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Coping strategies in a competitive situation: A comparative study, using an elite wheelchair fencing group

Estratégias de *coping* em situação de competição: Estudo descritivo-comparativo com um grupo de elite de esgrimistas em cadeira de rodas

Abstract

This study explores statistical differences between eight Coping Strategies in a competitive situation (Revaluation, Self-control, Social-Support, Direct Action, Aggressive Action, Denial, Distraction, Action Inhibition) and two Coping Dimensions (Engagement and Disengagement), according to control variables: Gender, Practicing Time, Application Moment (Before and After Competition). The best six wheelchair fencing athletes (Brazilian team), both sexes, between 18 and 31 years old, responded to the Balbinotti Coping Strategy Inventory for Athletes in a Competitive Situation (iB.ECASC-40). The main results indicate differences ($p < .05$) between means before competition (1) of Direct Action and Denial, controlling by Gender; (2) of Revaluation and Engagement, controlling by Practicing Time Variable. Furthermore, belonging to determined gender doesn't set different profiles of coping strategies in this specific modality. Main conclusion: Brazilian top athletes in this modality use statistically the same ($p > .05$) main Coping Strategies before and after a competition, denoting a certain stability of this personality characteristic. Further studies with larger samples and other sports can offer other important findings related to Coping Strategies in competitive situation.

Keywords: behavior; adaptive; athletic performance; psychological stress; wheelchair (fencing); psychology; sports.

Resumo

Esta pesquisa explora diferenças estatísticas nos índices médios de oito estratégias de *coping* (Reavaliação, Autocontrole, Suporte Social, Ações Diretas, Ações Agressivas, Negação, Distração, Inibição da Ação) e de duas dimensões (Engajamento e Desengajamento), segundo algumas variáveis controle: Sexo, Tempo de Prática, Momento de Aplicação (antes ou depois da competição). Os 6 melhores atletas de Esgrima em Cadeira de Rodas (Seleção Brasileira), ambos os sexos e com idades de 18 a 31 anos, responderam ao Inventário Balbinotti sobre Estratégias de *Coping* para Atletas em Situação de Competição (iB.ECASC-40). Principais resultados indicam diferenças ($p < 0,05$) nas médias antes da competição (1) das estratégias “Ações Diretas” e “Negação”, quando controlada a variável Sexo; (2) da “Reavaliação” e do “Enfrentamento”,

quando controladas pela variável “Tempo de Prática”. Ainda, pertencer a determinado sexo não determina perfis diferentes de estratégias de *coping*. Principal conclusão: a elite brasileira desta modalidade utiliza, de forma indistinta estatisticamente ($p > 0,05$), as mesmas estratégias de *coping*, antes e depois da competição, indicando certa estabilidade desta característica de personalidade. Novos estudos, com amostras maiores e com outros esportes, podem oferecer outras importantes conclusões referentes às estratégias de coping em situação de competição.

Palavras-chaves: comportamento adaptativo; desempenho atlético; estresse psicológico; (esgrima em) cadeiras de rodas; psicologia; esportes.

Introduction

This study is part of a broader and continuous study, which aims to explore and describe the many different personality traits of athletes in different sports played in Brazil, considering their inherent characteristics and aspects. This paper presents the data results collected on high level Brazilian disabled athletes, taking part in an international, top level competition (Wheelchair Fencing World Cup), and explores the occurrence of possible significant differences (or statistical similarity) in eight Coping strategies regarding a competitive situation (reevaluation, self-control, social-support, direct action, aggressive action, denial, distraction, action inhibition) and of two general Coping Orientations (engagement coping and disengagement coping)¹, all of them inspired in the context of the Transactional Coping Theory, proposed by Lazarus².

Throughout this paper, the general structures of wheel chair fencing, some personal and behavioral athlete characteristics, the coping evaluation models, as well as the transactional stress and coping model in stressful events, specifically in sports, will be presented. Following that, the central questions of the research, the ethical, methodological and statistical procedures will be presented. The last section will discuss the results, interpretations and discussions, as well as a general analysis of the items and the average comparisons between gender and practicing time before or after competition. The results will be according to the measurement guidelines of descriptive-comparative studies commonly accepted in the specialized literature. The conclusions will be derived from this process.

