COMPETITIVE STATE ANXIETY AND SELF-ESTEEM IN YOUTH FEMALE VOLLEYBALL PLAYERS OF DIFFERENT PLAYER ROLES AND COMPETITIVE EFFICACY

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Abstract

The aim of this paper was to analyse inter-positional differences, as well as differences in situational efficacy in youth female volleyball players regarding their level of global Self-Esteem and Competitive State Anxiety. The study included 204 youth female volleyball players from different Croatian regions, whose chronological age was 14.11±0.84 years. The Rosenberg Self-Esteem Scale (RSE) was used to assess global Self-Esteem, whereas the Competitive State Anxiety Inventory-2 (CSAI-2) was used to assess the level of somatic and cognitive precompetitive anxiety and self-confidence. Competitive efficacy was determined based on team placement in the competition and individual player quality within the team.

Analysis of variance did not yield significant inter-positional differences in any of the measured variables. More successful volleyball players had a higher level of cognitive and somatic anxiety and self-esteem in comparison to the less successful players.

Key words: *female youth players, CSAI-2, RSE, inter-positional differences, competitive efficacy*

Introduction

Volleyball is a sport of complex poly-structural movements which include a whole series of different movement structures. It is usually divided into attack and counter-attack complex, and these complexes consist of serve, serve reception, setting in attack and counterattack, spiking in attack and counterattack, block and field defense. For successful performance in competitions, certain psychological characteristics are required (Mooris 2000; in Galić, Protić, Žvan, Kondrič, 2014). Psychological characteristics often differentiate more successful from less successful teammates or opponents (Gould, Dieffenbach & Moffett (2001). High level of self-confidence is often stressed as a critical skill in an elite athlete (Orlick & Partington, 1988; Klein 1990; Feltz, 1994; Gould et al., 2002; Kitsantas & Zimmerman, 2002). Petz (2005, in Bosnar & Balent, 2009) defined self-confidence as a positive assessment of one's ability to perform different tasks. Successful athletes believe in their skills and capabilities and are less likely to give up their goals (Bosnar & Balent, 2009). A higher level of self-confidence is also related to the positive perception of arousal and anxiety (Jonas, Hanton & Swain, 1994) so that they are perceived as essential and facilitating for good sports performance. The level of precompetitive state anxiety is another psychological characteristic which is considered to have a significant impact on the quality of competitive sports performance. Petz (1992; in Bosnar & Balent, 2009) defines anxiety as a complex unpleasant feeling of angst, concern, tension and insecurity, accompanied by physiological reactions of the autonomic nervous system. There are two components of state anxiety. The cognitive component is caused by the fear of negative social evaluation, fear of failure and loss of self-esteem. The somatic component reflects the perception of physiological reactions such as increased heart rate, rapid breathing, and muscle tension (Cox, 2005). The relation between cognitive state anxiety and sports performance is linear and negative, whereas the relation between somatic state anxiety and sports achievement has an inverted U shape, which means that an increase of somatic state anxiety to an optimal level also improves achievement, and after this level, achievement drops again (Martens et al., 1990; in Cox, 2005;). Based on meta-analysis, Klein (1990) concluded that a negative correlation between anxiety and sports performance is more prominent in women than in men, in players of lower quality and in team sports. Kais & Raudsepp (2004) found that directional perceptions of cognitive and somatic anxiety and self-confidence are significant predictors of beach volleyball performance. Original intensity subscales of somatic and cognitive anxiety did not predict performance.

Self-esteem represents one component of self-concept. It refers to the judgement of one's self worth, and feelings related to these judgements. High self-esteem implies a realistic judgement of one's own characteristics and abilities, along with the attitude of self-acceptance and self-appreciation (Berk, 2015). Rosenberg (1979) (in Lacković-Grgin, 1994), says that an individual possesses a general feeling of self-worth, which surpasses self-evaluation in separate specific areas of life. Thus, it implies the existence of global self-esteem, i.e.,

what individuals thinks about themselves as a person. Persons with high self-esteem respect and appreciate themselves, feel worthy and have high opinion about themselves. On the other hand, persons with low self-esteem usually do not accept themselves, often underestimate themselves and have a negative opinion about themselves.

Previous studies have compared the level of anxiety, self-confidence and self-esteem of athletes in different sports (Kerketta, 2015), or have analyzed their relation to sports performance (Woodman & Hardy, 2003), but studies which would analyse inter-positional differences and differences between athlees of different competitive quality regarding their level of anxiety, self-confidence and self-esteem are lacking.

