that predisposition to mastery favors enormously self-confidence, which powerful ly inhibits somatic anxiety.

This study also confirms the low influence of somatic anxiety upon the performance, compared to the cognitive component of anxiety. In this same line Bueno, Capdevila and Fernandez (2002) experimentally proved that somatic anxiety could disappear as a competition started, while the cognitive one remained active. As a culmination of this foreword, and despite the widespread idea that anxiety decreases performance, a recent study has established that there are very few studies scientifically carried out which connect competitive anxiety and performance in any way, with a great dispersion in the way both variables are studied (Núñez & García-Mas, 2017).

Taking into account this theoretical frame, this study intends to describe the interaction (between performance and anxiety) between the mediating variable «performance» and anxiety in sailing sports. We have seen in this foreword how the intensity in competitive anxiety and the positive or negative experience that the individual feels about it, depends upon different personal factors, upon the characteristics of each sports activity and upon the motivational atmosphere. Therefore, ultimately, the findings of this line of working would contribute to establish a model of how competitive anxiety works, which will allow us to set the base to mold the anxiety level and perception of sailors in order to improve their performance.

## Method

### *Participants*

A total of 69 sailor from the Federación Balear de Vela (FBV) (Spain) take part in this study, with ages ranging from 10 to 64 years (mean = 26.38 years; «SD» 16.49 years) 52 of them male and 17 females.

The sample includes a proportion of men and women similar in number to that of federated sailors in the Balearic Islands, where women represent 21.05% of the total while in the sample, they represent 25.42%.

### *Instruments and material*

*Competitive anxiety analysis*

The Spanish version of the Sports Anxiety Scale (SAS-2) (Smith, Smoll, Cummings & Grossbard, 2006) and the Questionnaire of Competitive Anxiety (Ramis, Y., Torregrosa, M., Viladrich, C. & Cruz, J., 2010) were used. This scale consists of 15 items divided into three subscales: somatic anxiety; performance worry induced anxiety and lack of concentration anxiety. The participants assess the phrase «Before or while I play or compete …» (Examples: «I feel my body is tense», «… I'm worried about not competing or playing the best I can», «… it's hard to focus on what I'm supposed to do»). Each item is answered on a four points Likert scale ranging from one («nothing») to four («much»).

The SAS-2 (Alpha Cronbach) subscales reliability analysis gave: .80 in somatic anxiety, .82 in performance worry induced anxiety, and .86 in lack of concentration anxiety, while the global scale gave an alpha .88. These results show an acceptable internal consistency as much in the total pointing as in the levels of the three subscales, and their reliability is rather similar to the one verified using the original SAS-2 (Smith, et al. 2006) which gave .84, .89, .84, and .91 respectively.

*Performance evaluation*

In order to objectively evaluate the athletes' performance, the internal system of the FBV was used to establish the sailors ranking. This system uses a formula which weighs the following values: a) number of seasons in the Balearic Islands sailing team; b) number of podiums (1st, 2nd or 3rd classified) at the autonomous community (regional) competitions, multiplied per two; c) number of podiums (1st, 2nd or 3rd classified) at national competitions multiplied per three and c) number of podiums (1st, 2nd. Or 3rd. Classified) at international competitions multiplied per four. The result given by these values were divided by the number of years the athlete has been or still is active, in order to be able to compare the sailors by compensating the duration of their careers. The 69 individuals in the sample of this study get scores between 0 and 73 points, this sample giving a mean of 11.81 points

For the data analysis, this variable was converted into dichotomous, one being high performance and two low performance. The criterion followed to draft the groups was that individuals with above the mean scored belong to the high-performance group and the ones with scores lower than the mean would belong to the low performance group. Thus, a high-performance group of 20 individuals and a low performance group of 49 individuals were obtained.

### *Procedure*

To collect the data a computerized version of the SAS-2 was given to the participants to be answered by telematics. A telematic questionnaire was elaborated using the Google Forms tool. The form included a first part consisting of epidemiological data collection, such as name and age. Secondly, the athletes accessed the informed consent form which they filled in and signed. Lastly, the SAS-2 test was included, featuring an identical structure to the standard one. It included the instructions, all the questions and the Likert answer scale. After that a mailing addressed to all FBV athletes was carried out, using the Federation database. The whole procedure took place in October 2014.

