

**RELATIONSHIP OF INTENSITY AND DIRECTIONAL INTERPRETATION OF  
PRECOMPETITIVE ANXIETY WITH COPING FREQUENCY AND COPING EFFECTIVENESS**

**Ana V. Vesković<sup>1</sup>, Dragiša Stamenković<sup>2</sup>**

Faculty of Sport and Physical Education, University of Belgrade, Serbia

Faculty of Sport and Physical Education, University of Niš, Serbia

**Abstract**

Starting from the importance of competitive anxiety and coping for competitive achievement, this paper examines the relationships between these two groups of variables. The first goal was to determine the intensity and effect of anxiety, the frequency of application and the effectiveness of strategies and dimensions of coping. The second goal was to determine the relationship between the frequency of application and the effectiveness of coping strategies and dimensions. The third goal was to examine possible differences in the frequency of application and in the efficiency of coping dimensions between basketball players who experience anxiety and self-confidence of different degrees and who interpret their effects on performance differently. The sample consisted of 58 highly successful basketball players, who compete within the highest national level ( $M_{\text{year}} = 15.86$ ;  $M_{\text{sp.exp.}} = 5.85$ ). Respondents completed the following questionnaires: SCAI-2, SCAI-2-d and CICS (with an added scale for coping efficiency). Basketball players experience low anxiety but strong self-confidence. They perceived that anxiety has a slightly negative effect and self-confidence has a positive effect on performance. They most often apply task-oriented coping and evaluate it as the most efficient. The association between frequency and perceived efficacy of coping is positive, ranging from moderate to very strong. Basketball players with a higher degree of cognitive anxiety are more likely to use distraction-oriented coping and disengagement-oriented coping, while those with higher somatic anxiety are more likely to use disengagement-oriented and task-oriented coping. The more pronounced the self-confidence, the more effective is basketball players assess task-oriented coping, and the less effective is disengagement-oriented coping. The obtained results can be used in psychological preparation for the competition.

**Key words:** STATE ANXIETY / COPING /COMPETITION/ HIGHLY SUCCESSFUL FEMALE BASKETBALL PLAYERS

**Correspondence with the authors:** Ana Vesković, E – mail: ana.veskovic@fsfv.bg.ac.rs

## INTRODUCTION

While participating in competitions, many athletes including beginners and top levels athletes, experience pre-competitive anxiety (Jones & Hanton, 1996; Ford, Ildefonso, Jones, & Arvinen-Barrow, 2017). It's not surprising that many researchers and practitioners devoted time and attention to study the nature and consequences of anxiety on sport performance (Peng & Zhang 2021). Early interest was focused on the studying intensity of state anxiety (assessed as situational response) and trait anxiety (assessed as stable disposition) anxiety. Different theoretical models, in which were presumed mechanisms of anxiety affects performance were created. Martens' multidimensional model, that has stimulated numerous researches, is one of the dominant. The core assumption of this model is that anxiety is multidimensional in nature (Martens, Burton, Vealey, Bump, & Smith, 1990) and manifests itself through cognitive component (e.g. worry and negative performance expectations), somatic component (e.g. increasing heartbeat rate, difficulty in breathing, tight muscles, etc.) and self-confidence (e.g. positive expectations of success). It is proposed that anxiety components affect competition performance variously: cognitive anxiety is in negative relation with performance – the more cognitive anxiety, the more harmful effects on performance; somatic anxiety is in a non-linear fashion with performance – too low and too high levels can have harmful effects; the third component of the model is self-confidence which is in positive linear relationship with performance - the more self-confidence, the more positive effects on performance. Self-confidence isn't a feature of anxiety, but its low intensity or deficiency might be an indicator that athlete is experiencing intensive cognitive anxiety. Numerous empirical studies that tested these theoretical assumptions are ambiguous. Some researchers reported results that support theoretical assumptions (Kleine, 1990; Woodman & Hardy, 2003). Others, including meta-analysis (Woodman & Hardy, 2003) reported radically different results, which indicate that anxiety can improve competition performance (Hanin, 2007).

Inconsistent research results motivated researchers to expand intensity approach by including directional interpretation of anxiety symptoms. This line of research was initiated by work of Jones and Swain (Jones & Swain, 1992). According to these authors, directional interpretation of anxiety symptoms has important role in the anxiety-performance relationship. More precisely, a higher intensity of cognitive anxiety is not inevitably deleterious to successful performance. Its effects depend on interpretations of symptoms: if an athlete interprets symptoms as facilitative, anxiety has potential to improve competition performance. On the contrary, if athlete interprets symptoms as debilitating, anxiety has potential to induce poorer performance (Jones, Swain, & Hardy, 1993; Hatzegeorgiadis & Biddle, 2008). Mellalieu and collaborators (Mellalieu, Hanton, & O'Brien, 2004) cited that there is the agreement among a large number of studies, that both, elite and non-elite athletes experience similar intensity of anxiety symptoms, but, elite-athletes interpret anxiety symptoms as more facilitative.

To understand which factors determine individual differences in interpretation of anxiety symptoms - facilitative or debilitating, Jones (1995) formulate hypothesis, based on a Carver's and Shier's control model which assumed that usage of different coping strategies, along with other factors, can be one of most important. If an athlete has a positive expectation about his abilities to cope with competitive anxiety, it can have facilitative effects on performance. On the contrary, if an athlete has a negative expectation about his abilities to cope with competitive anxiety, it can have a debilitating effect on performance success.

