



## Competitive Anxiety and Coping Strategies in Young Martial Arts and Track and Field Athletes

by

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*This study is an examination of the relationship between competitive anxiety and coping strategies in young athletes. Sixty karatekas and 72 track and field athletes were the subjects of the study. The age of the athletes ranged between 18 and 25 years. All had been practicing their sports for 6-8 years. The research instruments employed are the Competitive State Anxiety Inventory-2 (CSAI-2) and the Coping Inventory for Stressful Situations (CISS). Results show that martial arts athletes reported a significantly higher level of self-confidence and lower levels of cognitive and somatic anxiety compared to track and field athletes. The two groups also differed in regard to the use of coping strategies in stressful situations. For example, the karate athletes used more effective strategies such as task-oriented coping. In the next step of the study, the subjects were divided into two groups according to the level of performance (i.e. “winners” and “losers”). The “losers exhibited higher levels of anxiety, both cognitive and somatic, than “winners”. They also had higher scores on less effective coping subscales, e.g. emotion-oriented and avoidance-oriented.*

*There is a significant interdependence between anxiety and level of performance in competitive stress situations. Future research should also consider the possible mediating role of other psychological factors, such as personality traits.*

**Key words:** *Stress, Performance level, Competitive anxiety*

### Introduction

It is well recognized that the level of performance in competitive sports is influenced by a number of psychological factors, e.g. personality traits, competitive anxiety and coping strategies (Mytskan et al. 2006). The relationship

between anxiety and level of performance in various sports has been the subject of many research studies (e.g. Krane and Williams, 1987; Swain and Jones, 1996). While competitive anxiety is a complex psychological phenomenon, it appears to be composed of some common basic elements. One such element is cognitive anxiety,

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which is characterized by athletes' negative concerns about performance and disrupted attention. Another element, somatic anxiety, is characterized by several physiological symptoms such as excessive perspiration and tremor of limbs.

Furthermore, there are some significant differences between male and female athletes regarding competitive anxiety. Also, the age and life experience of an athlete plays an important role. For example, Krane and Williams (1994) found that more experienced players had a much lower level of cognitive and somatic anxiety than less experienced athletes. In his review papers, Jones (1991, 1995) concluded that both the intensity and direction of anxiety symptoms are important determinants of performance in sports. Intensity and direction also interact with other psychological factors such as motivation, attitudes and expectations, as illustrated, for example, by Jones and Hanton (1996). Their examination of a group of competitive swimmers found that the subjects with positive expectations of goal achievement reported their anxiety symptoms as being more facilitative compared to those with negative expectations. This result especially refers to the cognitive element of anxiety. In another study (Hardy, 1997) it was demonstrated that some level of cognitive anxiety could be helpful to performance. This result clearly indicates that the ultimate effect of anxiety on performance is not always detrimental.

Psychologists have long argued that employing a variety of coping strategies can modify the effects of anxiety symptoms. For example, in some situations where athletes hold positive attitudes about their ability to cope successfully, competitive anxiety can actually play a facilitative role. However, inadequate coping is more likely to be associated with destructive anxiety. Nevertheless, complex as the links between anxiety and coping strategies in relation to level of performance in sports may be, they are certainly of great importance. Yet, they have not been addressed enough in some sport disciplines. Martial arts serve as a sport discipline which is in need of such studies. In martial arts, there are many situations that can be perceived as challenging, threatening or even harmful. If athletes do not have sufficient coping skills to deal adequately with these situations, they are exposed to risks of poor performance, failure and even serious injury.

To date, studies on coping strategies used by athletes have demonstrated that different individuals cope in different ways, e.g. using problem-focused or emotion-focused coping strategies. One of the findings of past studies is that athletes show a marked preference for using problem-focused rather than emotion-focused strategies. Usually they are convinced that problem-focused strategies are more effective in dealing with performance challenges and stressors (Crocker and Graham, 1995).

There is also an important difference between team and individual sports. According to Martens et al. (1990) for athletes who perform individually “the threat of evaluation is maximized; that is the diffusion of responsibility for performance errors is minimized”. In other words, individually performing athletes know that they alone are responsible for their failures or successes. If they want to succeed, they should lower their level of cognitive anxiety and raise their self confidence.