General facts and structure of wheelchair fencing

Historically, this model was proposed by Professor and Neurologist Sir Ludwig Guttman (1899 – 1980), who, in 1953, adapted fencing to special needs athletes. Wheelchair fencing has been part of the Paralympic program since its first edition, in Rome, in 1960³. The sport is governed by the International Wheelchair Fencing Committee of the International Wheelchair and Amputee Sports Federation (IWF/IWAS), and is practiced according to the International Fencing Federation (FIE) rules, and adapted to wheelchair fencing. Only physically challenged athletes can take part in the competition. The combat strip must be 4 meters long by 1.5 meters wide, with the athletes wheelchairs fixated to the ground. The competition gear is identical to conventional fencing, and uses three conventional weapons (foil, sabre and épée). In the épée and foil matches, points are awarded by touching the opponent with the tip of the weapon. On the other hand, in saber matches, points are awarded equally for touching the opponent with the

blade or the tip of the weapon. Relative to attack priorities, the same rules and conventions are applied in both regular and wheelchair fencing. Pressure sensitive sensors in the tip of the weapons, jacket (foil and sabre) and a metallic apron (used to prevent points outside of the target area), help the judges to locate the target areas. When a touch occurs, a green or red lamp lights up, but the point is only counted after a jury decision. The referee indicates the point with a specific gesture, that together with the touch computing system, help the spectator to watch the match. In foil and sabre, when the touch occurs outside the target area, a white lamp lights up and the point is not awarded^{4,5,6}.

Athletes' personal and behavioral characteristics

The athletes' personal and behavioral characteristics in this sport have been described in specialized literature, and they are not different than the requirements in conventional fencing^{7,8,9}. The Paralympic Brazilian Committee⁵ (CPB), in conjunction with the International Paralympic Committee (IPC), indicates that fencing, in general (conventional and wheelchair) requires special adaptation capacities from the athletes, such as creativity, speed, accurate reflexes, craftiness and patience. Other authors^{10,11,12, 13} have contributed in an important way to a more accurate description of such characteristics, whether with relation to (1) Physical aspects: adequate development of physical capabilities such as, coordination (balance, execution speed, reaction and movement precision), flexibility, strength, agility, neuromuscular and cardiovascular resistance (due to the closeness of the games, in other words, a small time lapse between each game that requires the most of the athletes' recovery capacity); (2) Tactical-technical aspects: practical-motion thinking, operational and problem solving, high levels of knowledge and technical-tactical reasoning, refined perception, proper weapon manipulation, decision making skills (adequate anticipation and reaction), accuracy with regard to time and space visual calculation (observation skills and "fencing time"); (3) Psychological aspects; high attention span, adequate levels of motivation, volition qualities, ambition, high score abstract thought, creative and imaginative skills (ability to mentally represent action), in comparison to the average athlete from other sports, average levels of anxiety and emotional stability, with good emotional control and a competitive drive; and (4) Social aspects: desire to succeed, independence and self-determination. It seems that these athletes fundamentally need proper regulation mechanisms to balance emotion and action in order to optimize their athletic performance. It is precisely this aspect of the athlete (conventional fencer) that has been underexplored¹⁴, not having found many references in wheelchair fencing, with regard to coping strategies in these cases.

Coping evaluation models

Many coping evaluation instruments have been used to evaluate coping, such as: (1) Ways of *coping* Questionnaire¹⁵; (2) COPE Inventory¹⁶; (3) Multidimensional *coping* Inventory¹⁷; (4) *coping* Strategy Indicator¹⁸; (5) Brief Resilient *coping* Scale¹⁹, among others. A recent systematic review of international literature²⁰ presented many instruments (questionnaires, inventories and scales) and techniques (interviews: structured, semi-structured, phenomenological, audio-diaries) applied to sport. It was also possible to find these coping evaluation models being used in Brazilian sport^{21,22}. However, it is possible to observe problems with the validity of these processes applied to the Brazilian experience: (1) Lack of adequate

demonstration of the factorial exploratory models (matrix inverse, anti-image, reproduced matrix); (2) confirmatory (absolute adjustment, comparative and parsimonious correction) ; and (3) items analysis (correlation, convergent values and divergent) with data collected from Brazilian athletes from many different sports (accentuating variability)²³.

Therefore, the only validated instrument, metrically structured that proved capable of evaluating the Engagement Coping dimension, with its four sub-dimensions (Revaluation, Self-control, Social-Support, Direct Action), and the Disengagement Coping dimension, with its own four sub-dimensions (Aggressive Action, Denial, Distraction, Action Inhibition), was the Balbinotti Coping Strategy Inventory for athletes in a Competitive Situation (iB.ECASC-40)²⁴, which consists of the actualized version of “Coping Inventory to sports activity practitioners”²⁵.

According to the concepts used, coping evaluation can be seen using two different aspects. The first, called dispositional, characterized as the way the individual handles stress, its style, and the manner it can influence the individual’s reactions and systematic and future decisions^{16,17}. The second, called situational, characterized by the conscious and active cognitive process, to evaluate the responses to stressful situations, which may change in each specific stressful event^{26,27}. According to Balbinotti and his co-researchers^{28,29}, in the dispositional approach, a stressful situation that provokes the coping behavior is insignificant, while, on the contrary, in the situational approach, the stressful situation has a fundamental role in the evaluation of the chosen strategy.