In the sport psychology literature, it is well documented that athletes in order to meet high competitive standards and perform well under the pressure of winning, have to develop different mental skills to reduce or tolerate stress and to achieve self-regulation (Anshel, Sutarso, & Juvenville, 2009; Hanin, 2007; Nicholls & Polman, 2007). In this process coping has a crucial role (Skinner & Zimmer-Gembeck, 2007). Majority of research on competition-related coping have employed Lazarus and Folkman's transactional model of stress (Jones, 1995; Nicholls & Polman, 2007). Within this model, coping is defined as "...constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing

or exceeding the resources of the person” (Lazarus & Folkman, 1984, p. 141). Equivalently like anxiety, coping can be conceptualized as state – utilization of coping strategies in a specific stressful situation, and also as stable disposition that is in the basis of typical reaction to stressors (Hurst, Thompson, Visek, Fisher, & Gaudreau, 2011). Similar coping strategies can be grouped into second-order dimensions, but the authors have different attitude towards usefulness of such broader classifications. Some authors advocate notion that broader classifications can cover variety and complexity of coping strategies (Compas, Connor-Smith, Saltzman, Harding Thomsen, & Wadsworth, 2001). Others believe that such classifications enhance understanding of athlete's typical approach to cope with stressful situations (Nicholls & Polman, 2007). Anyway, athletes use extensive range of coping strategies (Crocker, Tamminen, & Gaudreau, 2015) but individual differences in preferring some of them are evident (Gaudreau & Blondin 2004). A second-order classification that is predominantly used within sports psychology literature is the three-factor model (Gaudreau and Blondin, 2004): *task-oriented coping* (main purpose is to master stressful situations and include strategies such as thought control and logical analyses), *distraction-oriented coping* (main purpose is to redirect the attention of an athlete to non-sport-related aspects, including distancing from the situation and mental distraction), and *disengagement-oriented coping* (main purpose is to divert from the stressor and/or its consequential emotions). Task-oriented strategies are in stronger relationship with more positive physical, mental and also performance outcomes, and opposite, distraction-oriented and disengagement-oriented are in stronger relationship with poorer physical and mental outcomes and achievement (Connor-Smith & Flachsbart, 2007).

One more significant concept is coping efficacy. Nicholls and Polman (2007) specified coping effectiveness in a sport domain as “the extent to which a coping strategy, or combination of strategies, is successful in alleviating the negative emotions caused by stress.” (p. 15). But, since this concept isn't fully operationalized yet, some authors discuss about difficulty categorization strategy as adaptive or maladaptive (Nicholls, Holt, & Polman, 2005).

The association between anxiety and coping is reciprocal: anxiety can evoke coping, and also coping can affect coping in a different manner (Raffety, Smith, & Ptacek, 1997). Furthermore, studies of relationship between anxiety and coping, especially coping efficacy during the pre-competitive period, at the time that athletes currently experience them, are limited. Although immanent weaknesses, retrospective research designs were mostly used (Ntoumsanis & Biddle, 2000). Anyway, results one of the first study (Ntoumsanis & Biddle, 2000) suggest that athletes who perceive state of cognitive anxiety as facilitative, more frequently use a problem focused coping strategies, but those who perceive cognitive anxiety as debilitating, and those who experience high cognitive anxiety are prone to use disengagement and venting. Effects of the somatic anxiety on choosing coping strategies depend on interaction between its intensity and direction: athletes with high level of somatic anxiety, who perceive anxiety as facilitative, use a problem-focus coping. On the contrary, athletes who perceive as debilitating, use behavioural disengagement and venting. The research conducted on international level swimmers (Hatzigeorgiadis & Chroni, 2007) showed that intensity of cognitive anxiety is negatively correlated with approach coping strategies (low to moderate in size) and intensity of somatic anxiety is positively correlated with denial (low to moderate in size). Additionally, swimmers who interpret cognitive anxiety as facilitative in comparing with swimmers who interpret cognitive anxiety as debilitating, have a higher score on effort expenditure, but lower on mental disengagement and denial. More recently, a research focused on relationship between pre- competitive anxiety and coping self-efficacy (Nicholls, et al., 2010), in which authors reported existence of the negative relationships between coping self-efficacy and both component of state anxiety but the positive with self-confidence.

Identifying key factors which are the basis of choosing a certain type of coping strategies as well as perceived coping effectiveness are substantial to bring into a more desirable or excellent competition performance (Nicholls, Taylor, Carroll, & Perry, 2016). The first aim of this study was to investigate the intensity of cognitive and somatic anxiety and self-confidence and their perceived effects on performance

(facilitative/ debilitating), strategies and dimensions of coping, assessed at the level of the state (current coping) which young, highly successful basketball players currently use (frequency of coping strategies and frequency of coping dimensions) and which dimensions they assess as the most efficient in dealing with competitive stressors. The second aim was to explore the association between frequency of using and perceived efficacy of coping dimensions and strategies. The third main aim, was to determine whether there are differences in the usage of coping dimensions and perceived efficacy of the coping dimensions between successful basketball players who experience different degrees of pre-competition anxiety and self-confidence (low/high) and those who differently perceive the effects of anxiety on performance (facilitative/ debilitating). In other words, the third aim was to investigate independent and interactive effects of intensity and directional interpretation of anxiety on coping.

## METHOD

### Sample

Participants were 58 females who train basketball in five different clubs and compete in the highest national league. Girls are aged 12-17 years old ( $M = 15.68$   $SD = .99$ ), with an average competitive experience 2-11 years in sport ( $M = 5.85$ ,  $SD = 2.23$ ).

### Instruments

**The Competitive State Anxiety Inventory-2- (CSAI-2)** is instrument used to assess the intensity of precompetitive state anxiety, developed by Martens and et al., (Martens et al., 1990). It consists of three subscales (27 item items in total, nine items per scale): cognitive anxiety ("I am concerned I may not do as well in this competition as I could 7."), somatic anxiety ("My hands are clammy." 23) and self-confidence ("I'm confident I can meet the challenge"15). Items were rated on a four-point Likert scale (from 1 "not at all" to 4 "very much so"). The score range for each subscale ranged from 9 – low score, to 36 – high score.

**The directional interpretation of anxiety symptoms scale (CSAI-2-d)** is a modified version of the CSAI-2 by Jones and Swain (1992). Items from this scale are parallel form to items of the CSAI-2. Participants were instructed to rate the degree to which perceived anxiety symptoms are facilitative or debilitating to their performance. Items are rated on a 7-point Likert scale, from -3 (very debilitating), via 0 (unimportant) to +3 (very facilitative), and potential scores ranged from -27 to +27.