Thus, the aim of this study is to analyse inter-positional differences, as well as differences in competitive efficacy of youth female volleyball players regarding their level of global Self-Esteem and Competitive State Anxiety.

Methods

The subject sample included 204 youth female volleyball players from all parts of Croatia, who participated at the open Croatian volleyball championship 2014 in Rovinj. To make the sample as representative as possible, young female volleyball players from all Croatian regions were included, especially members of the best teams at the national level. Out of the 9 best-ranked teams, 8 teams participated in this study. The second group included players from 5 clubs that were ranked between the 10th and the 19th place, whereas the third group included 3 volleyball teams who were ranked between the 20th and the 30th place. Mean chronological age of the participants was 14.11±0.84 years. All participants had an

identity card issued by the Croatian volleyball federation, certified by an authorized sports physician. The variable sample included variables of the RSE and the CSAI-2 questionnaire. The Rosenberg Self-Esteem Scale (RSE) was used to test self-esteem on a 5-point Likert scale, and it consists of 10 statements – 5 positively and 5 negatively worded. The Competitive State Anxiety Inventory-2 (Martens, Vealey & Burton, 1990) consists of 27 items measuring 3 dimensions: somatic anxiety (perception of personal physiological reactions in a competitive situation), cognitive anxiety (fear of negative social evaluation, fear of failure and loss of self-esteem), and self-confidence. The Croatian version of the CSAI-2, validated by Milavić (2013), was used on female volleyball players in this study. Two dependent, i.e., grouping variables were also defined: player role and player's competitive efficacy. Following this criterion, volleyball players were divided into five groups: setters, liberos, passer-hitters, opposite hitters and middle blockers – 1st tempo attackers. Players' competitive efficacy was determined on a 5-point Likert scale. A grade of 1 to 5 was assigned to each player based on two criteria (Table 1): 1) Team ranking in the competition, 2) Player quality within the team (assessed by the coaches). Each coach divided the players of her/his team into three groups (the most successful – the most efficient players, average – other members of the starting line-up and reserves who contribute to game quality; the least successful – players who very rarely or never enter the game). All players who were assigned grades of 1 to 3 were categorized into the less successful group, and all players who were assigned grades 4 and 5 represented the group of more successful players (Grgantov, 2005). Categorization of individual player quality is presented in Table 1.

Table 1. Categorization of individual player quality

Team placement at the national championship	Individual player quality			
	Members of the national team	The most successful players in a team	Average players in a team	The least successful players in a team
(1-9)	5	5	4	3
(10-19)	5	4	3	2
(20-30)	5	3	2	1

In the first phase of the study, content validity of the psychological characteristics questionnaires was determined by a team of experts: expert translator, psychologist and three volleyball experts. In the second phase of the study, questionnaires assessing self-esteem and psychological characteristics were filled out. The subjects filled out questionnaires at their sports halls. At the beginning of the testing, a researcher informed all participants about the importance of answering sincerely. In case some of the respondents needed help filling out the questionnaire or required further information, the researcher was at their disposal throughout the testing. In the final phase, players' coaches assessed players' individual efficacy within their teams. Team quality was assessed based on the results at the youth Croatian volleyball championship 2014. In the third phase of the study, the obtained data were entered and analysed by the Statistica Ver. 13.00 software. Methods of data analysis included validation of the applied questionnaires and analysis of metric characteristics of the self-esteem, anxiety and self-confidence variables. Latent structure was determined and basic metric characteristics of the scales were calculated. Homogeneity was calculated by applying the principal components analysis with orthogonal Varimax rotation, with Guttman-Kaiser criterion for the extraction of components. To assess

reliability, the Cronbach's alpha coefficient of internal consistency was calculated. Measures of symmetry (SKEW) and peakedness (KURT), MaxD value and Kolmogorov-Smirnov test (KS test) were calculated to assess the deviation of results from normal distribution of the applied variables. To ensure comparability of the results obtained on scales with different number of items, a corrected arithmetic mean of the results of the scales was calculated by summing up the results of all items on each scale and dividing the sum by the number of items of the scale. Univariate analysis of variance (ANOVA) with post-hoc test of differences (LSD test) was used to determine the differences between youth female volleyball players at different player positions and of different competitive efficacy regarding their level of self-esteem, self-confidence and anxiety, with the level of significance set at p≤0.05.