Permission from the athletes or from their parents in case they were minors was obtained, to use the results in this study. They were reassured about its confidentiality and they all accepted willingly to take part in it.

In compliance with the Helsinki accords, the athletes were informed about the objectives of the investigation, about the safekeeping of the gained data as well as the basic directions for the fulfilment of the self-reports.

### *Data analysis*

The statistical analysis was carried out using the statistics program SPSS 21.00. In the first place the medians and stan-

dard deviations of each one of the variables of both sexes were worked out, ANOVA were carried out to study the median differences between groups and correlations between the performance indicators and the SAS-2 subscales. The value of significance established for all tests was p<.05.

The normality test by Kolmogorov was applied with the Lilliefors significance correction, to determine whether the parametric or non-parametric analysis were adequate in this study. The results showed normality assumption for this sample. As a result, a parametric analysis was carried out, in this case, ANOVA statistics and correlations, to evaluate the median differences.

## Results

In Table 2 we can observe the correlation between the various anxiety subscales of SAS-2 and the performance. These results show a lack of correlation between the anxiety subscale and the performance.

Table 1.
Descriptive statistics and median differences of the questionnaire SAS-2 results and its subscales. NOTE: Perf 1 = high performance, Perf 2 = low performance.

| | Somatic | | Worry | | Lack of concentration | | A.Global | |
|---|---|---|---|---|---|---|---|---|
| | *X* | *SD* | *X* | *SD* | *X* | *SD* | *X* | *SD* |
| Men | 7.11 | 2.56 | 10.09 | 3.48 | 6.77 | 2.62 | 26.76 | 7.43 |
| Women | 7.25 | 2.77 | 11.01 | 2.81 | 6.76 | 1.57 | 28.32 | 6.82 |
| Total | 7.15 | 2.59 | 10.31 | 3.33 | 6.77 | 2.39 | 27.14 | 7.27 |
| *F* | .036 | | .974 | | .000 | | .584 | |
| Sig | .84 | | .32 | | .99 | | .44 | |
| Perf 1 | 7.87 | 1.94 | 10.45 | 3.59 | 6.82 | 1.90 | 27.97 | 6.4 |
| Perf 2 | 6.86 | 2.78 | 10.26 | 3.25 | 6.75 | 2.58 | 26.81 | 7.6 |
| F | 2.18 | | .43 | | .12 | | .36 | |
| Sig | .43 | | .83 | | .9 | | .55 | |

Table 2.
Pearson correlations between the SAS-2 questionnaire and its subscales.

| | Performance | Somatic | Worry | Lack of concentration. | A. Global |
|---|---|---|---|---|---|
| Performance | | -.17 | -.02 | -.01 | -.07 |
| Somatic | | | .44** | .49** | .75** |
| Worry | | | | .37** | .83** |
| Lack of concentration | | | | | .75** |

* *p* = .000; ** *p*< .001; *** *p*< .005

### *Comparison of medians with other sports*

In Table 3 we can see the comparison between the anxiety levels (studied using the same instruments in competition sports) of different sports with the results of this study. Thus, we can observe that the competing sailors sample gets the lowest values in worry and lack of concentration, and also shows a lower value in somatic anxiety compared to the other sports.

## Discussion

Historically the commonly accepted idea among sailors and coaches has been that the presence of anxiety during competition is detrimental to the athletes performance. In this study the results point at the fact that anxiety does not exert a meaningful influence on sports performance, when measured in an objective way.

More precisely, no significant differences are found referred to the medians of the three anxiety subscales, between the high and low performance groups. The correlational study does not show any connection between the anxiety subscales and performance.