In the situational approach, two different Orientations may be found, each one formed by four strategies, in each of the referred dimensions. They are: Disengagement Coping, in which the behavioral and cognitive strategies aim to manage the stress through (1) aggressive action, when the individual discharges his emotion through actions or emotions (ex: rage discharge, smashing a door or screaming); (2) denial, when the individual avoids thinking about the problem; (3) distraction, when the individual searches for a way to avoid the problem, (4) action inhibition, where the individual resigns and tries to appease his/her emotions.

In Engagement Coping, the behavioral and cognitive strategies aim to solve the problem in an active way, using strategies such as, (1) Positive Revaluation, when the individual searches for alternative solutions; (2) Self-control, when the individual faces the problem in a rational and organized way, controlling himself; (3) Social support, when the individual seeks help from people who experienced the same situation or problem; and (4) Direct Action, when the individual acts directly on the problem^{28,30,31}.

Transactional stress and coping model in stressful events.

Since the 1960’s, the transactional stress and coping model has been proposed as a way to understand and evaluate the effects of stressful situations caused by the relationship between the person and its environment when a “harmony” break-down happens, unbalancing the individual, and affecting their wellbeing; what demands physical and/or psychological action to restore homeostasis. At first, this phenomenon depends on the signification given to the stressful stimulus by the observer, in which, initially a primary evaluation is performed when the subject evaluates the importance of the event, sorting it as stressful, positive, manageable, challenging or irrelevant. Afterwards, a second evaluation is conducted,

that produces a personal perception of the styles and strategies of coping that will be adopted to solve the problem. In this sense, this model is the one that works better as a modulator between the environment and the individual. In other words, the coping strategies are the methods that better fit the need of conciliation between the inner needs of the individual and the ambience^{2,32,33,34}.

In the application framework of the transitional model, Glantz et. al.³⁵, use therapeutic techniques that intend to develop a certain consciousness and control of the responses to stressors. *Biofeedback*, mental relaxation techniques, in addition to techniques such as yoga and hypnosis, in a quiet environment, reduce stress levels and tension in response to everyday stressful situations. Those techniques can be combined with visualization, used to improve an individual's state of mind, and improve their confrontational abilities, by mentally repelling gestures and situations experienced in a stressful event.

These authors claim that the transactional stress and coping model is an extremely useful tool to understand health education, health promotion and illness prevention. Stress does not affect every individual the same way, but stress can lead to illness and negative experiences. To deal with stress, it is, therefore, an important factor that affects why and how, people go for medical and social care, and how they believe or follow the advice and information of these professionals. According to these understandings, it is vital to understand and apply this model in sport.

Coping in Sport

When the results in a sportive event are analyzed, it is very common to seek explanations about the efficiency of determined athletes, when others do not achieve such standards^{10,36}. Following this thought, it is commonly accepted that the success in sport is directly connected to the individual's capability to deal with the demands imposed upon him, in other words, their efficiency to respond in an adequate way to stressful situations presented by training and competitions. In this direction, since the early 1990's, many studies^{7,37,38,39} have demonstrated the value of coping strategies to reduce stress levels, anxiety and increase performance, satisfaction and the promotion of pleasant, emotional experiences^{8,20,40,41}.

Having presented all the coping-related aspects, the investigation will begin with the research central questions.

Research central questions

These specifications (of theoretical and empirical character), no doubt, can help to elaborate the central questions of this study. From the importance coping strategies have in a sport context^{1,14,21,22,36,42}, and the dimensions and sub-dimensions that must be investigated by this paper²⁴, it was possible to elaborate 3 (three) questions that guide this research; (1) Do the evaluated athletes present different average results ($p < 0,05$) then the expected central values? (2) Are there any statistically significant differences ($p < 0,05$) between the averages of the athletes tested, when the variables: Gender and Practicing Time are controlled? (3) On average, do these athletes present significantly higher averages ($p < 0,05$) before or after a competition, in each of the dimensions and sub-dimensions? To be able to properly answer the

questions, the following ethical, methodological and statistical methods were used.

Ethical, methodological and statistical methods

The research ethics committee of the Federal University of Rio Grande do Sul analyzed and approved – Reference number: 2006569 – this research. Six athletes from the Brazilian wheelchair fencing team took part in the experiment, 3 (three) male athletes and 3 (three) female athletes, ranging from 18 to 31 years of age ($25,6 \pm 5,4$). The sample was chosen according to the athletes' availability and the access granted by the directors of the Brazilian wheelchair fencing team. According to Maguire & Rogers⁴³, this is a non-random sample recommended for studies in education and psychology. Even though the number of athletes is pretty strict, its specificity and the level of the athletes that are part of the sample, are the elite of the sport of fencing in Brazil, thus proving the relevance of the study.