Results and discussion

Basic descriptive parameters of the RSE and CSAI-2 scale are presented in Table 2: arithmetic mean (AM), standard deviation (SD), minimum result (MIN), maximum result (MAX), measure of distribution symmetry (SKEW), measure of distribution peakedness (KURT), reliability of the scales (CRONBACH's ALPHA), and coefficient of significance of distribution (MaxD).

Table 2. Descriptive parameters and metric characteristics of the validated scales of the questionnaires

VARIABLE	AM	SD	CRON. ALPHA	% VAR	D * (KS test)	MIN	MAX	RANG.	SKEW	KURT
RSE	3.88	0.59	0.79	36.62	0.098	2.10	5.00	2.90	-0.50	-0.12
CSAI-COGNITIVE ANXIETY	3.17	0.88	0.89	54.18	0.065	1.22	4.78	3.56	-0.14	-0.80
CSAI-SOMATIC ANXIETY	3.47	0.84	0.87	50.91	0.070	1.11	5.00	3.89	-0.35	-0.44
CSAI-SELF-CONFIDENCE	3.29	0.71	0.84	44.81	0.086	1.67	5.00	3.33	0.10	-0.61

Legend: AM – arithmetic mean; SD – standard deviation; CRON. ALPHA – coefficient of internal consistency; % VAR – percentage of explained variance; D – coefficient of the KS test; * – level of significance of the K-S coefficient of the test; MIN – minimum result; MAX – maximum result; RANG. – range of results; SKEW – measure of distribution symmetry; KURT – measure of distribution peakedness.

Means of the scores range from 3.17±0.88 for the **cognitive anxiety** scale from the **CSAI-2** questionnaire to 3.88±0.59 for the self-esteem scale from the **RSE** questionnaire. The coefficient of internal consistency for determining the metric characteristic of reliability of the applied variables range from 0.79 for the self-esteem scale from the **RSE** questionnaire to the very high value of 0.89 for the **cognitive anxiety** scale from the **CSAI-2** questionnaire. The results of the Kolmogorov-Smirnov test (cut-off value of the K-S test = 0.12) indicate that the distribution of results in neither of the scales differs significantly from normal distribution and other indicators of sensitivity of the scales (range of results and measures of symmetry and peakedness of result distribution) indicate good sensitivity of the scales. Therefore, significant non-deviation of results from normal distribution, as well as good sensitivity of scale scores, allow further use of parametric statistical procedures in this study. All the analysed scales have good homogeneity, sensitivity and reliability. The results of inter-positional differences among youth female volleyball players regarding their level of self-esteem, cognitive and somatic anxiety are presented in Table 3.

Table 3. Inter-positional differences among youth female volleyball players regarding their level of self-esteem, cognitive and somatic anxiety, and self-confidence

VARIABLE	PLAYER POSITION										F	p=
	1 SETTER N-35		2 OPPOSITE HITTER N-33		3 PASSER-HITTER N-57		4 MIDDLE BLOCKER N-43		5 LIBERO N-36			
	AM	SD	AM	SD	AM	SD	AM	SD	AM	SD		
RSE	4.05	0.50	3.97	0.53	3.79	0.61	3.83	0.60	3.86	0.67	1.39	0.24
CSAI-COGNITIVE ANXIETY	3.38	0.96	3.08	0.76	3.26	0.83	3.17	1.00	2.91	0.79	1.56	0.19
CSAI-SOMATIC ANXIETY	3.52	0.92	3.51	0.78	3.56	0.82	3.37	0.92	3.33	0.76	0.60	0.66
CSAI-SELF-CONFIDENCE	3.35	0.76	3.32	0.55	3.16	0.71	3.36	0.72	3.34	0.77	0.70	0.59

LEGEND: AM – arithmetic mean; SD – standard deviation; F – coefficient of analysis of variance; p= – level of statistical significance; * – statistically significant difference.

The analysis of the results presented in Table 3 shows that there are no statistically significant inter-positional differences in the analysed variables. Means of the **self-esteem** scale range from 3.79±0.61 in passer-hitters to 4.05±0.50 in setters.