Other studies have corroborated that the anxiety levels do not have any influence upon sports performance (Cervelló, Santos-Rosa, Jiménez, Nerea & García, 2002). One of several explanations could be, as has been suggested, that anxiety can be understood as an excitement that the athlete perceives in a pleasant and positive way. The more difficult the challenge that the athlete faces is, the higher is the excitement. This could explain the higher median, although not so meaningful, in somatic anxiety in our high-performance group (Gutiérrez, Estévez, García & Pérez, 1997). That is to say, there is a somatic response to the sports event, but it is not interpreted in an anxious way in any of its cognitive modalities.

Likewise, in other disciplines in which also high performance is sought (Miguel-Tobal & Escalona, 1996) it has been observed that only very high levels of anxiety have an

Table 3.
Comparison of the values of competitive anxiety factors (SAS-2 measuring instrument) between sailing (gained in this study) and other sports (Ramis, Torregrosa & Cruz, 2013).

| Sports | Synchr Gym. | Gymnastics | Swimming | Tennis | Waterpolo | Handball | Basket | *Sailing* |
|---|---|---|---|---|---|---|---|---|
| Somatic anx. | 13.57 | 11.4 | 11.72 | 9.4 | 8.6 | 8.5 | 8.41 | ***7.15*** |
| Worry | 15.93 | 16.65 | 15.45 | 12.76 | 14.51 | 13.17 | 13.59 | ***10.31*** |
| Lack of conc. | 9.92 | 9.76 | 9.38 | 9.58 | 7.91 | 8.67 | 8.81 | ***6.77*** |

Table 4.
Performance variable and dichotomization thereof in two groups, high (1) and low (2) performance.

| Subject | Sex | Age | Performance FBV | Performance dichotomized |
|---|---|---|---|---|
| 1 | 2 | 13 | 0 | 2 |
| 2 | 1 | 55 | 0 | 2 |
| 3 | 2 | 18 | 0 | 2 |
| 4 | 1 | 14 | 0 | 2 |
| 5 | 2 | 10 | 0 | 2 |
| 6 | 1 | 46 | 0 | 2 |
| 7 | 1 | 61 | 0 | 2 |
| 8 | 1 | 15 | 0 | 2 |
| 9 | 1 | 24 | 0 | 2 |
| 10 | 1 | 45 | 0 | 2 |
| 11 | 1 | 51 | 0 | 2 |
| 12 | 2 | 44 | 0 | 2 |
| 13 | 1 | 48 | 0 | 2 |
| 14 | 1 | 64 | 0 | 2 |
| 15 | 1 | 55 | 0 | 2 |
| 16 | 1 | 61 | 0 | 2 |
| 17 | 1 | 14 | 1 | 2 |
| 18 | 1 | 14 | 1 | 2 |
| 19 | 1 | 14 | 1 | 2 |
| 20 | 2 | 14 | 1 | 2 |
| 21 | 1 | 11 | 1 | 2 |
| 22 | 1 | 13 | 1 | 2 |
| 23 | 1 | 16 | 1 | 2 |
| 24 | 1 | 16 | 2 | 2 |
| 25 | 1 | 16 | 2 | 2 |
| 26 | 2 | 14 | 2 | 2 |
| 27 | 1 | 13 | 3 | 2 |
| 28 | 1 | 15 | 3 | 2 |
| 29 | 2 | 15 | 3 | 2 |
| 30 | 1 | 14 | 3 | 2 |
| 31 | 2 | 18 | 3 | 2 |
| 32 | 1 | 15 | 4 | 2 |
| 33 | 1 | 17 | 4 | 2 |
| 34 | 1 | 48 | 4 | 2 |
| 35 | 1 | 15 | 5 | 2 |
| 36 | 1 | 44 | 5 | 2 |
| 37 | 1 | 11 | 6 | 2 |
| 38 | 2 | 20 | 6 | 2 |
| 39 | 1 | 41 | 6 | 2 |
| 40 | 1 | 12 | 7 | 2 |
| 41 | 1 | 13 | 7 | 2 |
| 42 | 1 | 16 | 7 | 2 |
| 43 | 2 | 13 | 7 | 2 |
| 44 | 1 | 17 | 7 | 2 |
| 45 | 2 | 17 | 8 | 2 |
| 46 | 1 | 16 | 8 | 2 |
| 47 | 1 | 15 | 8 | 2 |
| 48 | 2 | 17 | 11 | 2 |
| 49 | 1 | 22 | 11 | 2 |
| 50 | 2 | 13 | 13 | 1 |
| 51 | 1 | 19 | 18 | 1 |
| 52 | 1 | 47 | 18 | 1 |
| 53 | 1 | 61 | 18 | 1 |
| 54 | 1 | 32 | 19 | 1 |
| 55 | 2 | 17 | 20 | 1 |
| 56 | 1 | 43 | 22 | 1 |
| 57 | 2 | 14 | 23 | 1 |
| 58 | 1 | 14 | 27 | 1 |
| 59 | 1 | 32 | 30 | 1 |
| 60 | 1 | 58 | 30 | 1 |
| 61 | 1 | 29 | 32 | 1 |
| 62 | 1 | 40 | 33 | 1 |
| 63 | 2 | 56 | 35 | 1 |
| 64 | 1 | 16 | 44 | 1 |
| 65 | 1 | 38 | 44 | 1 |
| 66 | 1 | 28 | 50 | 1 |
| 67 | 1 | 16 | 57 | 1 |
| 68 | 2 | 22 | 60 | 1 |
| 69 | 1 | 15 | 73 | 1 |