**The Coping Inventory for Competitive Sports (CICS)** used to assess coping strategies that athletes used before and during competition developed by Gaudreau & Blondin (2002). It consists of 39 items grouping in ten coping strategies, that are grouped in the second order dimensions: Task-oriented coping (mental imagery, effort expenditure, thought control, relaxation, logical analysis, seeking support). Distraction-oriented coping (mental distraction, distancing), Disengagement-oriented coping disengagement and venting of unpleasant emotions). Participants were instructed to specify the extent to each item is corresponded with its actions and or thought aimed to manage the stress on a five-point Likert scale (from 1 "not at all" to 4 "very strongly").

To assess coping effectiveness, modified version of CICS adapted by Nicholls and collaborators (Nicholls, Polman, Morley, & Taylor, 2009) by adding a 5-point Likert-type scale, was applied. Participants rated effectiveness of their coping strategy they were experiencing before competition. The 5-point scale was anchored at 1 = not effective and 5 = very effective.

Furthermore, participants were asked about their age and sport experience.

### Procedure

The questionnaires were administrated during the Final cadet women's league tournament – Triglav, in May 2021 within an hour before the match. First, participations were informed about the purpose of the study and completed informed consent. After that, they completed socio-demographical information (age, length of sport experience), intensity and directional CSAI-2, CICS and CICS effectiveness. Procedure lasted in average 10 minutes.

### Statistical analysis

Preliminary statistical analyzes included descriptive statistics (*M*, *SD*) and Cronbach's alpha reliability coefficients. To test the differences in the frequency of using efficiency of the coping dimensions, the analysis of variance for repeated measurements was applied with three t-tests for dependent samples. The correlation between the frequency of using and the perceived efficacy of coping dimensions for overcoming competitive stress was verified by applying correlational analysis. A series of independent multivariate analysis of variance (2x2 MANOVA) followed by univariate analysis (ANOVA) were used to test the significance of the main effects and interactions effects of the intensity and direction of cognitive anxiety, somatic anxiety and self-confidence on frequency of using and perceived efficacy of coping dimesnions. The following variables were created by the mdn-split method: the intensity of cognitive anxiety (low / high), the intensity of somatic anxiety (low / high), the intensity of selfconfidence (low / high) and the effect of cognitive anxiety (facilitative / debilitating), the effect of somatic anxiety (facilitative / disturbing) and the effect of selfconfidence (facilitative / debilitating).

## RESULTS

### Preliminar analysis

Table 1 represents means, standard deviations and Cronbach's alpha coefficients of reliability for intensity and directional interpretation of cognitive and somatic anxiety and self-confidence subscales. Reliability coefficients were in the range from acceptable to excellent. As it is seen, self-confidence is the most intensive, and also its effects are perceived as the most positive. Successful female basketball players were anxious, precisely, they felt more cognitive then somatic anxiety, but they interpreted cognitive anxiety as less harmful for performance. Further, it is obvious that magnitude of negative effects of both components of anxiety were law.

**Table 1** Descriptive statistics – intensity and directional interpretation of cognitive and somatic anxiety and self-confidence

	Intensity					Directional interpretation				
	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SD</i>	<i>a</i>	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SD</i>	<i>a</i>
Cognitive anxiety	9	35	18.69	6.26	.90	-19	18	-1.15	7.09	.89
Somatic Anxiety	9	32	16.42	5.46	.85	-24	20	-3.20	8.18	.78
Self-confidence	10	36	26.49	5.58	.87	-27	27	8.88	11.84	.92

Table 2 presents Cronbach's alpha reliability coefficients for frequency and perceived efficacy for coping dimesions. Coefficients are ranged from acceptable for the frequency of the disengagement-oriented scale and to excellent for all remaining. Descriptive statistics for frequency of using and efficacy of coping with stress during competition. Basketball players the most frequently applied task-oriented coping (the most frequent strategies: effort expediture, thought control and mental imagination), then, equally frequently, distraction-oriented coping (distancing and mental distraction) and disengagement-oriented coping (venting of unpleasant emotions is the most used strategy). A similar order was obtained when assessing the effectiveness of the dimensions of coping competitive stress: task-oriented coping is assessd as the most efficiant (strategies: effort

expenditure, thought control and seeking support), whereas, distraction-oriented coping and disengagement-oriented coping assessed as less effective types of coping with competitive stress.

**Table 2** Means and standard deviations – coping dimensions and strategies

	Frequency			Efficacy		
	<i>M</i>	<i>SD</i>	$\alpha$	<i>M</i>	<i>SD</i>	$\alpha$
<b>Task – oriented coping</b>	3.21	.60	.84	3.19	0.74	.89
mental imagination	3.25	.97		3.22	.95	
effort expenditure	3.92	.68		3.57	.98	
thought control	3.43	.83		3.35	.88	
seeking support	2.87	1.11		3.23	1.07	
relaxation	2.65	.83		2.80	.99	
logical analyses	3.17	.88		2.96	.96	
<b>Distraction – oriented coping</b>	2.02	.80	.81	2.39	.92	.85
distancing	2.03	.83		2.36	.98	
mental distraction	2.01	.96		2.42	1.00	
<b>Disengagement – oriented coping</b>	2.11	.82	.79	2.29	.85	.80
venting of unpleasant emotions	2.35	1.04		2.37	.87	
disengagement/resignation	1.87	.85		2.20	1.04	

