RELATIONS BETWEEN COMPETITIVE ANXIETY AND SELF-CONFIDENCE STATES AND SITUATIONAL ACHIEVEMENT OF ELITE EUROPEAN JUNIOR FEMALE VOLLEYBALL PLAYERS

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Abstract

Four volleyball teams (N-48) filled the Revised Competitive State Anxiety Inventory – 2 (CSAI-2R) by Cox, Martens and Russel (2003), used in measuring somatic and cognitive anxiety and self-confidence. The questionnaire was filled immediately before the teams played their first match at the European junior championship, with the aim of determining does the pre-competitive anxiety influence the situational success in elite junior female volleyball players. Application of one-way ANOVA and Scheffe post-hoc test revealed the existence of significant differences in the state anxiety components in elite junior teams with different group placement at the European volleyball championship. The players of more successful teams showed lower levels of somatic and cognitive anxiety than the players of less successful teams. The findings of this research partially support the findings present in the literature, but nevertheless, further research on anxiety and competitive success is recommended.

Key words: *anxiety, self-confidence, situational efficacy, CSAI-2R*

Introduction

The study of emotions in sport is important because emotions influence the performance and give important information about the relation of an athlete and its surroundings. This information can help in better understanding of an athlete and in creating a program of certain athletes` performance improvement. Anxiety is a complex emotion with numerous intellectual, physiological and "behavioural" symptoms, often related to stress or excitement. Stress is an untypical reaction of a body to a demand set before it (Selye, 1983, according to Cox, 2005). The quality of an athlete`s performance often depends on his excitement (Cox, 2005). Anxiety is related to increase of excitement. A moderate level of anxiety results in nervousness, worry and tension, while high level of anxiety results in intensive notion of fear, catastrophic thoughts and strong physiological excitement. Trait anxiety differs from state anxiety.

State anxiety or competitive anxiety is a characteristic that has drawn the most scientists` and experts` attention in the psychology of sport. The multidimensional anxiety theory resulted in numerous measuring questionnaires, and CSAI-2 by Martens, Vealey, Burton, Bump and Smith (1990) is a very well known and often used questionnaire. It measures the cognitive anxiety, as a mental component caused by fear of negative social evaluation, and fear of failure and loss of self-esteem. The somatic anxiety is a physical anxiety component, causing physiological reactions (rapid heartbeat, accelerated breathing and muscle tension). The authors introduced the third factor, called "individual self-confidence difference factor". Self-confidence is defined as a belief of an individual that he can cope with the challenges set before him.

Regarding the time of anxiety measuring, the authors determined the highest relation between anxiety and sport performance was half an hour before the competition (shorter and longer time distance resulted in relation decreas). Craft et al. (2004), using the sample of 29 research (meta analysis) that studied the relation between the cognitive and somatic anxiety and self-confidence on one side and sport performance on the other side, did not found the significant relation of cognitive anxiety and sport performance, while the relation between somatic anxiety and sport performance was low, negative and was not statistically significant. Woodman and Hardy (2003), performing the meta-analysis of 48 research, analysed the relation of anxiety and self-confidence cognitive component with sport performance. Cognitive anxiety had significantly higher negative influence onto the sport performance in male athletes in relation to female athletes, and also a negative influence of the component was significantly higher in higher quality and important competitions. Self-confidence had significantly higher positive influence onto the sports performance in male athletes and in higher quality level competitions. Volleyball is characterised by actions performed at high speeds. In jump serve the time of ball flight is 0.7-0.9 sec (Janković, 1995). The reaction possibilities are very low, and the fear of errors due to expectations is increasing. Kais (2005) researched the relation between certain anxiety components and their direction and the situational success of sand volleyball. The groups of more and less successful sand volleyball players did not differ in the levels of somatic anxiety. Variance analysis revealed that sand volleyball players of higher quality had significantly lower level of cognitive anxiety and

significantly more self-confidence. Besides, elite volleyball players took anxiety as something stimulating, and less successful as a hindering factor of their play. The aim of this research was to ascertain does the pre-competitive state of anxiety influence the situational success in elite junior volleyball players.