#### *Aim of the study*

The main aim of this study was to investigate the relationship between competitive anxiety and coping strategies used by martial arts athletes and its effect on performance level. It is expected that the potential interactive effects of those variables are of great importance for explaining both successes and failures in sport performance. This seems to be especially related to martial arts, because the sense of isolation and exposure is much greater in individual sports such as karate and judo than in team sports (e.g. football and basketball). For athletes in high-contact sports such as martial arts and boxing, an additional source of anxiety is the possibility of getting hurt. This is why most of them use different coping strategies aimed at reduction of intensity of stress-related anxiety.

Based upon findings in recent research literature (e.g. Martens et al., 1990), it was hypothesized that a young athletes' level of performance is influenced by self-confidence. The

authors predicted that athletes achieving higher levels of performance use effective coping strategies more often and express lower levels of cognitive and somatic anxiety than athletes with lower levels of performance. Additionally the authors hypothesized that task oriented coping will negatively correlate with somatic anxiety and positively with self-confidence.

### ***Material and methods***

#### *Participants*

Two groups of young athletes participated in this study. The first group consisted of 60 athletes performing karate kyokushin (group A). Training experience of the karate athletes ranged between 6-8 years. All were at an advanced level of training (5 kyu and higher degree). The group was comprised of 45 males and 15 females. The second group consisted of 72 young athletes, also of both sexes, performing various track and field events (group B). All participants in the study were regularly competing at the regional level. The age of the subjects ranged from 18 to 25 years ( $20.5 \pm 4.5$ ). Most were high school and college students. The subjects were approached through instructors, coaches and youth tutors who helped carry out the examinations. The basic ethical principles for conducting research studies were observed. The subjects were assured confidentiality regarding the data collected and their personal identity.

#### *Procedures*

A set of questionnaires was administered to the athletes participating in the study. According to the instructions, they were asked to recall and briefly describe a recent stressful experience related to their sport (e.g. performance in a public place, failure in competition). They were also asked to describe the coping strategies they use while dealing with the stressful conditions. All questionnaires were administered by the researchers directly.

#### *Measures*

The first instrument used in the study was the Competitive State Anxiety Inventory-2 (CSAI-2). This measurement tool is often used in research studies in order to estimate the participants' cognitive and somatic types of anxieties, as well as their self-confidence (Martens, Vealey and Burton, 1990). The inventory consists of 27 items, 9 for each of three subscales (cognitive anxiety, somatic anxiety, self-confidence). It requires approximately 5 minutes to administer. All items were rated on a 4-point Likert-type scale. The potential scores ranged from 9 (the lowest) to 36 (the highest). Regarding the content, all items were positively stated, except item 14 which was scored reversely in the analysis of results. This inventory was employed as a measure of cognitive and somatic anxiety in subjects and their self-confidence in sport-related competition situations.

Their coping style in stressful situations was measured with the Polish version of the Coping Inventory for Stressful Situations (CISS) (Cosway

et al., 2000; Wrześniewski, 2000). This instrument measures three main coping strategies: task focused, emotion focused and avoidance coping. Avoidance coping can be divided further into two subtypes: Distraction subscale and Social Diversion subscale. The score range is from 16 to 80 points for the strategies and 5 to 40 and 5-25 for the two subscales. Task-oriented coping refers to purposeful task-oriented efforts aimed at solving the problem, cognitively restructuring the problem or attempts to alter the situation. The emphasis is on the task, planning and on attempts to solve the problem. Emotion-focused coping refers to emotional reactions that are self-oriented. The aim is to reduce stress. Reactions include emotional responses, self-preoccupation and fantasizing. Avoidance coping refers to activities and cognitive changes aimed at avoiding the stressful situation via distracting oneself with other situations or tasks, or via social diversion as a means of alleviating stress. In this study the CISS inventory was used as a tool for measurement of strategies used by subjects while coping with stress in sport competition situations.

During the analysis of results, differences occurring between examined groups of athletes were verified in order to find out whether they run into the level of statistical significance. All calculations were performed by means of STATISTICA program v. 5.1.

## Results

Karate athletes (group A) reported significantly lower levels of both cognitive and somatic anxiety ( $p < .05$ ).

At the same time, the results indicated that their self-confidence was stronger than in athletes belonging to group B (Table 1).