Multivariate analysis of variance (MANOVA) for repeated measures was applied to test possible differences in frequency and perceived efficacy between coping dimensions. Results indicated that difference in frequency of using different dimensions of coping is statistically significant  $F_{(1, 58)} = 61.63, p < .01, \eta^2 = .52$ , as well as, difference in perceived efficacy of coping dimensions  $F_{(1, 58)} = 35.54, p < .01, \eta^2 = .38$ . The first set of t-test for dependent samples showed that female basketball players more frequently use task-oriented coping,  $M=3.21; SD=.60$ , in compare with distraction-oriented coping,  $M=2.02; SD=.80; t(58)=9.67, p < .01$ , and also with disengagement-oriented coping  $M=2.11; SD=.82; t(58)=8.80, p < .01$ ; difference between distraction-oriented coping,  $M=2.02; SD=.80$ , disengagement-oriented coping  $M=2.11; SD=.82; t(58)=-.81, p > .05$ , isn't statistically significant. The second series of t-test for dependent samples showed that basketball players, task-oriented coping  $M=3.19; SD=.74$ , perceive as more efficient in comparing with distraction-oriented coping,  $M=2.39; SD=.92; t(58)=-6.45, p < .01$ , and in comparing with disengagement-oriented coping  $M=2.11; SD=.82; t(58)=-6.96, p < .01$ . Difference in perceived efficacy of distraction-oriented coping,  $M=2.02; SD=.80$ , and disengagement-oriented coping,  $M=2.11; SD=.82; t(58)=1.10, p > .05$ , is statistically insignificant. In sum, successful female basketball players the most frequently use task-oriented coping, and that type of coping perceive as most efficient.

The correlation between the frequency of application and the estimated efficiency of the prevailing dimensions is positive: correlation between task-oriented frequency and its efficacy is very high intensity,  $r_{(59)} = .82, p < .01$ , correlation between frequency of distraction-oriented coping and its efficacy is moderate,  $r_{(59)} = .43, p < .01$ , and correlation between disengagement-oriented frequency and its efficacy is very high intensity,  $r_{(59)} = .69, p < .01$ . Table 3 displays correlations between frequency of using and their perceived efficacy at the strategies level during actual competition. Correlations among all strategies are positive and vary in a range of very high (seeking support strategies), over high (thought control, relaxation, logical analysis, venting of unpleasant emotions) to low (distancing). The contribution of explained variance in a frequency of using a certain type of coping based on perceived efficiency is up to 67% (for the task-oriented dimension of coping), or up to 69% (for the support strategy).

**Table 3** Correlations between frequency and efficacy of using coping strategies

	EMI	EEE	ETC	ESS	EREL	ELA	EDIS	EMD	EVE	EDR
MI	.77**	.40**	.49**	.37**	.41**	.56**	.07	.07	.06	-.03
EE	.31*	.43**	.27*	.20	.01	.20	.09	-.05	-.01	-.08
TC	.38**	.17	.61**	.41**	.37**	.40**	.20	.08	-.02	-.13
SS	.43**	.43**	.47**	.83**	.49**	.53**	.19	.28*	.08	.09
REL	.19	.07	.13	.42**	.67**	.38**	.25	.47**	.42**	.22
LA	.50**	.34**	.39**	.49**	.50**	.68**	.32*	.26*	.21	.19
DIS	-.12	-.26	-.03	.27*	.30*	.00	.35**	.41**	.36**	.24
MD	-.13	.10	-.09	.36**	.28*	.10	.18	.50**	.28*	.22
VE	.16	.11	-.04	.12	.22	.32*	.36**	.41**	.72**	.52**
DR	-.17	-.01	-.19	.10	.05	.04	.25	.19	.37**	.48**

*Legend:* MI- mental imagination; EE- effort expediture; TC- thoght control; SS- seeking support; REL- relaxation; LA- logical analyses; DIS- distancing; MD- mental distraction; VE- venting of unpleasant emotions; DR-disengagement/resignation; EMI- efficacy of mental imagination; EEE- efficacy of effort expediture; ETC- efficacy of thoght control; ESS- efficacy of seeking support; EREL- efficacy of relaxation; ELA- efficacy of logical analyses; EDIS- efficacy of distancing; MD- efficacy of mental distraction; EVE- efficacy of venting of unpleasant emotions; EDR- efficacy of disengagement/resignation; \*- $p < .05$ , \*\*- $p < .05.01$ .

Two independent multivariate analysis of variance (2x2 MANOVA), were applied to test the significance of the main effects of intensity and directional interpretation of cognitive anxiety and their interaction on the frequency of using and, second analysis on the effectiveness of coping dimensions (Table 4). In the first analysis dependent variables were frequency of using coping dimensions (task-oriented coping, distraction-oriented coping, disengagement-oriented coping) and in the second, perceived efficacy of aforementioned coping dimensions. Independent variables in the botht analysis were intensity of cogitive anxiety (low/high) and direction of cognitive anxiety (debilitative /facilitative) created by mdn-split method. Results indicated that the main effect of intensity of cognitive anxiety on frequency of coping was statistically significant,  $F_{(1, 55)} = 10.81, p < .01$ ; Wilk's  $\Lambda = .620, \eta^2 = .39$ . Univariate analyses showed statistically significant differences on the distraction- oriented coping  $F_{(1, 55)} = 5.66, p < .05, \eta^2 = .10$ , and on the disengagement-oriented coping  $F_{(1, 55)} = 10.81, p < .05, \eta^2 = .39$ , whereas differences were not statistically significant on frequency of task oriented coping  $F_{(1, 55)} = 33.56, p > .05, \eta^2 = .03$ . Main effect of directional interpretation of cognitive anxiety on frequency of using coping dimensions was not statistically significant,  $F_{(1, 55)} = .72, p > .01$ ; Wilk's  $\Lambda = .889, \eta^2 = .04$ , as well as interaction effect of intensity and directional interpretation of cognitive anxiety  $F_{(1, 55)} = 2.21, p > .05$ ; Wilk's  $\Lambda = .889, \eta^2 = .11$ . Results of the second multivariate analyses indicated that the main effect of the intensity of cognitive anxiety on coping efficacy at dimensional level was statistically significant,  $F_{(1, 55)} = 4.15, p < .01$ ; Wilk's  $\Lambda = .810, \eta^2 = .19$ . Univariate analyses reviled statistically significant differences on efficacy distraction-oriented coping,  $F_{(1, 55)} = 3.75, p < .05, \eta^2 = .08$ , and on efficacy disengagement oriented-coping  $F_{(1, 55)} = 12.47, p < .01, \eta^2 = .19$ , while, no significant difference on efficacy of task-oriented coping  $F_{(1, 55)} = .03, p > .05, \eta^2 = .00$ . The main effect of the directional interpretation of cognitive anxiety on coping efficacy at dimensional isn't significant,  $F_{(1, 55)} = .54, p > .05$ ; Wilk's  $\Lambda = .970, \eta^2 = .04$ , neither interactional effect intensity and directional interpretation of cognitive anxiety,  $F_{(1, 55)} = 2.33, p > .05$ ; Wilk's  $\Lambda = .884, \eta^2 = .12$ .