Methods

The subject sample consisted of 48 volleyball junior female players from four European representations (Croatia, Poland, Serbia and France), participating at the 2008 European Junior Volleyball Championship. The measuring of the psychological characteristics of the examinees (states of anxiety and self-confidence) was conducted by applying the *Revised Competitive State Anxiety Inventory – 2* (CSAI-2R) by Cox, Martens and Russel (2003), consisting of 17 items, measuring: *somatic anxiety*; *cognitive anxiety* and *confidence* From 17 questionnaire items in total, 7 items measured the somatic anxiety component and 5 items measured cognitive anxiety component and self-confidence. For this research, the questionnaire was first translated into Croatian, Serbian, and the existing French (Martinent, Ferrand i Guillet, 2007; Martinent, Ferrand, Guillet i Gautheur, 2010) and Polish (Borek-Chudek, 2007) questionnaire versions were applied. The anxiety and self-confidence were measured 60 minutes before the first championship match. The situational success of a certain team is estimated by their placement in the group after all the matches played. All the measured teams played in the same group, and it is important to remark that a team played with all the remaining teams in the group. The descriptive indicators of variables were calculated in order to process the collected data. The correlation analysis determined the levels of relation between the certain anxiety and self-confidence components, and the univariate variance analysis determined the difference significance in the anxiety components, regarding the situational success – team group placement.

Results and discussion

The calculation of the basic descriptive parameters, as well as the indicators of measuring instruments sensitivity, was achieved by application of the questionnaire onto the four junior female teams. The conclusion, based on the data shown in table 1, was that all of the variables of CSAI-2R questionnaire had high sensitivity, because their result distribution did not significantly differ from the normal distribution. Elite young volleyball players had equal average level of cognitive and somatic pre-competitive anxiety state (1.95), calculated by dividing the average value of a certain scale by the number of particles of the same scale. This finding was in concordance with the one by Martens et al. (1990), conducted approximately one hour before the match. Self-confidence of the examinees was medium high, since the average value was 3.12, and the max. possible range of results was from 1.00 to 4.00.

Table 1 Descriptive characteristics of the CSAI-2R scales

VARIABLE	Somatic	Cognitive	Self
M	13.67	9.77	15.58
SD	4.66	3.10	2.36
of items	1.95	1.95	3.12
(K-S test)	0.15	0.11	0.13
MIN	7	5	8
MAX	25	16	20
SKEW	0.55	0.17	-0.58
KURT	-0.61	-0.99	1.15

Legend: M – mean; SD – standard deviation; D (K-S test) – coefficient of the Kolmogorov-Smirnov test; MIN – minimum result; MAX – maximum result; SKEW – measure of distribution asymmetry; KURT – measure of distribution shape

However, all of these findings were determined using the total sample of the examinees, and it was necessary to additionally ascertain did the players differ by the expressiveness of their psychological characteristics regarding their situational effectiveness at this championship.

Table 2 Correlations of the CSAI-2R scales

VARIABLE	Somatic anxiety	Cognitive anxiety	Self confidence
Somatic anxiety	1.00	* 0.71	* -0.39
Cognitive anxiety	* 0.71	1.00	* -0.53
Self confidence	* -0.39	* -0.53	1.00

Legend:* - statistically significant coefficient of correlation

The table 2 shows the relation between the measured variables. A high positive correlation was determined between the two anxiety components (0.71), while the level of negative relation of cognitive anxiety and self-confidence was medium high (-0.53). The ascertained negative correlation between the self-confidence and cognitive anxiety was expected and understandable. Namely, self-confidence is all about the belief of the player in the achievement of sport success (Vealey, 2001), and it was expected that an individual, if his level of self-confidence prior to the match was low, would develop a higher degree of cognitive anxiety, directly related to the uncertainty of realising the successful sport result at the match. Further on, a high positive correlation between the cognitive and somatic anxiety indicated the possibility of a mutual latent base in this research, and it is recommended to ascertain the factor structure of the CSAI-2R questionnaire in the following research. Based on the results of the conducted variance analysis for determining the difference between the groups of female players in different situational success, the success of the placement of their teams inside a group at the junior Europe championship, express of the anxiety and self-confidence states, it is possible to conclude that the groups of players significantly differed in all the measured variables, regarding the final group placement.