The participating athletes answered the Balbinotti Coping Strategy Inventory for athletes in a Competitive Situation (iB.ECASC-40) during the course of one of the Grand Prix events, held in Montreal – Canada, between April 26-28, 2013. The data was gathered over two different periods (before and after competition), according to the classical experimental design⁴⁴. This instrument was already tested for its psychometric properties^{1,42}.

To evaluate the response behavior, the athletes used a Likert scale⁴⁵, graded in 5 points, from (1) “Strongly disagree”, to (5) “Strongly agree”. A higher sum in one or more coping strategies indicates that the subject uses it more strongly than others, revealing, the importance of this research. This is the reason a careful examination of the averages is necessary.

Results, Interpretations and Discussions

To adequately answer the 3 (three) central questions of this study an investigation of the scores obtained by the iB.ECASC-40 was performed, according to some guideline principles commonly accepted in specialized literature^{23,46}. Following that stage, the results obtained from the general analyses of the items and comparisons of the averages will be presented successively and systematically.

It stands out that the initial and formal presentation of the general analysis of the items in this study aims to demonstrate the reliability of the values of the observed averages, because these can suffer from the negative influence of extreme cases, and therefore, they can be unrepresentative of the inventoried behaviors, decreasing the value of the findings.

General analyses of the items

It may be determined that the averages found for each one of the 40 reviewed items, individually, vary between 1,17 and 4,83; with the associated standard deviations varying between 0,41 and 1,67. This variability of the results demonstrates the adequate homogeneity in the evaluated statistical dispersion. These results indicate that, on average, athletes respond to the (iB.ECASC-40) items in an equidistant way.

Two positive character interpretations are possible; a) there was no predominant adherence (positive or negative) to any of the isolated items, in other words, items with averages equal to the extreme values (1 or 5), could indicate the absence of variability of answers – a condition that would prevent the continuation of the analyses; and, b) such an equidistant behavior was expected, because the items feature contents that are at the same time, closer or more remote to the personality of each athlete, which might indicate that the coping strategies consist of an important behavioral aspect, or a highlighted aspect in the dynamic of its personality.

The total of the averages and standard deviations found in the questionnaire were in the time series 1 (T1) ($123,0 \pm 14,89$) and in the second period (T2) ($122,17 \pm 12,35$). A paired t test was produced, resulting in ($t_{(5)} = 0,175$; $p = 0,868$), leaving no doubts: the small variation found in the averages is not statistically significant. These results are interpreted as positive, since the averages were different only as an effect of the competition, in that sense, the expected alteration in the averages should be those amongst the dimensions and sub-dimensions of the instrument.

Since the total range expected was from 40 to 200 points (with an expected average of 120 points), and the final results observed were from 110 to 151 ($123,0 \pm 14,89$) in the first period of the time series (T1), and from 106 to 134 ($122,17 \pm 12,35$) in the second period (T2), (with Interquartile ranges from 20,00 in T1 and 25,75 in T2), the values found between the expected and the found averages were close. A t test to the sample was conducted and its results in T1 ($t(5) = 0,494$; $p = 0,642$) and in T2 ($t(5) = 0,430$; $p = 0,685$) clearly reveal the inexistence of significant differences, indicating a satisfactory parametric relation of the total instrument and of the individual items.

The median of the item-to-item correlation was satisfactory, both in T1 ($r = 0,08$) and T2 ($r = 0,05$), once the athletes used the engagement coping strategy, more than the disengagement coping strategy, by this reason, the non-significant correlation ($p = 0,893$) is expected to be around 0 (zero). These results reinforce even more the interpretation that the items are adequate and pertinent.

Finally, and so there is no doubt left around the pertinence of the use of averages in this research (considering the small sample), the normality distribution was tested according to 2 strict statistical procedures: Kolmogorov- Smirnov calculations (K-S) and Shapiro-Wilk (S-W). The results obtained ($0,067 < K-S < 0,20$; $0,054 > S-W > 0,98$) corroborate the suitability of the research data and the continuation of the analysis, once the parametric relation is proved⁴⁷.

Comparisons of Averages

To adequately answer the first of the three central questions of this study: (Do the valuated athletes present average results ($p < 0,05$) different than the expected central values, according to the dimensions and sub-dimensions of the iB.ECASC-40?). It was necessary to investigate the observed averages (see Tables 1 and 2). To accomplish this, a single, sample t test was used, its results indicate that all the differences are weighty ($p < 0,05$) except for the sub-dimension Distraction, in both of the applications of iB.ECASC-40 (Table 1). Observing Table 2, it is possible to notice that the observed averages ($82,83 \leq Oa \leq 85,33$) in the Engagement Orientation dimension ($\sum Re, DA, SS, Sc$) are significantly superior ($37,67 \leq Oa \leq 39,33$) to the Disengagement Orientation ($\sum AA, De, Di, AI$), before ($t_{(5)} = 6,54$; $p \leq 0,001$) and

after ($t_{(5)} = 9,72$; $p < 0,001$) competition, suggesting that this behavior can occur independently of the application of the iB.ECASC-40. This first general result is interpreted in a positive manner, once the athletes demonstrated, with their answers, that they engage in the hardships originated by the possibility of stressful situations generated in competition. With regard to what concerns the sub-dimension Distraction, the interpretations are also positive, once this phenomenon makes us believe that the athletes do not search for alternatives to engage the problem. Finally, other studies could explore the utilization of the same coping strategies by other elite athletes under the same conditions.