An identical procedure, two independant multivariate analysis, were applied but independet variables were intensity of somatic anxiety (low/high) and directional itepretation of somatic anxiety (debilitative /facilitative). Results of the first multivariate analyses of variance indicated significant main effect of somatic anxiety intensity on frequency of coping at dimensional level,  $F_{(1, 55)} = 2., p < .05$ ; Wilk's  $\Lambda = .789, \eta^2 = .21$ .

Univariate analyses revealed significant difference on task-oriented coping,  $F_{(1, 55)} = 6.99, p < .05, \eta^2 = .12$ , and disengagement-oriented coping,  $F_{(1, 55)} = 7.70, p < .05, \eta^2 = .12$ , but no significant difference on distraction-oriented coping,  $F_{(1, 55)} = 2.03, p > .05, \eta^2 = .06$ . Main effect of directional interpretation of somatic anxiety on frequency of using coping dimensions wasn't statistically significant,  $F_{(1, 55)} = 1.66, p > .05$ ; Wilk's  $\Lambda = .914, \eta^2 = .09$ , nor interactional effect between intensity and directional interpretation of somatic anxiety  $F_{(1, 55)} = 1.16, p > .05$ ; Wilk's  $\Lambda = .938, \eta^2 = .06$ . The second multivariate analyses indicated main effect of intensity of somatic anxiety on coping efficacy on dimensional level,  $F_{(1, 55)} = 1.80, p > .05$ ; Wilk's  $\Lambda = .907, \eta^2 = .09$ , as well as directional interpretation of intensity and interpretation of somatic anxiety were no significant,  $F_{(1, 55)} = .79, p > .05$ ; Wilk's  $\Lambda = .987, \eta^2 = .04$ , nor their interactional effect,  $F_{(1, 55)} = .26, p > .05$ ; Wilk's  $\Lambda = .986, \eta^2 = .01$ .

Also, same procedure, was conducted to test the significance of the main effects of intensity and direction of self-confidence and their interaction. Independent variables were intensity of self-confidence (low/high) and directional interpretation of somatic anxiety (debilitative /facilitative). The first analyses showed no significant main effect intensity of self-confidence on frequency of coping at dimensional level,  $F_{(1, 55)} = 1.55, p > .05$ ; Wilk's  $\Lambda = .843, \eta^2 = .16$ . The main effect of directional interpretation of self-confidence on the frequency of using coping was significant,  $F_{(1, 55)} = 3.14, p < .05$ ; Wilk's  $\Lambda = .726, \eta^2 = .27$ . Univariate analyses showed significant effect on task-oriented coping, but the intensity of difference is low in intensity,  $F_{(1, 55)} = .12, p < .05, \eta^2 = .00$ , and also on disengagement-oriented coping,  $F_{(1, 55)} = 7.09, p < .05, \eta^2 = .14$ , but no significant effect on distraction-oriented coping,  $F_{(1, 55)} = 1.61, p > .05, \eta^2 = .03$ . Interactional effect between intensity and directional interpretation of self-confidence on frequency of using coping dimensions is no significant,  $F_{(1, 55)} = .29, p > .05$ ; Wilk's  $\Lambda = .966, \eta^2 = .06$ . Results of the second MANOVA indicated no significant effect intensity of self-confidence,  $F_{(1, 55)} = 2.22, p > .05$ ; Wilk's  $\Lambda = .888, \eta^2 = .11$ , nor interactional effect between intensity and direction of self-confidence,  $F_{(1, 55)} = .80, p > .05$ ; Wilk's  $\Lambda = .995, \eta^2 = .01$ , on coping frequency. The main effect directional interpretation of self-confidence on coping efficacy was significant,  $F_{(1, 55)} = 5.21, p < .05$ ; Wilk's  $\Lambda = .772, \eta^2 = .23$ . Univariate analysis showed significant effect on task-oriented coping,  $F_{(1, 55)} = 8.06, p < .05, \eta^2 = .13$ , but no significant effect on efficacy disengagement-oriented coping,  $F_{(1, 55)} = 2.18, p > .05, \eta^2 = .04$ , neither on efficacy distraction oriented coping,  $F_{(1, 55)} = 1.16, p > .05, \eta^2 = .00$ .

**Table 4** Descriptive statistics for frequency and efficacy of coping dimensions: different intensity and directional interpretation of cognitive anxiety, somatic anxiety and self-confidence groups