Table 3 Differences of the CSAI-2R results according to the situational team efficacy

VARIABLE	Results of Anova	
	F	p
Somatic anxiety	24.62	0
Cognitive anxiety	24.49	0
Self confidence	3.65	0.02

Legend: F – coefficient of one-way analysis of variance; p – level of statistical significance of the coefficients.

The most pronounced differences were in the two anxiety components (coefficient of statistic difference significance of both measures was p=0.000 in both groups), and it was found somewhat lower for the self-confidence variable (p=0.02). The ascertained differences between the teams of different placement are graphically represented in figure 1.

Figure 1 Display of the average results of groups of players (teams) with different situational success
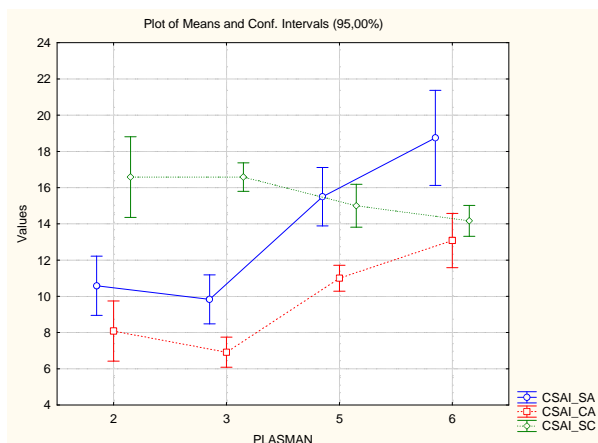
Legend: CSAI_SA – somatic anxiety; CSAI_CA – cognitive anxiety; CSAI_SC – self-confidence.

The graphic display clearly shows the previously determined differences between the groups of representative female volleyball players (teams), second-ranked and third-ranked, in relation to those groups of players (teams) who were next-to-last and last team of the group. The players of two successful teams had very similar results on the psychological characteristics scale, while there were certain less significant differences in the players of the two less successful teams. The fact ascertained in detail in this graphic representation, referring to the previously determined findings regarding the identical expression of the somatic and cognitive component of players` anxiety (shown in table 1) in the complete sample is the fact that the identical values of somatic and cognitive anxiety in the total sample are a product of significantly different expressions of different teams players` anxiety components, the average value of the lower degree anxiety of the more successful teams and higher degree of anxiety in the less successful teams. To ascertain in detail the differences in individual groups of players with different situational success, a *post-hoc* analysis was conducted, using the Scheffe test.

The determined differences of the difference coefficient statistical significance are shown in tables 4 to 6.

Table 4 Statistical significance levels of somatic anxiety difference coefficients

Team placement	2	3	5	6
2		0.94	0.00	0.00
3	0.94		0.00	0.00
5	0.00	0.00		0.08
6	0.00	0.00	0.08	

Table 4 shows the significant difference between the two successful teams and the less successful ones in the degree of somatic anxiety. The players of the successful teams showed significantly lower level of somatic anxiety than the players of less successful teams, and the ascertained differences were very notable (all the statistic significance difference coefficients were p=0.00). The somatic anxiety result difference between the two least successful groups was very close to reaching the level of statistical significance (p=0.08).

Table 5 Statistical significance levels of cognitive anxiety difference coefficients

Team placement	2	3	5	6
2		0.55	0.01	0.00
3	0.55		0.00	0.00
5	0.01	0.00		0.09
6	0.00	0.00	0.09	

Table 5 shows the significant difference between the two successful teams and the less successful ones in the degree of cognitive anxiety. The players of the successful teams showed significantly lower degree of cognitive anxiety than the players of the less successful teams, and the ascertained differences were very high (statistic difference significance coefficients were p=0.01 or higher).