Table 1

Results of the different application moments in the different Orientations and Strategies

| iB.ECASC-40 administration moment. | Dimension (Orientation) | Sub dimensions (Estrategies) | Observed Average (Oa) | SD | Expected Central Values (Me) = 15 | | | |
|------------------------------------|---------------------------|------------------------------|-----------------------|------|--------------------------------------|-------|----|-------|
| | | | | | Difference of the averages (Oa - Ea) | t | df | p |
| Time 1 (T1) | Engagement orientation | Revaluation | 20,00 | 2,28 | 5,00 | 5,37 | 5 | 0,003 |
| | | Direct Action | 23,33 | 1,63 | 8,33 | 12,50 | 5 | 0,000 |
| | | Social Support | 21,83 | 1,72 | 6,83 | 9,72 | 5 | 0,000 |
| | | Self-Control | 20,17 | 2,79 | 5,17 | 4,54 | 5 | 0,006 |
| | Disengagement orientation | Aggressive action | 7,50 | 3,99 | -7,50 | -4,61 | 5 | 0,006 |
| | | Denial | 9,33 | 2,25 | -5,67 | -6,17 | 5 | 0,002 |
| | | Distraction | 12,00 | 6,84 | -3,00 | -1,07 | 5 | 0,332 |
| | | Action inhibition | 8,83 | 3,97 | -6,17 | -3,80 | 5 | 0,013 |
| Time 2 (T2) | Engagement orientation | Revaluation | 18,83 | 2,93 | 3,83 | 3,21 | 5 | 0,024 |
| | | Direct Action | 22,67 | 1,21 | 7,67 | 15,51 | 5 | 0,000 |
| | | Social Support | 20,83 | 3,31 | 5,83 | 4,32 | 5 | 0,008 |
| | | Self-Control | 20,50 | 1,38 | 5,50 | 9,77 | 5 | 0,000 |
| | Disengagement orientation | Aggressive Action | 8,00 | 4,00 | -7,00 | -4,29 | 5 | 0,008 |
| | | Denial | 10,67 | 2,73 | -4,33 | -3,88 | 5 | 0,012 |
| | | Distraction | 12,17 | 3,76 | -2,83 | -1,84 | 5 | 0,125 |
| | | Action inhibition | 8,50 | 4,04 | -6,50 | -3,94 | 5 | 0,011 |

Note: Time 1 = Before competition; Time 2 = After competition

Table 2

Results of the different application moments in the different Orientations

| iB.ECASC-40 administration moment. | Dimension | Observed Average (Oa) | SD | Expected Central Values (Me) = 60 | | | |
|------------------------------------|---------------------------|-----------------------|-------|--------------------------------------|-------|----|-------|
| | | | | Difference of the averages (Mo - Me) | t | df | p |
| Time 1 (T1) | Engagement orientation | 85,33 | 4,68 | 25,33 | 13,27 | 5 | 0,000 |
| | Disengagement orientation | 37,67 | 15,76 | -22,33 | -3,47 | 5 | 0,000 |
| Time 2 (T2) | Engagement orientation | 82,83 | 4,22 | 22,83 | 13,47 | 5 | 0,018 |
| | Disengagement orientation | 39,33 | 10,89 | -20,67 | -4,65 | 5 | 0,006 |

To adequately answer the second of the three (3) central questions of this study: (Are there any statistically significant differences ($p < 0,05$) between the averages of the tested athletes, when the variables Gender and Practicing Time are controlled, according to the dimensions and sub-dimensions of the iB.ECASC-40?); it was also necessary to explore the observed averages (see Tables 1 and 2) with relation to the variables Gender and Practicing time in the two moments of the study (see Table 3). To understand this, an independent sample t test was used, and its results indicated that almost all the discrepancies are non-significant ($p < 0,05$). The exceptions were the sub-dimensions Direct Action ($t_{(s)} = 4,00$; $p_{DA} = 0,02$) and Denial ($t_{(s)} = - 2,77$; $p_D = 0,04$) in the time period 1, with regard to the control variable Gender; the sub-dimension Reevaluation ($t_{(s)} = - 2,77$; $p_{Re} = 0,04$), and the Engagement Coping Dimension ($t_{(s)} = - 2,90$; $p_{EC} = 0,04$), with regard to the control variable Practicing Time. According to this data, it is possible to say, in general, that the evaluated athletes, independently of Gender or Practicing Time, behave in the same manner, in a way that the competitive event is not capable of alternating its strategies to react to situations that generate stress.

