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**Original research article**

# RELATIONS BETWEEN COPING SKILLS AND SITUATIONAL EFFICACY IN YOUNG FEMALE VOLLEYBALL PLAYERS

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**Abstract**. *A sample of 180 junior female Croatian volleyball players and younger took part in the measurement of their psychological skills, performed by applying the Athletic Coping Skills Inventory-28 (ACSI-28). Regarding team ranking in the competition and player quality within the team, all the participants were divided into 5 groups of different situational efficacy. In order to determine the differences in the level of psychological coping skills between the groups of players, a one-way ANOVA and discriminant analysis were performed. It was determined that the most successful players had the strongest self-confidence and motivation, and that they were additionally characterized by the ability of good performance under pressure. The least successful players were characterized by constant worry about performing poorly or making mistakes, and concern with what other people would think about them if they do happen to make a mistake.*

**Key words**: *ACSI-28, ANOVA, discriminant analysis, youth and junior players.*

## INTRODUCTION

Volleyball is a very dynamic sports game characterized by short rallies, of 7 s on average and somewhat longer breaks between the rallies, 14 s on average (Sheppard, Gabbett, & Stanganelli, 2009). On a higher performance level, certain players and teams are characterized by play with a very low number of errors. In a rally point system every error can decide the final outcome, unlike the previous rules (the side-out system), in which none of the serving team errors were sanctioned by loss of points. The continuous exchange of actions and pauses demands an ability of fast attention focus and refocus, and emotional stability and flexibility of a player. The uncertain finals of sets additionally increase psychological pressure, causing stress that one should know how to cope with.

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Morris (2000) states that elite athletes must constantly be under a high level of pressure, and it is therefore not surprising that psychological characteristics often distinguish successful elite athletes from those less successful ones.

Because of this, it is obvious that volleyball success does not depend purely on corresponding anthropometric characteristics, motor and functional abilities, and technical-tactical knowledge, but also on psychological skills. Indeed, Mac Namara, Button & Collins (2010) determined that psychological factors play a key role in the development of an athlete's talent and the achievement of top sports results.

Coping with adversity is the ability to remain emotionally stable and positive during sports performance or competition no matter the situation (Weinberg & Gould, 2011), and to utilize other psychological skills and coping strategies.

Coping skills can also be defined as cognitive, affective and behavioral efforts to manage specific external and/or internal demands, and they are the mediators between stressful events and subsequent reactions or consequences, e.g. sports performance (Crocker, Kowalski, & Graham, 1998).

A central paradigm of applied sport psychology, which encompasses mental skills training, is that mental skills are not innate. That is, they can be learned by any mentally healthy person, and, just like their physical counterparts, they will improve with practice (Reese Jr., 2005).

It is therefore very important to develop coping skills in young athletes. In order to be sure that this process is taking its right course, it is necessary to control it by a high quality measuring instrument. The Athletic Coping Skills Inventory-28 (ACSI-28 hereinafter) was developed as a research instrument, designed to assess psychological coping skills within a sport context (Smith, Schutz, Smoll & Ptacek, 1995). The authors state that ACSI-28 measures a multifaceted construct and that each scale of the questionnaire could be used as a specific measure. Satisfactory metric characteristics have been determined for the questionnaire, and many research studies have been conducted by using this short and economic questionnaire (Geczi, Vincze, Koltai, & Bognar, 2009; Bognár, Géczi, Vincze, & Szabo, 2009; Geczi, Toth, Sipos, Fugedi, Dancs, & Bognar, 2009; Kruger, Pienaar, Du Plessis, & Van Rensburg, 2012; Milavić, Grgantov & Aleksovska-Veličkovska, 2013b). Weinberg & Forlenza (2012), although criticizing the procedure of developing the ACSI-28, consider the questionnaire to be a high quality instrument of measuring the psychological characteristics of athletes. By testing the construct validity of the questionnaire, significant correlations were found with general self-esteem (Smoll, Smith, Barnett & Everett, 1993), as well as with a scale or subscales such as the scale of *worry* on the *Sport Anxiety Scale* (constructed by Smith, Smoll & Schutz, 1990) and with different measures of sports performance. Recently, the ACSI-28 has been validated on a population of young Croatian female volleyball players (Milavić, Jurko, & Grgantov, 2013a). Geczi et al. (2009) did not establish age differences by applying the instrument on a sample of young hockey players, and Milavić et al. (2013) found neither age nor positional differences on a sample of young female volleyball players. Kruger et al. (2012) established significant differences in coping skills on a sample of young male and female long distance runners of different qualities. The available references did not reveal any studies that analyzed the differences in coping skills, regarding situational efficacy of athletes in sports games. Therefore, the basic aim of this research was to analyze the coping skill differences in young female volleyball players with different situational efficacy.