	Intensity of cognitive anxiety		Intensity of somatic anxiety		Intensity of self-confidence	
	low	high	low	high	low	high
<b>Coping frequency</b>	M ± SD	M ± SD	M ± SD	M ± SD	M ± SD	M ± SD
TOC	3.22 ± .64	3.23 ± .57	<b>3.00 ± .52</b>	<b>3.39 ± .60</b>	3.11 ± .56	3.29 ± .62
DOC	<b>1.78 ± .75</b>	<b>2.23 ± .78</b>	1.82 ± .77	2.19 ± .78	2.22 ± .71	1.88 ± .83
DSOC	<b>1.61 ± .61</b>	<b>2.56 ± .73</b>	<b>1.81 ± .77</b>	<b>2.36 ± .78</b>	2.51 ± .75	1.82 ± .75
<b>Coping efficacy</b>	low	high	low	high	low	high
	M ± SD	M ± SD	M ± SD	M ± SD	M ± SD	M ± SD
ETAC	3.00 ± .52	3.40 ± .60	3.01 ± .74	3.34 ± .72	3.09 ± .70	3.26 ± .77
EDOC	<b>1.82 ± .77</b>	<b>2.19 ± .78</b>	2.15 ± .91	2.59 ± .89	<b>2.65 ± .94</b>	<b>2.21 ± .88</b>
EDSOC	<b>1.18 ± .77</b>	<b>2.36 ± .78</b>	2.06 ± .83	2.48 ± .83	<b>2.66 ± .81</b>	<b>2.02 ± .78</b>
	Directional interpretation of cognitive anxiety		Directional interpretation of somatic anxiety		Directional interpretation of cognitive anxiety	
	debilitative	facilitative	debilitative	facilitative	debilitative	facilitative
<b>Coping frequency</b>	M ± SD	M ± SD	M ± SD	M ± SD	M ± SD	M ± SD
TOC	3.13 ± .58	3.29 ± .61	3.15 ± .60	3.28 ± .59	3.02 ± .60	3.40 ± .54
DOC	1.94 ± .81	2.09 ± .78	1.97 ± .68	2.07 ± .90	2.17 ± .75	1.88 ± .82
DSOC	2.13 ± .96	2.09 ± .69	2.28 ± .87	1.94 ± .74	2.42 ± .85	1.81 ± .67
<b>Coping efficacy</b>	debilitative	facilitative	debilitative	facilitative	debilitative	facilitative
	M ± SD	M ± SD	M ± SD	M ± SD	M ± SD	M ± SD
ETAC	3.15 ± .79	3.22 ± .71	3.19 ± .70	3.19 ± .79	<b>2.91 ± .68</b>	<b>3.46 ± .71</b>
EDOC	2.32 ± 1.00	2.45 ± .86	2.29 ± .91	2.49 ± .94	2.52 ± .88	2.27 ± .96
EDSOC	2.21 ± .97	2.35 ± .74	2.34 ± .93	2.24 ± .77	2.55 ± .78	2.04 ± .85

*Legend:* TOC- task-oriented coping; DOC- distraction-oriented coping; DSOC-disengagement-oriented coping; ETAC- efficacy of task-oriented coping; EDOC- efficacy of distraction-oriented coping; EDSOC- efficacy of disengagement-oriented coping.

Online first

## DISCUSSION

Although athletes often experience anxiety in the face of competitive stress and the key role of coping, researching the relationship between these two groups of variables remain neglected. Bearing in mind that agreement wasn't reached on the exclusive advantage of conceptualizing coping at the level of strategies or dimensions, in order to gain insight into their complexity and diversity but also to achieve simplicity in understanding the obtained results, we decided to compare athletes for the first two research goals at the both levels, and for the third goal to compare frequency and observed efficiency of the dimensional level.

The first aim of this research was to determine the frequency of application and the observed efficiency of coping just before the competition. The obtained results indicate that young highly successful basketball players most often use task-oriented coping (most often strategies: effort expenditure, thought control and mental imagination), in order to manage the situation, and which they also assess as the most effective. Comparison with the results of existing researchs is difficult, due to the administration of different measuring instruments, as well as different classification of coping. The obtained result, that basketball players most often apply task-oriented coping, has partial support in the existing research. In the study on a sample of elite basketball players at the level of dimensions, it was shown that they most often apply active coping aimed to solve problems (Rosado, Santos, Guillem, 2012), and in the socond (Rosado, Santos, Silva & Silva, 2007), when comparing coping strategies used by elite professional basketball players, they are most commonly applied active coping, mental disengagement, planning, and venting of emotions to deal with the stressful situations.

The second aim was to determine the intensity of correlation between the frequency of application of a coping dimensions and strategies and their perceived efficiency. The frequency of coping is positively correlated with the assessment of its effectiveness, which is supported by the results of existing research (Nicholls, et. al., 2009) in the context of sports competition. At the dimensional level, the strongest correlation was obtained between the frequency of task-oriented coping and its efficiency, while at the strategies level, the strongest correlations were obtained on the scales: thought control, relaxation, logical analysi and venting of unpleasant emotions. Practically, the more efficient a basketball player perceive one of the coping dimension or strategy, the more often they will apply it. However, having in mind the percentage of the explained variance of the coping frequency through its efficiency, the obtained results suggest that other variables explain the remaining variance of the frequency of applying a certain type of coping with competitive stress. This research finding is supported by previous one (Nicholls, et. al., 2009).

The third aim of the research was to determine whether there are differences in the frequency of use and in perceived effectiveness of coping dimensions between basketball players who experience pre-competition anxiety of varying degrees and who interprets its effects on performance differently. The results indicated that basketball players, regardless of the intensity and direction of the of cognitive anxiety, equally often apply task-oriented coping. However, those basketball players who experience more intense cognitive anxiety, more often apply and also perceive as more effective distraction-oriented coping and disengagement-oriented coping. In considering the obtained results, the characteristics of the basketball game as well as the purpose of these two types of coping should be considered. Specifically, the basketball game is very complex, with fast changes on the basketball court, specially fast dribbling system (Singh & Sardar, 2015) and the outcome of each action depends on the coordination of the activities of the teammates, as well as on the game of the opposite team. Practically, neither the course nor the outcome of most actions on the court (except free throws, which is the only procedure that is always performed in the same way in basketball) are not under the exclusive control of one player. This is especially emphasized when two uniform teams compete, when there is a high degree of uncertainty, which is the case with the respondents from our sample. Additionally, although basketball is a team sport, it is a game played by individuals (Burke, 2006). Precisely, because the individual player performing the action has only partial control over the situation, disengagement-oriented coping which aims to instantly