Table 3

F Test (Levene) and t (Student) to the variables Gender and Practicing Time

| Variables | | F test for equality of variances | | | | t test for equality of averages | | | | | |
|---------------------------|---------|----------------------------------|-----|--------|-----|---------------------------------|------|------------------|-------|------------------|-------|
| Evaluated | Control | Time 1 | | Time 2 | | Time 1 | | Time 2 | | | |
| | | F | p | F | p | t | p | Dif. of averages | | Dif. of averages | |
| Reevaluation | S | 1.00 | .37 | 1.23 | .33 | 1.10 | .34 | 2.00 | 0.97 | .39 | 2.33 |
| | PT | 1.54 | .28 | 0.14 | .73 | -0.68 | .54 | -1.33 | -2.77 | .04 | -4.33 |
| Direct Acion | S | 0.40 | .56 | 0.73 | .44 | 4.00 | .02 | 2.67 | 0.63 | .56 | 0.67 |
| | PT | 0.08 | .79 | 0.31 | .61 | -0.46 | .67 | -0.67 | 1.51 | .21 | 1.33 |
| Social Support | S | 3.27 | .15 | 1.22 | .33 | 0.67 | .54 | 1.00 | -1.53 | .20 | -3.67 |
| | PT | 0.40 | .56 | 0.04 | .85 | -1.25 | .28 | -1.67 | -0.84 | .45 | -2.33 |
| Self-control | S | 0.14 | .73 | 2.57 | .18 | 0.13 | .90 | 0.33 | 1.77 | .15 | 1.67 |
| | PT | 0.25 | .64 | 4.00 | .17 | -0.69 | .53 | -1.67 | -0.87 | .44 | -1.00 |
| Agressive action | S | 4.53 | .10 | 1.39 | .31 | -1.48 | .23 | -4.33 | -1.31 | .26 | -4.00 |
| | PT | 4.28 | .11 | 4.03 | .12 | -0.68 | .54 | -2.33 | 0.18 | .86 | 0.67 |
| Denial | S | 1.73 | .26 | 0.25 | .64 | -2.77 | .04 | -3.33 | -0.56 | .61 | -1.33 |
| | PT | 2.88 | .17 | 5.69 | .08 | 0.00 | 1.00 | 0.00 | -0.27 | .80 | -0.67 |
| Distraction | S | 5.35 | .08 | 1.60 | .28 | -0.11 | .92 | -0.67 | 0.50 | .64 | 1.67 |
| | PT | 2.12 | .22 | 0.84 | .41 | -1.93 | .13 | -8.67 | -1.63 | .19 | -4.33 |
| Action Inhibition | S | 1.84 | .25 | 6.26 | .07 | -0.91 | .42 | -3.00 | -1.45 | .22 | -4.33 |
| | PT | 2.27 | .21 | 1.00 | .37 | -0.91 | .43 | -3.00 | -0.27 | .80 | -1.00 |
| Engagement orientation | S | 4.93 | .09 | 7.18 | .06 | 1.98 | .12 | 6.00 | 0.26 | .81 | 1.00 |
| | PT | 3.35 | .14 | 1.37 | .31 | -1.60 | .19 | -5.33 | -2.90 | .04 | -6.33 |
| Disengagement orientation | S | 4.87 | .09 | 3.17 | .15 | -0.86 | .44 | -11.33 | -0.88 | .43 | -8.00 |
| | PT | 4.90 | .09 | 1.65 | .27 | -1.11 | .33 | -14.00 | -0.56 | .61 | -5.33 |

Note: Time 1 = Before competition; Time 2 = After competition
S = Gender; PT = Practicing Time

Gender and Practicing time

Reche, Cepero and Rojas⁴⁸ evaluated the dominance of psychological variables in a sample of 40 fencers with relation to their sportive experience, without distinguishing their levels. The results pointed out that the group presented excellent skills in variables such as: competitive challenge and emotional sensitivity; necessity to improve self-confidence, motivation, positive attitude, concentration and imagination. Significant differences were found in favor of the more experienced fencers regarding emotional

control and attention, but they also presented lower levels of motivation in their practices.

A study carried out by Cox, Liu and Qiu⁴⁹, the Chinese, elite athletes demonstrated better anxiety control and confidence than those on an inferior level, independently of their gender.