## THE METHOD

### The sample of participants

The sample of participants included 180 female youth and junior volleyball players (aged 15.91±1.78, Mean±St.Dev.), members of clubs from all parts of Croatia, competing in the 2011 Croatian Championship. The largest group of participants included players whose teams had qualified for the final tournament of the Croatian Championship for their age category. The research also included the members of the teams which had not qualified for the final tournament of the Croatian Championship.

### The sample of variables

The measurement of the subjects' psychological skills was performed by applying the *Athletic Coping Skills Inventory-28* (ACSI-28), constructed by Smith et al. (1995). The inventory measured 7 psychological coping skills dimensions – facets: *Coping with Adversity* (abbreviation COPE), which is used to measure the athletes' way of coping with difficulties during their performance (the tendency to remain positive and enthusiastic, to stay calm and controlled and to bounce back quickly from mistakes); *Peaking under Pressure* (abbreviation PEAK), which is used to measure the athletes' ability to perform well under pressure; *Goal-Setting & Mental Preparation* (abbreviation GOAL), which is used to measure the athletes' ability to set and work towards specific performance goals and to plan and mentally prepare themselves for performances; *Concentration* (abbreviation CONC), which is used to measure the athletes' ability to focus on the task at hand, to be able to maintain focus, and not to be easily distracted; *Freedom from Worry* (abbreviation FREE), which is used to measure the athletes' ability to not put extra pressure on themselves by worrying about performing poorly or making mistakes, and not to be concerned with what other people will think about them if they do happen to make a mistake; *Confidence & Motivation* (abbreviation CONF), which is used to measure self-confidence and positive motivation of athletes who consistently give 100% and work hard to improve their skills; and *Coachability* (abbreviation COACH), which is used to measure the extent to which athletes are able to be open and learn from instruction, and to accept constructive criticism without taking it personally and becoming upset. The ACSI-28 questionnaire was validated on a sample of young Croatian female volleyball players (Milavić et al., 2013b), on the same sample that was included in this research. Almost all the scales of the questionnaire (except the *Concentration* scale) had acceptable homogeneity, reliability and sensitivity. Because of its poor reliability, the *Concentration* scale was left out from further analyses. The measurement of psychological skills by ACSI-28 was conducted, for the most part, through group testing during the final tournaments of the Croatian Championship for youth and junior players, just before playing the first match of the tournament. The remaining participants were measured later in their clubs. In order to be able to compare the results of scales with different numbers of items, the results of each scale were calculated by summing each item within the scale and then dividing that sum with the number of items in that scale.

Player quality on a five-point Likert represents a criterion variable. A grade of 1-5 was assigned to each player regarding two criteria (Table 1):

1. Team ranking in the competition: The teams were classified into three categories according to this criterion. The first category was made up of teams that were

ranked between the 1st and the 4th place, the second category teams ranked between the 5th and the 8th place, and the third category teams that did not manage to qualify for the final tournament of the best eight teams of the state championship.

2. Player quality within the teams was assessed by the coaches. Each coach divided the players of her/his team into 3 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 entered the game).

**Table 1.** Categorization of individual player performance level.

| | Individual performance level | | | |
|---|---|---|---|---|
| Competition ranking | Members of the national team | The most successful players in the team | Average players in the team | The least successful players in the team |
| 1-4 | 5 | 5 | 4 | 3 |
| 5-8 | 5 | 4 | 3 | 2 |
| Did not qualify for the final tournament | 5 | 3 | 2 | 1 |

In order to determine the differences in the level of psychological coping skills between groups of players with different individual player efficacy indices, a One-Way ANOVA and Discriminant Analysis procedures were performed.