alleviate negative feelings (in this case cognitive anxiety) as well as distraction-oriented coping which aims to divert attention from anxiety and can allow refocusing on relevant points of focus, and that results are in line with Jones's control model. The obtained results have indirect support in previous research (Ntoumsanis & Biddle, 2000). Furthermore, the basketball players from our sample experience a moderate degree of somatic anxiety, but those who experience more intense anxiety, more often apply disengagement-oriented coping aimed at releasing tension and task-oriented coping. In the discussion of the obtained results, and the explanation of why both types of coping can be considered adaptive, we will look at several possible explanations. Somatic anxiety is most often provoked by environmental factors - conditional stimuli that precede the beginning of the competition, e.g. preparing sports equipment, locker rooms, performing pre-competition routines, warming up, coaching instructions (Gould, Dieffenbach, Moffett, 2002; Jones, Swain & Cale, 1990), and is most pronounced just before the start of the competition with a tendency to decrease after the beginning of the game (Karteroliotis & Gill, 1987). In this context, coping strategies aimed to manage the situation and coping strategies aimed to throw out of unpleasant feelings, can be considered an effective coping in reducing the symptoms of somatic anxiety.

Additionally, somatic anxiety negatively affects performance only if it is extreme (Karteroliotis, & Gill, 1987), which is not the case with female respondents from our sample. Female basketball players interpreted that self-confidence has a facilitative effect on performance, while somatic and cognitive anxiety have debilitating effect on performance which is low intensity, and that result is supported by research conducted in elite athletes (Hagan, Pollmann & Schack, 2017). In addition, female basketball players with varying degrees of self-confidence equally often apply all three dimensions of coping with stress. However, those with higher degrees of self-confidence and those who interpret more facilitative effects of self-confidence on performance, task-oriented coping assesses as more efficient and disengagement-oriented coping as less efficient. In other words, the more female basketball players' belief in their abilities to perform successfully, at the same time, they will assess managing of the situation as more efficient type of coping and disengagement as less efficient type of coping. Those research results extend result of previous research (Radochoński, Cynarski, Perenc, & Siorek-Maślanka., 2001) that reported a positive relationship between self-confidence and task-oriented coping. But those with more self-confidence perceive task-oriented coping as more effective, and disengagement-oriented coping as less effective. This result that can be linked to the next set of results. Actually, basketball players who interpreted the effect of self-confidence as more stimulating, more often apply and evaluate as more efficient task-oriented coping and also, less often use disengagement-oriented coping. There is evidence in the literature that self-confidence is a protective factor in interpreting the debilitating effects of cognitive and somatic anxiety on performance (Mellalieu, Hanton, & Fletcher, 2006).

## CONCLUSION

The results of this research indicate that highly successful basketball players experience anxiety that is not intense, and that they have a noticeable self-confidence that is considered as a protective factor in the interpretation of the interfering effects of anxiety on performance. A positive correlation was obtained between the frequency of use and the perceived efficiency of coping, both, at the level of dimensions and at strategies the level. Female basketball players who experience a higher degree of cognitive anxiety, more often apply distraction-oriented coping and disengagement-oriented coping, and those with a higher degree of somatic anxiety, more often apply disengagement-oriented coping and then, task-oriented coping. One of the key findings of this research is that the more pronounced the self-confidence, the more effective task-oriented coping is assessed, and disengagement-oriented coping as less effective by basketball players. This research finding also has a significant practical recommendation that can be applied in the work of coaches and in the work of sports psychologists, and it refers to paying special attention to the development of athletes' self-confidence. This

research is one of the few that includes the intensity and directional interpretation of anxiety as well as the frequency of application and the observed effectiveness of coping during pre-competition period. Data were collected at the end of the competition season, during the final tournament, which was attended by the most successful teams competing at the highest national level, just before the start of important matches, which compared to retrospective studies, which are more represented, is one of its main advantages.

The main limitation of this research is the relatively small sample of respondents that can be overcome in several ways in the research conducted, bearing in mind that the respondents are highly selected. One way would be to include mail basketball players or athletes who compete within other sports, but are of a similar competition rank. Another way would be to conduct longitudinal research in which the intensity and effect of anxiety, frequency and efficiency of coping, as well as their relationships, would be assessed in different periods of the competition season. The third way would be to compare with basketball players who are of lower competitive rank, which would provide additional data that can be used for psychological preparation for the competition.