According to Garcia *et al.*⁵⁰, the elite fencers who were evaluated, presented excellent abilities to face challenges and a great emotional sensitivity amongst the many athletes' with different levels of experience. However, these authors noticed a need to improve the athletes' imaginative capacities, motivational abilities, concentration, positive attitude and self-confidence. Results were also corroborated by Reche *et al.*⁴⁸, with 40 Spanish fencers.

According to Martin⁵¹, there were no gender differences amongst the elite, Spanish fencer's psychological abilities. This author's results match the results of an observational study of football teams, that did not find gender differences related to the psychological profile of the athletes, considering variables such as motivation, confidence, activation levels, concentration, emotional stage, mental image using and internal dialogue. Godoy *et al.*⁵² also pointed out the good levels of concentration, activation control, use of visualizations, self-confidence and motivation, among others.

Garcia, Gonzales and Ruiz⁵⁰ encountered variations according to sportive fencing years of experience. A result contrary to Godoy, Velez e Pradas⁵² study that affirms that there are no significant differences in the psychological abilities based on the sportive competitive experience, data collected from a group of young table tennis, badminton and football players, between the ages of 9 and 17.

Smith *et al.*⁵³ compared male and female athletes and observed that the male athletes had higher averages in five of the seven dimensions (females obtained higher averages in Trainability and Free of Worries). Goudas, Theodorakis and Karamousalidis⁵⁴ found no significant differences between genders in a sample of male and female basketball athletes. Both genders presented moderate averages in all seven dimensions.

Using different modality and level athletes, Omar-Fauzee *et al.*⁵⁵ only found statistically significant differences ($p < 0,05$) between genders, in the Deal with Adversity dimension, in which male athletes obtained higher levels. Comparing different competitive athletic levels (regional, state and country), Coimbra *et al.*²¹ found discrepancies ($p < 0,05$) in the coping levels, the national-level athletes demonstrated the highest levels in all the scales. Independently of the kind of sport and competitive level, male athletes presented higher scores in these psychological abilities. To deal with adversity, male athletes demonstrated even higher registers in regional and national levels (gender vs competition level, interaction). On other hand, in trainability, the regional-level athletes presented higher values, while at the national level, the observed results were similar to both. Apart from gender or competition level, single sport practitioners scored higher in Trainability than team sports practitioners. When it comes to the Deal with Adversity variable, higher values were observed in male athletes. Independently of gender and of the kind of sport, national-level athletes demonstrated higher scores to deal with Adversity, Goal/Mental Preparation, Free of Worries and Confidence/Motivation.

According to Coimbra *et al.*²¹, even if the national level athletes presented higher coping scores, it

is not possible to ensure a cause-and-effect relationship between the competition level and psychological abilities of the subjects. In other words, national-level athletes are more successful in developing these abilities or athletes' with better abilities may reach this competitive level?

Athletes that only compete in regional levels have fewer opportunities to improve, once they face opponents with similar abilities. National or international-level athletes, besides taking part in more competitions, are able to face opponents of different levels, with distinct skills, leading them to develop and improve their psychophysical capabilities. These authors suggest that, although the literature points at a certain influence of these factors, no necessary correlation was found with age or the practicing time in any of the psychological abilities measured by the coping inventory used.

Smith *et al*⁵³ also did not find any significant differences between males and females, as well as Goudas *et al*⁵⁴ with basketball athletes. Both of them displayed moderate averages in all dimensions and in the total scale. Omar-Fauzee *et al*⁵⁵ only found statistically significant ($p < 0,05$) differences between the genders in the Dealing with Adversity dimension (male athletes scored higher).

In Willians *et al*'s study¹¹ regarding the different levels of contenders (low and high level – elite athletes), it was possible to show that the lower level fencers have a greater desire for domination in comparison to the higher level athletes. However, the authors do not indicate the possible reasons for such a finding. Rivero¹² adds that the elite fencers present great motivation levels towards sport and exhibit great humor profiles before the most relevant competitions.

To adequately answer the third of the three (3) central questions of this study: [(3) On average, do these athletes present significantly higher averages ($p < 0,05$) before or after a competition, in each of the dimensions and sub-dimensions of iB.ECASC-40?], it was necessary to explore the observed averages in the two moments of the research, but it was done considering the same coping strategy (Table 3). A *t* test in non-paired samples was used, and its results indicated that all the differences are insignificant (display values of $p < 0,05$). What is possible to understand is that, among the athletes who were evaluated, there are no alterations on the way they react to stress generating situation.