## RESULTS

**Table 2.** Analysis of variance between groups of female junior players with different individual player efficacy indices according to the expression level of acsi-28 measures.

| Variable | PLAYER EFFICACY INDEX | | | | | | | | ANOVA | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Index 2 N=50 | | Index 3 N=64 | | Index 4 N=27 | | Index 5 N=39 | | | |
| | M | SD | M | SD | M | SD | M | SD | F | p |
| PEAK | 2.84 | 0.92 | 2.82 | 0.86 | 2.97 | 0.79 | 3.12 | 0.76 | 1.20 | 0.31 |
| FREE | 3.46 | 0.88 | 3.04 | 0.85 | 2.99 | 0.81 | 2.93 | 0.85 | 3.66 | 0.01* |
| COPE | 3.31 | 0.72 | 3.45 | 0.64 | 3.31 | 0.79 | 3.45 | 0.72 | 0.63 | 0.59 |
| GOAL | 2.84 | 0.84 | 2.73 | 0.81 | 2.68 | 0.87 | 2.97 | 0.91 | 0.93 | 0.43 |
| CONF | 3.66 | 0.66 | 3.62 | 0.70 | 3.63 | 0.52 | 4.02 | 0.59 | 3.61 | 0.01* |
| COACH | 3.93 | 0.78 | 3.83 | 0.71 | 3.75 | 0.66 | 3.86 | 0.69 | 0.42 | 0.74 |

* – level of statistical significance at $p<0.05$

Table 2 shows that young female volleyball players were open to the coach's instructions, are were ready to listen to him and accept constructive criticism. They were also self confident, had faith in their playing abilities, and were intrinsically motivated for training and volleyball progress. The analysis of differences, shown in Table 2, shows

two significant differences between the psychological coping skills measures, in the *Freedom from Worry* (p=0.01) and *Confidence & Motivation* scales (p=0.01). The comparison of the average values of the young female volleyball players with different index of playing quality shows that the increase of playing quality resulted in a decrease of worry about performing poorly or making mistakes, and an increase in self confidence and motivation.

To establish the significant differences between the groups of players, a post-hoc test was conducted for the FREE and CONF measures, using a Fisher's LSD test (Tables 3 and 4).

**Table 3.** Post-hoc testing of differences in freedom from worry between groups with different player efficacy indices.

| FREEDOM * FROM WORRY | | PLAYER EFFICACY INDEX | | | |
|---|---|---|---|---|---|
| | | Index 2 | Index 3 | Index 4 | Index 5 |
| | | M±SD | M±SD | M±SD | M±SD |
| | | 3,46±0,88 | 3,04±0,85 | 2,99±0,81 | 2,93±0,85 |
| PLAYER EFFICACY INDEX | Index 2 | | 0.01* | 0.02* | 0.00* |
| | Index 3 | 0.01* | | 0.78 | 0.53 |
| | Index 4 | 0.02* | 0.78 | | 0.79 |
| | Index 5 | 0.00* | 0.53 | 0.79 | |

* – level of statistical significance of the Fisher's LSD test coefficients displayed at p<0.05

**Table 4.** Post-hoc testing of differences inconfidence between groups with different player efficacy indices.

| CONFIDENCE * | | PLAYER EFFICACY INDEX | | | |
|---|---|---|---|---|---|
| | | Index 2 | Index 3 | Index 4 | Index 5 |
| | | M±SD | M±SD | M±SD | M±SD |
| | | 3.66±0.66 | 3.62±0.70 | 3.63±0.52 | 4.02±0.59 |
| PLAYER EFFICACY INDEX | Index 2 | | 0.77 | 0.84 | 0.01* |
| | Index 3 | 0.77 | | 0.97 | 0.00* |
| | Index 4 | 0.84 | 0.97 | | 0.02* |
| | Index 5 | 0.01* | 0.00* | 0.02* | |

* – level of statistical significance of the Fisher's LSD test coefficients displayed at p<0.05

Table 3 shows that the group of players with index 2 (players with the lowest level of player quality) had significantly higher cognitive anxiety in relation to all the other groups of players.

Players with the highest level of player quality (group 5) had significantly higher values on the confidence and motivation scale, in relation to the other groups of players (table 4).