Liberos have lower values of cognitive and somatic anxiety, whereas the results in the self-confidence variable are equal for players at different positions, except for a mild deviation at the passer-hitter position. The obtained results confirm the results of previous studies (Milavić, Grgantov & Velickovska, 2013; Milavić, Jurko & Grgantov, 2013) in which inter-positional differences were not found in the measured characteristics. It is noticeable that liberos have lower values of cognitive and somatic anxiety as opposed to setters, whose values of cognitive anxiety are the highest. Considering the role of each player in the game, this result was expected. Namely, the setter, a playmaker, bears great responsibility during the game. He or she participates in almost every point, is responsible for creating the attack and determines its outcome, whereas liberos play only in the back of the court and are responsible for serve reception and field defense. Furthermore, given the obtained results, it is assumed that psychological characteristics alone cannot clearly differentiate players by player position, i.e., cannot differentiate them in this age group. We can assume that specialization for each player role was done based on some other criteria, e.g., anthropometric characteristics (Đurković, Marelić, Rešetar, 2011, 2012; Milić, Grgantov & Katić, 2012a, 2012b, 2013), motor skills (Grgantov, Katić & Janković, 2006; Grgantov, Milić & Katić, 2013; Milić et al., 2017; Grgantov et al., 2017), and quality of performance of volleyball elements (Katić, Grgantov & Jurko, 2006; Jurko, Grgantov & Čular, 2008; Grgantov, Jurko & Milić, 2013). However, the lack of inter-positional differences in the measured psychological characteristics does not mean that these skills should not be developed or analysed in the training process, as it has been determined that their perfection can improve sports performance (Hatzigeorgiadis et al., 2009). The lack of significant inter-positional differences can indicate that the analysed psychological skills are equally important for all player roles, but also that specificities of each player role have not come to the fore yet in the youth age group which is characterized by the initial level of player specialization.

The results of the analysis of differences between more female volleyball players of different competitive efficacy in the analysed variables are presented in Table 4.

Table 4. Analysis of differences between more successful and less successful volleyball players regarding their level of self-esteem, cognitive and somatic anxiety and self-confidence

VARIABLE	INDEX OF EFFICACY				F	P=
	0 LESS SUCCESSFUL N-119		1 MORE SUCCESSFUL N-85			
	AM	SD	AM	SD		
RSE	3.79	0.60	4.02	0.56	7.51	0.01
CSAI-COGNITIVE ANXIETY	3.04	0.87	3.36	0.87	6.66	0.01
CSAI-SOMATIC ANXIETY	3.33	0.83	3.65	0.83	7.56	0.01
CSAI-SELF-CONFIDENCE	3.25	0.70	3.35	0.73	0.84	0.36

LEGEND: AM – arithmetic mean; SD – standard deviation; F – coefficient of analysis of variance; p= – level of statistical significance; * – statistically significant difference.

The analysis of the results in Table 4 shows that more successful volleyball players have a significantly higher level of cognitive and somatic anxiety in comparison to their less successful peers. It is possible that more successful players bear greater responsibility in the game but are not yet mature enough for such a role in the team. Furthermore, previous studies have found that in more successful athletes, directional perceptions, and not the intensity of pre-competitive anxiety, has a positive relationship with the quality of performance (Kais & Raudsepp, 2004). The results indicating the lack of significant differences at the level of self-confidence between players at different levels of efficacy are not congruent with previous findings which confirm that more successful athletes have higher self-confidence (Gould et al., 2002; Kitsantas & Zimmerman, 2002; Orlick, 2002). These studies were carried out on adult athletes, and the subject sample in this study included youth volleyball players who have probably not yet developed a sufficient level of self-confidence, which might have affected the obtained results.

Conclusion

The lack of significant inter-positional differences in the analysed variables indicates that during selection of player roles in volleyball, some other indicators are taken into consideration, such as morphological characteristics, motor skills and specificities in the performance of some phases of the game, rather than the level of anxiety, self-confidence and self-esteem. This could mean that the investigated psychological skills are equally

important in this age group for all player positions and should therefore be analysed and monitored longitudinally as they would probably become more prominent as the level of competition increases. More successful volleyball players exhibit a higher level of somatic and cognitive anxiety as they probably feel greater responsibility for the achievement of the desired result, i.e., they have a more important and more responsible role within their team. It can be assumed that the high level of self-esteem helps them to perceive the relatively high level of cognitive and somatic anxiety as stimulus rather than a threat for good performance at important competitions.

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Received: 20.11.2019.
Accepted: 19.12.2020.
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