Table 4

Test *t* to paired samples (*gl* = 5) before and after competition

| Dimension | Sub-dimensions | | Difference among pairs | | | |
|---------------------------|-------------------------|------------------------|------------------------|-------|----------|----------|
| | Before Competition (T1) | After Competition (T2) | Average | d.p. | <i>t</i> | <i>p</i> |
| Engagement Orientation | Reevaluation | Reevaluation | 1.17 | 2.14 | 1.34 | 0.24 |
| | Direct Action | Direct Action | 0.67 | 1.86 | 0.88 | 0.42 |
| | Social Support | Social Support | 1.00 | 3.74 | 0.65 | 0.54 |
| | Self-Control | Self-Control | -0.33 | 2.80 | -0.29 | 0.78 |
| Disengagement Orientation | Aggressive Action | Aggressive Action | -0.50 | 3.56 | -0.34 | 0.75 |
| | Denial | Denial | -1.33 | 3.14 | -1.04 | 0.35 |
| | Distraction | Distraction | -0.17 | 3.71 | -0.11 | 0.92 |
| | Action inhibition | Action inhibition | 0.33 | 2.94 | 0.27 | 0.79 |
| | EO | EO | 2.50 | 3.62 | 1.69 | 0.15 |
| | DO | DO | -1.67 | 11.74 | -0.35 | 0.74 |

EO = Engagement Orientation
DO = Disengagement Orientation

Before or after competition

Nascimento Junior *et al*²², state that the coping strategy repertoire must be widely diversified, so that the football athlete is able to deal and overcome the many different factors and/or stressful conditions, providing the terms of a satisfactory performance for a successful career. Regarding the coping strategies, it was noted that both categories use *trainability*, *confidence* and *motivation* strategies as a psychological resource to deal with stressful situations.

According to Pensgaard and Duda⁴¹, the ability to use adequate coping strategies influences the perception of situations as threatening or not; highlighting that, the greater the number of strategies the subject develops and frequently uses, the smaller is the feeling of danger or fear facing stressful situations.

Lazarus⁵⁶ points out that stress, emotions and coping can be combined into one single conceptual unit (can and should be understood as a whole) and its segregation (frequent) in investigation terms, is only justified by facilitation in the data analysis.

Another point mentioned by Folkman and Lazarus⁵⁷ and Lazarus⁵⁸ is that it is common to verify a division between problem-centered coping strategies, used when the person focuses on solving or modifying the stressful situation, and emotions centered around coping, referring to the person's efforts to

reduce or manage the emotional and psychological malaise associated to the stressful situation. However, Gomes³⁶, does not seem to believe that emotion, by itself, has a role in enhancing or debilitating the efficiency, inasmuch as from the conceptual point of view, positive emotions always seem positive in all the adaptation process, and the same thing happens to negative emotions. What can make a difference is the way the athlete reacts to each emotional condition; here, there may be as many answers to the same emotional conditions as there are athletes (or subjects) in cause.

Therefore, to Lazarus and Folkman²⁷, more than simply describing specific tension situations (ex: fail in a decisive moment, or suffer an injury, etc), the aspects that make the situation potentially stressing, and which are often left aside, must be analyzed. Lazarus⁵⁹ also suggests that the transaction is more being important to evaluate the relational meaning the individual creates when confronting a specific situation. That is why the stress definitions given by Lazarus' transactional perspective⁶⁰, indicate that this phenomenon does not reside in the person or in the environment, thus, truly resulting of the interaction of these two.

According to Gomes³⁶, it is common in specialized literature for authors who focus on only one of these components, really few investigations tend to conjugate these two essential domains, essential in understanding the stress confrontation. With regard to this question, the author points out one of the advantages of considering the psychological processes implicated in the analysis of the interaction between subject and the environment, anchored in the fact that, in the end, the experience of confronting stress might not be negative, instead, it can mean a positive situation, because the person might be able to handle the problem properly, which demonstrates the relevance of the coping strategies analysis.

Conclusions

This study aimed to investigate the way Brazilian, elite, wheelchair fencing athletes use and resort to coping strategies in stressful competitive situations. The way these athletes behave in competitive situations may provide important information about the psychological abilities used, in a statistically indistinct form ($p < 0,05$), and if they use coping strategies before and after competition. A certain personality stability was noticed, in other words, the athletes who were evaluated, were not influenced by competitive situations, even in an international competitive situation.

The athletes who were evaluated used engagement techniques to the detriment of disengagement techniques, over other coping strategies, thus showing a proactive attitude towards competitive situations. These findings point in the same direction as studies conducted by Folkman and Lazarus⁵⁷, Gould et al.^{9,61} and Dias, Cruz and Fonseca⁶², that state that the athletes use various forms of coping and tend to defer more to engagement techniques instead of disengagement techniques.

Once you evaluate and detect these psychological abilities in these high performance athletes, the interdisciplinary work planning of the technical team also provides reference material to future interventions. Therefore, it is interesting to develop longitudinal studies to enable the establishment of relationships between the stress sources and the coping strategies generally used, as well as the different situations and the phases of the training cycle (as in national and international competitions, and the different phases of sports preparation).

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