Although significant differences were found in only two out of the six scales, all the variables show the trend of result increase following the quality increase (efficacy) of a player. Also, Milavić et al. (2013b), while validating the ACSI-28 instrument, established the existence of a large number of statistically significant correlations between the measures of psychological coping skills. For future research they recommended using multivariate statistical procedures, because some of the measures might have a common latent basis, as well as determining the partial contribution of each variable while excluding the

contribution of other variables related to that one. In order to apply (accept) this justified (reasonable) recommendation in this study a discriminant analysis procedure was performed to determine the differences in the level of psychological coping skills between groups of players with different individual player efficacy indices.

**Table 5.** Discriminant analysis of groups of female junior players with different individual player efficacy indices according to the expression level of acsi-28 measures.

| Function | λ | RC | Wilks' lambda | $\chi^2$ | DF | p |
|---|---|---|---|---|---|---|
| 1 | 0.13 | 0.34 | 0.83 | 32.76* | 18 | 0.02 |
| 2 | 0.06 | 0.24 | 0.93 | 11.79 | 10 | 0.30 |
| 3 | 0.01 | 0.10 | 0.99 | 1.86 | 4 | 0.76 |

| Variable | Structure Matrix | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| PEAK | 0.38 | 0.17 | -0.17 |
| FREE | -0.55 | 0.62 | -0.23 |
| COPE | 0.13 | -0.19 | 0.79 |
| GOAL | 0.17 | 0.41 | 0.44 |
| CONF | 0.58 | 0.48 | 0.63 |
| COACH | -0.10 | 0.28 | 0.32 |

| Player Efficacy Index | Group Centroids | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| Index 2 | -0.38 | 0.29 | -0.02 |
| Index 3 | -0.14 | -0.25 | 0.08 |
| Index 4 | 0.16 | -0.20 | -0.22 |
| Index 5 | 0.59 | 0.18 | 0.05 |

| Variable | Player Efficacy Index | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Index 2 N - 50 | | Index 3 N - 64 | | Index 4 N - 27 | | Index 5 N - 39 | |
| | M | SD | M | SD | M | SD | M | SD |
| PEAK | 2.84 | 0,92 | 2,82 | 0,86 | 2,97 | 0,79 | 3,12 | 0,76 |
| FREE | 3.46 | 0,88 | 3,04 | 0,85 | 2,99 | 0,81 | 2,93 | 0,85 |
| COPE | 3.31 | 0,72 | 3,45 | 0,64 | 3,31 | 0,79 | 3,45 | 0,72 |
| GOAL | 2.84 | 0,84 | 2,73 | 0,81 | 2,68 | 0,87 | 2,97 | 0,91 |
| CONF | 3,66 | 0,66 | 3,62 | 0,70 | 3,63 | 0,52 | 4,02 | 0,59 |
| COACH | 3,93 | 0,78 | 3,83 | 0,71 | 3,75 | 0,66 | 3,86 | 0,69 |

λ – Eigenvalue of discriminant function; RC – coefficient of canonical correlation; Wilks' lambda –Wilks' lambda coefficient (Wλ) of discriminant function; $\chi^2$ – significance test of discriminant function – $\chi^2$ test; * – significance level of DF at p<.05; DF – degrees of freedom; p – level of statistical significance of DF ($\chi^2$ -test).

The discriminant analysis (Table 5) resulted in an important discriminant function. The comparison of the group centroids values with the projections of certain variables on the discriminant function led toward the conclusion that the most successful players had the highest level of self-confidence and motivation (CONF), and that they were additionally characterized by the ability of good performance under pressure (PEAK). The least successful players were characterized by worrying about performing poorly or making mistakes, and worrying about what other people would think about them if they do happen to make a mistake (FREE). Therefore, except for the previously determined signifi-

cant contribution of the measures of self-confidence/motivation and freedom from worry in differentiating between groups of players of different player quality, another expressed measure had been established, an ability of good performance under pressure (PEAK). This measure significantly facilitated the differentiation of high quality players from those of less quality, within the predictor group of coping skills.