**Table 1**

*Results for CSAI-2*

Group	Cognitive anxiety		Somatic anxiety		Self-confidence	
	M	sd	M	sd	M	sd
A	16.8	2.6	15.7	3.2	29.3	5.6
B	20.1	3.2	19.6	5.1	22.8	4.7
p value	p<.05	-	p<.05	-	p<.01	-

*M-mean value, sd-standard deviation*

**Table 2**

*Results for Coping Inventory for Stressful Situations (CISS)*

Group	Task oriented		Emotion oriented		Avoidance oriented		Distraction subscale		Social diversion subscale	
	M	sd	M	sd	M	sd	M	sd	M	sd
A	58.4	7.1	39.7	7.6	41.4	6.6	15.9	3.9	15.6	3.2
B	53.3	6.8	44.5	8.4	49.5	7.3	21.7	4.8	18.2	3.7
p value	p<.05	-	p<.05	-	p<.01	-	p<.01	-	p<.05	-

**Table 3**

*Intercorrelation of CSAI-2 and CISS subscales*

Subscales	1	2	3	4	5	6	7	8
1. Cognitive anxiety	-	.61**	-.48**	-.12	.34*	.23	.18	.21
2. Somatic anxiety	-	-	-.54**	-.45**	.16	.08	.22	.15
3. Self-confidence	-	-	-	.56**	-.31*	-.38*	-.25	-.12
4. Task oriented	-	-	-	-	-.44*	-.31*	.14	.08
5. Emotion oriented	-	-	-	-	-	.27	.29*	.30*
6. Avoidance oriented	-	-	-	-	-	-	.33*	.24
7. Distraction subscale	-	-	-	-	-	-	-	.20
8. Social diversion subscale	-	-	-	-	-	-	-	-

\* Correlation is significant at the .05 level; \*\* Correlation is significant at the .01 level

It shows that karate athletes (group A) in stressful situations clearly preferred using of task-oriented coping strategies. The difference between the two groups is statistically significant ( $p < .05$ ). Compared with group B subjects (track and field athletes) group A placed much higher value on "Focus on problem" or "Take best course of action". A significant difference between the two groups also appeared in the emotion-oriented coping subscale. In this case participants belonging to group A (karate athletes) showed a much weaker tendency to use strategies oriented towards emotions in stressful situations. In the avoidance-oriented coping subscale, subjects belonging to group B scored significantly higher. They tended to choose items such as "Tell myself that (i.e. stressful event) is not really happening to me". Participants belonging to group A reported lower numbers of activities and cognitive changes aimed at avoiding stressful situations.

The last scale was divided into two dimensions: distracting and social diversion. The heightened results in these dimensions were obtained by individuals who avoided stressful events via distracting. Results showed that cognitive anxiety was positively associated with somatic anxiety as well as emotion-oriented coping style and negatively associated with self-confidence. Somatic anxiety was negatively related both to task-oriented coping strategy and self-confidence. Self-confidence showed a positive correlation only with task-oriented coping and the correlation with other factors was a negative one.

For the requirements of this part of our analysis, all participants were divided into 2 groups (Table 4). The first consisted of 34 athletes from group A and B who were winners in most of their competitive events (over 50 %). 98 persons belonged to the second group who declared that in more than 50 % of their sport events, they lost the competition. Athletes belonging to the group of "losers" reported significantly higher levels of both cognitive and somatic anxiety than those included in the group of "winners" ( $p < .01$ ). Also they differed in regard to the dimension of self-confidence: "winners" showed a much higher level of trust in themselves (Table 4).

In order to assess the effectiveness of coping styles, the analysis took into consideration participants' levels of performance in past competitions. The athletes assigned to the group of "winners" were more likely to use task-oriented coping strategies following stressors than "losers" (Table 5). Consistent with the greater use of task-oriented coping, this group of athletes also perceived emotion-oriented coping as a less effective strategy than athletes included in the group of "losers". The "losers" had higher scores than "winners" on Avoidance-oriented coping, although the difference between the two groups was smaller than in case of Task-oriented coping. The "winners" had significantly lower scores than "losers" in both the Distraction and the Social diversion subscales. In this last case, the difference was not statistically significant ( $p > .05$ ).