Similar as with the differences of the somatic anxiety, the difference of the cognitive anxiety results between the two least successful teams were very close to reaching the statistical significance (p=0.09). Players of the more successful teams differed from those of less successful teams by the somatic and the cognitive pre-competitive anxiety.

Table 6 Self-confidence difference coefficient levels of statistical significance

Team placement	2	3	5	6
2		0.99	0.38	0.08
3	0.99		0.37	0.08
5	0.38	0.37		0.83
6	0.08	0.08	0.83	

Although the One-way ANOVA show significant differences between the groups of players of different situational success, Schaffe *post-hoc* test did not show significant differences between the individual groups (teams) of players.

It is noticeable that the players from the least successful team had the lowers self-confidence, and the two difference significance coefficients were very close to the criterion of determining a statistical significance (both were p=0.07). This research had several limits which should be considered while interpreting the results: the questionnaire was filled only once, before the first championship match, and it was possible that after the match there were some changes in the competitive state anxiety and self-confidence components, due to the different achievement of the players in a game.

The teams group placement was only one of the possible criteria of the team, the situational success at the European junior championship; only small portion of the teams participating at the championship agreed to fill in the CSAI-2R questionnaire. It is recommended to repeat the research, while "solving" these limitations, and it is also recommended to explore the states of anxiety component relations with the game role of a player, relations of the anxiety state with the measures of team cohesion and to follow the possible changes of anxiety degree during the competition.

Conclusion
Based on the results of this research it can be concluded that there were significant differences in certain anxiety components in elite junior teams with different group placement at the European volleyball championship. It was ascertained that better team placement meant lower degree of somatic and cognitive anxiety, and a higher degree of players` self-confidence. It can be assumed that the members of the less successful teams due to their high state anxiety and lower self-confidence at the important competitions did not manage to play volleyball at the level of their actual possibilities. This is why it is important that their trainers, parents and everybody participating in the training process and life of young athletes, by their behaviour and action contribute the decrease of the anxiety level, and rise of the self-confidence. While doing this, it is crucial that the atmosphere at the training and competition is such in which the accent would be at the intrinsic, instead the extrinsic motivation. The fellowship of the team and the feeling that the co players are ready to mend the possible errors of the game can also contribute greatly to the decrease of the anxiety level of the young players.

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RELACIJE NATJECATELJSKE ANKSIOZNOSTI I STANJA SAMOPOUZDANJA I SITUACIJSKOG POSTIGNUĆA KOD ELITNIH EUROPSKIH JUNIORSKIH ODBOJKAŠICA

Sažetak

S ciljem utvrđivanja utječe li prednatjecateljsko stanje anksioznosti na situacijsku uspješnost kod vrhunskih juniorskih igračica odbojke, 4 odbojkaške ekipe (N-48) su neposredno prije odigravanja svoje prve utakmice na europskom juniorskom prvenstvu popunile revidirani upitnik stanja natjecateljske anksioznosti (eng. Revised Competitive State Anxiety Inventory – 2, CSAI-2R), autora Cox, Martens i Russell (2003) kojim se mjere somatska i kognitivna anksioznost, te samopouzdanje. Primjenom jednosmjerne ANOVE i post-hoc analize razlika utvrđeno je postojanje značajnih razlika u komponentama stanja anksioznosti kod vrhunskih juniorskih ekipa različito plasiranih u grupi na evropskom prvenstvu u odbojci. Igračice uspješnijih ekipa pokazuju niže razine somatske i kognitivne anksioznosti od igračica manje uspješnih ekipa. Nalazi ovog istraživanja djelomično podupiru nalaze u literaturi, te se preporučaju daljnja istraživanja relacija stanja anksioznosti i natjecateljske uspješnosti.

Ključne riječi*: anksioznost, samopouzdanje, situacijska uspješnost, CSAI-2R.*

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