## DISCUSSION

The basic aim of this study was to determine the differences in coping skills of young female volleyball players of different situational efficacy. It was established that a high level of self-confidence and motivation, as well as a low level of cognitive anxiety was important in success achievement. Milavić et al. (2013) also described the trend in which the increase of situational efficacy resulted in an increase of self-confidence and a decrease of somatic and cognitive anxiety.

Milavić et al. (2013) established that the measure of confidence/motivation, along with coping with adversity, expressed the highest correlation with the other variables, which indicated their highest level of importance and their "central" place among the measures of psychological coping skills. A positive relation between self-confidence and sport success has been determined in other research studies on athletes of different ages and gender (Woodman & Hardy, 2003; Craft, Magyar, Becker, & Feltz, 2003). Most of the studies confirmed a negative relation between cognitive anxiety and sport success. Similar results were obtained on a sample of male senior sand volleyball players and junior female volleyball players (Jurko, 2013).

Descriptive indicators obtained in the current research are very similar to those obtained for a sample of high school female athletes, in a study that constructed the ACSI-28 questionnaire (Smith et al., 1995). The research of Bognar et al. (2009), based on a sample of hockey and junior soccer players, showed similar results in all of the coping skills except for coachability, which measured notably lower values. That means that hockey and junior soccer players are significantly less ready to be open and learn from instruction and to accept constructive criticism without taking it personally and becoming upset.

Lazarus & Folkman (1984) concluded that stress emerges when the situation demands (in this case a volleyball competition) that one go beyond their adjustment capability or response to the situation (player competence). It is obvious that in least successful volleyball players this disproportion of competition importance and their ability to respond to the demands was causally connected to the higher levels of concern. Martens, Burton, Vealey, Bump, & Smith (1990) emphasized that cognitive anxiety was thought to stem from http://www.thefreedictionary.com/emanate evaluative cues, negative feedback, and negative performance expectations. Therefore, it is important, especially while working with less successful players, to direct attention towards the perfection of the fitness abilities and technical-tactical skills, and not the result. In this way, motivation is directed toward intrinsic, instead of extrinsic aspects of motivation. If this is omitted, there is danger that young volleyball players would give up volleyball. It is important to mention that in this age group competition success can be significantly influenced by the biological matureness of volleyball players. It is probable that some volleyball players achieve weaker results during competition not because they lack talent, but because they are biologically immature and their body height, strength and power are less pronounced in

comparison to their biologically more mature peers, who are more successful because of this. Therefore, it is necessary that the coaches protect less successful players from unnecessary attacks and pressures that they might experience from teammates, administration members, fans and other people around them.

Caruso, Dzewaltowski, Gill, & McElroy (1990) confirmed the previously stated facts and concluded that cognitive anxiety was found to increase after a competitive situation when negative feedback was provided, while positive evaluative feedback was related to a decrease in cognitive anxiety. Bandura (1989) and Feltz (1992) considered that low performance expectations would also influence cognitive anxiety. Krane, Williams, & Feltz (1992) found that golfers who expected to perform poorly in a tournament had higher cognitive anxiety than the golfers with expectations of successful performances. It is also important that the coaches give less successful players a chance to gain some playing experience in a more relaxed atmosphere, because competitive experience has also been found to predict cognitive anxiety (Gould, Petlichkoff, & Weinberg, 1984).

Brookfield (2009) emphasized that decreases in self-efficacy (confidence) could alter important performance variables such as arousal, stress and anxiety which may have a snowballing effect on performance. Swain & Jonas (1992) established that a higher level of self-confidence was related to highly positive perceptions of arousal and anxiety in a way that they are perceived as indispensable and facilitative regarding sports performance and achievement. In addition, self-confident athletes are more skilful and successful in using cognitive resources indispensable for sport success, and have more productive attribution models, attention skills, aim orientations, self-perceptions of their own success, and coping skills, compared to athletes with lower self-confidence (Grove & Heard, 1997; Vealey, 1986). A study by Feltz (1988) confirmed a positive correlation between self-confidence and success at a competition. The analysis of 28 studies showed a relation between self-confidence and later sports performance, spanning from 0.19 to 0.73, with a 0.54 median.