## REFERENCES

1. Anshel, M.H., Sutarso, T., & Jubenville, C. (2009). Racial and gender differences on sources of acute stress and coping style among competitive athletes. *The Journal of Social Psychology, 149*(2),159–177.
2. Burke, K. L. (2006). Using Sport Psychology to Improve Basketball Performance. In J. Dosil (Ed.), *The Sport Psychologist's Handbook A Guide for Sport-Specific Performance Enhancement* (pp. 121-138). Chichester: John Wiley & Sons.
3. Compas, B. E., Connor-Smith, J. K., Saltzman, H., Thomsen, H. A., & Wadsworth, M. E. (2001). Coping with stress during childhood and adolescence: Progress, problems, and potential in theory and research. *Psychological Bulletin, 127*, 87–127.
4. Connor-Smith, J. K., & Flachsbart, C. (2007). Relations between personality and coping: A meta-analysis. *Journal of Personality and Social Psychology, 93*(6), 1080–1107.
5. Crocker, P. R., Tamminen, K. A., & Gaudreau, P. (2015). Coping in sport. *Contemporary advances in sport psychology, 28*-67.
6. Ford, J. L., Ildefonso, K., Jones, M. L., & Arvinen-Barrow, M. (2017). Sport-related anxiety: Current insights. *Open Access Journal of Sports Medicine, 8*, 205-212.
7. Gaudreau, P., & Blondin, J.P. (2002). Development of a questionnaire for the assessment of coping strategies employed by athletes in competitive sport settings. *Psychology of Sport and Exercise, 3*(1),1–34.
8. Gould, D., Dieffenbach K., & Moffett, A. (2002). Psychological characteristics and their development in Olympic champions. *Journal of Applied Sport Psychology, 14*(3),172-204.
9. Hagan Jr, J. E., Pollmann, D., & Schack, T. (2017). Elite Athletes' In-event Competitive Anxiety Responses and Psychological Skills Usage under Differing Conditions. *Frontiers in psychology, 8*, 2280.
10. Hanin, Y. L. (2007). Emotions in sport. Current issues and perspectives. In G. Tenenbaum & R. Eklund (Ed.), *Handbook of sport psychology* (pp.31–58). Champaign, IL: Human Kinetics.
11. Hatzigeorgiadis, A., & Biddle, S. J. H. (2008). Negative self-talk during sport performance: Relationship with pre-competitive anxiety and goal performance. *Journal of Sport Behavior, 31*(3), 238-253.
12. Hatzigeorgiadis, A., & Chroni, A. (2007) Pre-Competition Anxiety and In-Competition Coping in experienced Male Swimmers. *International Journal of Sports Science & Coaching, 2*(2), 181-189.
13. Hurst, J.R., Thompson, A., Visek, A.J., Fisher, B., & Gaudreau, P. (2011). Towards a dispositional version of the coping inventory for competitive sport. *International Journal of Sport Psychology, 42*(2), 167-185.
14. Jones, G. (1995). More than just a game: Research developments and issues in competitive anxiety in sport. *British Journal of Psychology, 86*, 449-478 Jones J.G., Swain A, & Cale, A. (1990). Antecedents of multidimensional competitive state anxiety and self-confidence in elite intercollegiate middle-distance runners. *Sport Psychologist, 4*(2), 107-18.
15. Jones, G., & Hanton, S. (1996). Interpretation of Competitive Anxiety Symptoms and Goal Attainment Expectancies. *Journal of Sport and Exercise Psychology, 18*(2), 144-157.
16. Jones, G., Swain, A., & Hardy, L. (1993). Intensity and direction dimensions of competitive state anxiety and relationships with performance. *Journal of sports sciences, 11*(6), 525-532.
17. Karteroliotis, C., & Gill, D. L. (1987). Temporal changes in psychological and physiological components of state anxiety. *Journal of Sport & Exercise Psychology, 9*(3), 261-274.

18. Kleine, D. (1990). Anxiety and sport performance: A meta-analysis. *Anxiety, Stress, and Coping*, 2(2), 113–131.
19. Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal and coping*. New York: Springer.
20. Martens, R., Burton, D., Vealey, R., Bump, L., & Smith, D. (1990). The development of the Competitive State Anxiety Inventory-2 (CSAI-2). In R. Martens, R.S., Vealey, & Burton (Eds.), *Competitive anxiety in sport* (pp. 117-190). Champaign, IL: Human Kinetics.
21. 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.
22. Mellalieu, S. D., Hanton, S., & Fletcher, D. (2009). *A competitive anxiety review: Recent directions in sport psychology research*. New York, NY, USA: Nova Science Publishers.
23. Nicholls, A. R., Taylor, N. J., Carroll, S., & Perry, J. L. (2016). The Development of a New Sport-Specific Classification of Coping and a Meta-Analysis of the Relationship between Different Coping Strategies and Moderators on Sporting Outcomes. *Frontiers in psychology*, 7, 1674.
24. Nicholls, A. R., Holt, N. L., & Polman, R. C. J. (2005). A phenomenological analysis of coping effectiveness in golf. *The Sport Psychologist*, 19(2), 111-130.
25. Nicholls, A. R., & Polman, R. C. (2007). Coping in sport: A systematic review. *Journal of sports sciences*, 25(1), 11-31.
26. Nicholls, A. R., Polman, R. C. J., Morley, D., & Taylor, N. (2009). Coping and coping effectiveness in relation to a competitive sport event: Pubertal status, chronological age, and gender among adolescent athletes. *Journal of Sport and Exercise Psychology*, 31(24), 299-317.
27. Nicholls, A.R., Polman, R., & Levy, A.R. (2010) Coping self-efficacy, pre-competitive anxiety, and subjective performance among athletes. *European Journal of Sport Science*, 10(2)97-102.
28. Ntoumsanis, N., & Biddle, S.J. (2000). Relationship of Intensity and Direction of Competitive Anxiety With Coping Strategies. *Sport Psychologist*, 14, 360-371.
29. Peng, F., & Zhang, L. W. (2021). The Relationship of Competitive Cognitive Anxiety and Motor Performance: Testing the Moderating Effects of Goal Orientations and Self-Efficacy Among Chinese Collegiate Basketball Players. *Frontiers in psychology*, 12, 685649.
30. Radochoński, M., Cynarski, W. J., Perenc, L., & Siorek-Maślanka., L. (2001). Competitive Anxiety and Coping Strategies in Young Martial Arts and Track and Field Athletes. *Journal of Human Kinetics*, 27(1), 180-189.
31. Raffety, B., Smith, R.E., & Ptacek, J. (1997). Facilitating and debilitating trait anxiety, situational anxiety, and coping with an anticipated stressor: a process analysis. *Journal of personality and social psychology*, 72(4), 892-906.
32. Rosado, A., Santos, A. M. y Guillem, F. (2012). Coping Strategies In High Competition Basketball Players. *Revista Iberoamericana de Psicología del Ejercicio y el Deporte*, 7(1), 127-149.
33. Rosado, A. Santos, A., Silva, C., & Silva, Carlos. (2007). Professional basketball players coping strategies in stressful situations. *Perceptual and Motor Skills* 4, 108-111.
34. Singh, K., & Sardar, S. (2015). Comparison of coping strategies between Basketball and Volleyball University players. *International Journal of Physical Education, Sports and Health*, 1(6), 155-156.
35. Skinner, E. A., & Zimmer-Gembeck, M. J. (2007). The development of coping. *Annual Review of Psychology*, 58, 119-144.
36. Woodman, T., & Hardy L. (2003). The relative impact of cognitive anxiety and self-confidence upon sport performance: A meta-analysis. *Journal of Sports Sciences*, 21(6), 443–457.