influence upon performance.

At this point it is worth reflecting on the term performance. The deeper you look into it, the more ambiguous it seems to be and the more difficult is to establish a method to determine it (Bohórquez, Delgado and Fernández 2017). Performance can be understood as an own personal assessment by the athlete (internal) or as the assessment that external agents do, such as the public or the coach (external). Performance is also considered as the process through which you achieve excellence or as a concrete result at a certain moment.

In table 4 you can see the objective performance that the subject had at the time the test was made, as per the FBV punctuation system. It should be considered whether the perceived performance of the athletes was tantamount to the one described by the performance variable of the FBV. A difference between perceived and objective performance could explain the fact that no relation has been found between anxiety and performance.

In Table 1, unlike the results of other studies (Ponseti, García-Mas, Cantallops & Vidal 2017) (Peñaloza, Jaenes, Méndez-Sánchez & Jaenes-Amarillo 2016), you can observe that there are no meaningful differences regarding to gender, in the various anxiety subscales. You can also observe that the high-performance group shows, although not in a meaningful way, a little more somatic anxiety.

It has also been observed that, referring to other similar studies (Ramis, et al. 2013), in the three anxiety subscales sailors show the lowest medians. Taking into account what Hanton and Jones (1994) and Jones, Hanton and Swain (1994) proposed about the influence that the sports characteristics have upon the anxiety experienced by athletes, we could conclude that sailing sport does not generate any high levels of anxiety.

Perhaps one of the factors that could explain these results is that, unlike in sports such as football or basket, in sailing -owing to the special characteristics of the practicing area, the sea, which cannot be easily reached by crowds- there is a relative lack of the perception of psycho-social pressure from parents, spectators and even coaches when it comes to competition. Likewise it could also be assumed that due to the features of the working instrument, the boat, a rather long period of time for preparations is needed by sailors before each competition takes place, and that, be it referred to the acclimation concept, or to the more complex of confrontation strategies (Romero, Zapata, García-Mas, Brustad, Garrido & Letelier, 2010) the repetitive and meticulous task might influence, as many routines do, in the decrease of somatic and cognitive signs of anxiety associated with competition.

As an overall picture we might assume that this study gives support to the idea that anxiety associated with competition does not have a negative influence upon performance. The athlete perceives it as an excitement sensation associated with competition that does neither hinder nor ease it carrying out. Perhaps only for challenges perceived by the athlete as very difficult, excitement can grow so high that it may hinder the carrying out of the task (Miguel-Tobal & Escalona, 1996). This is an interesting point to be looked over in future studies.

It seems to be an interesting future line of research that of looking deeper into the differences among objective, self-perceived and hetero-perceived performance. For instance, the relation of each one of them with the anxiety construct.

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