Unlike the results of this research, in which only some of the coping skills turned out to be important for the situational efficacy of young volleyball players, Kruger et al. (2012), using a sample of young long distance runners, found significant differences between talented and less talented boys and girls in adversity, pressure, goal-setting, concentration, coachability and average coping ability. Possible reasons why some of the coping skills were related to long distance running success, and not volleyball success were:

- In team sports such as volleyball, coping skills of individual athletes are more difficult to evaluate than in individual sport (long distance running);
- In team sports, psychological features of an athlete interfere with group characteristics of a team (such as cohesion, coaching behavior, or team efficiency);
- Not all of the psychological features (coping skills) are equally important for success in team sports (volleyball) and individual sport, such as long distance running;
- The evaluation system and success categorization of players in the current study were different than the one applied in the research by Kruger et al. (2012).

This research established good pragmatic validity of the ACSI-28 questionnaire used on a sample of young Croatian female volleyball players. Therefore, this questionnaire could be recommended as a short orientation measure, in collecting reliable and valid information on a greater number of psychological (coping) skills of young volleyball players in a short time span. However, if a more detailed evaluation of certain coping skills was the aim, different questionnaires should be used, such as the Ways of Coping Check-

list (Folkman & Lazarus, 1985), Ways of Coping in Sports Scale (Madden, Kirkby, & McDonald, 1989) and COPE Inventory (Carver, Scheier, & Weintraub, 1989). Regarding the results of the current research, it would be interesting to explore the relations between the measures of the ACSI-28 and the Anxiety Evaluation Questionnaire (CSAI-2) and Motivation (SMS).

## CONCLUSION

The results of the current study confirmed the previous findings about the relation between self-confidence, motivation and cognitive anxiety on the one hand and sport success on the other. It is necessary to create programs for developing those psychological skills and predicting their effect on performance, so that young players would be as motivated as possible for the execution of the programs.

However, there is no sufficient amount of information on the causal nature of the relation between coping skills and competition success. Further research is necessary with the aim of establishing whether the alterations in certain coping skills affect alterations in competition success or alterations in competition success affect alterations in those coping skills. There is certainly a possibility of a mutual influence. The following type of research is proposed:

a. During a prolonged period (e.g. during the whole competition season) the alterations in situational success of the participants would be observed, and related to the possible alterations in certain psychological skills. It is also necessary to eliminate the possible influence of other factors on psychological skills alterations (psychological treatment, replacement of the coach etc.);
b. A research in which the relations of psychological features of the participants would be determined, in relation to the measures of group characteristics of the participant's team, so as to determine the possible influence of the team factors on the expressiveness of the individual, psychological features of the participant.

Treatments that would influence the development of certain psychological skills in an experimental group of participants, and afterwards, the analysis of situational efficacy differences in relation to the control group that was not subjected to the treatments.

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# POVEZANOST VEŠTINA SUOČAVANJA I TAKMIČARSKE USPEŠNOSTI MLADIH ODBOJKAŠICA

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*Na uzorku od 180 hrvatskih odbojkašica kadetkinja i juniorki provedeno je merenje psiholoških veština primenom upitnika Athletic Coping Skills Inventory-28 (ACSI-28). Obzirom na plasman ekipa na takmičenju i kvalitetu igračica u ekipi, sve ispitanice su podeljene u 5 grupa različite takmičarske uspešnosti. S ciljem utvrđivanja razlika u nivou psiholoških veština suočavanja između grupa odbojkašica provedena je univarijatna analiza varijanse i diskriminaciona analiza. Utvrđeno je da najuspešnije igračice imaju najviše izraženo samopouzdanje i motivaciju, te da ih dodatno karakteriše sposobnost dobrog izvođenja pod pritiskom. Najmanje uspešne igračice karakteriše izražena zabrinutost da će loše odigrati i da će raditi greške, kao i briga o tome šta će drugi ljudi da misle o njima ako budu radili greške. Zaključno, ACSI-28 se može preporučiti kao kratka orentaciona mera za procenu veština suočavanja mladih odbojkašica. Potrebna su daljnja istraživanja s ciljem utvrđivanja uzročno-posledičnih odnosa između veština suočavanja i sportskog uspeha.*

Ključne reči: *ACSI-28, ANOVA, diskriminaciona analiza, kadetkinje i juniorke.*