**Table 4***Results for CSAI-2 for "winners" (n=34) and "losers" (n=98)*

Group	Cognitive anxiety		Somatic anxiety		Self-confidence	
	M	sd	M	sd	M	sd
"Winners" (n=34)	15.4	3.1	14.9	2.7	30.2	4.8
"Losers" (n=98)	21.5	4.2	20.8	6.3	21.7	4.9
p value	p< .01	-	p< .01	-	p< .01	-

**Table 5***Results for CISS for "winners" and "losers"*

Group	Task oriented		Emotion oriented		Avoidance oriented		Distraction subscale		Social diversion subscale	
	M	sd	M	sd	M	sd	M	sd	M	sd
"Winners"	62.1	7.4	37.9	6.8	42.6	6.8	16.5	4.0	16.8	3.6
"Losers"	50.8	6.5	46.4	8.8	48.8	7.7	20.9	4.2	17.5	4.1
p value	p< .01	-	p< .01	-	p< .05	-	p< .05	-	n.s.	-

## Discussion

Sport places a wide variety of stressors on athletes. It can be exhausting both physically and mentally. The stress factors are related not only to opponents, but also to hostile fans, the physical conditions of a sport event, etc. All these elements need to be overcome by athletes. Despite this, regular participation in sport contests offers athletes an opportunity for improvement. However, in those who perceive sport-related stress in a negative way, it causes anxiety and nurture failure. In other words, while stress and uncertainty may motivate some athletes to a greater effort, it induces anxiety and a feeling of

defeat in others. Participants in individual sports have been shown generally to report feeling a higher level of anxiety before, during and after competition than individuals participating in team sports Martens R., Vealey R.S., Burton D. (1990). This is because the sense of isolation and exposure is much greater in sports such as biathlon and judo than in football and basketball. For athletes in high-contact sports such as martial arts and boxing, an additional source of anxiety is caused by the possibility of getting hurt. Most of them use different coping strategies aimed at reducing the intensity of stress-related anxiety.

The first important finding of our research is that the two compared groups of athletes differed

in regard to the level and type of anxiety. The martial arts athletes (karate kyokushin) reported significantly lower levels of both cognitive and somatic anxiety compared to the athletes involved in track and field. Also, karate athletes attained better result on the subscale measurement of self-confidence, which is regarded as an important personality trait influencing the level of sports performance. It seems that training experience in karate positively influences the development and strengthening of athletes' self-confidence.

The second finding suggests that all three coping styles (i.e. task-oriented, emotion-oriented and avoidance-oriented) discriminate, in some ways, both studied groups. The martial arts athletes praise the value of the task-oriented coping style significantly higher than the athletes representing track and field. The second group of athletes prefers emotion-oriented and avoidance-oriented coping, which are known to be much less effective strategies. This result of our research confirms an assumption that, for a similar level of competitive anxiety, karate athletes are more likely to use task-oriented coping strategies. This conclusion is consistent with previous studies showing that coping skills can be developed through specific training (Pfohl, 1980; Morales-Negron, 2008).

The third important finding relates to the level of performance in sports. It seems that there is a significant interdependence between anxiety and level of performance in competitive stress situations. As the data show, the athletes

belonging to the group of "losers" (lower level of performance) reported significantly higher intensity, both cognitive and somatic anxiety, than the "winners" group (higher level of performance). The two groups also differed in the self-confidence dimension: "winners" reported a much higher level of trust in themselves.

Our study also highlighted some conceptual and methodological problems in relation to the use of such instruments as CISS and CSAI-2 in competition-related stress studies. The authors of this paper believe that both inventories should receive clear support because of their diagnostic value. The inventories have the potential to assess both anxiety associated with sport-related competition and coping strategies preferred by athletes in their efforts to alleviate a negative influence of stress.

Future research aimed at examining the relationships between coping strategies and sport-related stress should consider the mediating role of other psychological variables, such as personality traits - for example internal or external locus of control.

It may also be important to educate sport managers and coaches about the significance of some psychological factors which play an important role in sport performance, including intense emotions and coping styles. This kind of knowledge should be incorporated into educational programs directed at professional athletes engaged in various sport disciplines, as



well as teachers and instructors responsible for physical education at schools.

### **Conclusion**

The authors emphasize that there is a significant interdependence between anxiety and the level of performance in competitive stress situations. An athlete's self-confidence also plays an important role, which can be regarded as a mediating variable. Instruments such as the Competitive State Anxiety Inventory-2 (CSAI-2) and the Coping Inventory for Stressful Situations (CISS) have a predictive value in assessing levels

of athletes' performance. Athletes should be aware of their individual level of anxiety in relation to optimal functioning, as well as the values of particular coping strategies in sport competition situations. It is important for sport psychologists and coaches to help athletes in establishing their individual levels of optimal functioning. Some limitations of this study include the size of the sample of subjects, which is relatively low.

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