ELITE ATHLETES’ ASSESSMENT OF MENTAL STATE FOR COMPETITION IN INDIVIDUAL AND TEAM SPORTS

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Abstract: Pre-competition mental state is an important component of a sports outcome. In terms of the type of sport, the results of pre-competition state research differ depending on the methodology used. The aim of this paper was to determine mental states for elite sports competitions in one individual (shooting) and one team sport (handball). The research involved 41 elite athletes of both genders (11 males and 30 females) aged 16 to 34, who were members of the senior national shooting (N₁=24) and senior national handball (N₂=17) teams of Serbia. The applied instruments included the CSAI-2 and the CA test. Data processing involved descriptive statistics and variance analysis. The results indicate significant differences between athletes in individual and team sport, in favour of team sport athletes. Elite shooters show more cognitive anxiety, they are more prone to mental perception of pain, fear, and reliance on habits and automatism in competitions. Elite handball players showed significantly higher values on scales of desirable mental state for training and competition.

Keywords: psychological assessment, elite sport, competition, CA method, CSAI-2.

INTRODUCTION

Psychological assessment for competitions traditionally relies on personality inventories which seek to determine character traits or the characteristics of an athlete’s mental state for competition. What is usually examined is whether an athlete possesses an anxiety trait and to what extent, as well as whether they express a smaller or larger amount of cognitive or somatic anxiety prior to a competition (Spielberger et al. 1983; Martens, Vealey & Burton, 1990). Those psychological variables are very significant factors for success in elite sport.

The research on psychological differences between athletes in individual and team sport also covered other

PROCENA MENTALNOG STANJA ZA TAKMIČENJE VRHUNSKIH SPORTISTA U INDIVIDUALNOM I KOLEKTIVNOM SPORTU

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Apstrakt: Psihičko stanje pred takmičenje važna je komponenta sportskog ishoda. U odnosu na tip sportsa, rezultati istraživanja predtakmičarskih stanja, razlikuju se u zavisnosti od primenjene metodologije. Cilj ovog rada bio je da utvrdi psihička stanja za takmičenje vrhunskih sportista iz jednog individualnog sportsa (streljaštvo) i jednog kolektivnog sportsa (rukomet). U istraživanju je učestvovalo 41 vrhunski sportista, oba pola (11 muškaraca i 30 žena), starosti 16 do 34 godine, koji su bili članovi seniorske strelnjake (N₁=24) i rukometne (N₂=17) reprezentacije Srbije. Primjenjeni instrumenti bili su CSAI-2 i metod asocijacije bojama (CA). Podaci su obrađeni deskriptivnom statistikom i analizom varijanse. Rezultati pokazuju da postoje značajne razlike između sportista u individualnom i kolektivnom sportsu, koji idu u prilog sportistima iz kolektivnog sportsa. Vrhunski strelici znacajnije su kognitivno anksiozniji, više podložni psihičkom doživljavanju bola, straha i oslanjanju na navike i automatizam na takmičenju. Vrhunski sportisti u rukometu pokazali su značajno više vrednosti na merama poželjnog psihičkog stanja za trening i takmičenje.

Ključne reči: psihološka procena, vrhunski sport, takmičenje, CA metod, CSAI-2.

Uvod

Psihološka procena za takmičenje tradicionalno se oslanja na inventare ličnosti koji nastoje da utvrde crte ličnosti ili karakteristike mentalnog stanja sportiste za takmičenje. Obično se ispituje da li sportista i u kojoj meri posude crtu anksioznosti, kao i da li u situacijama pred takmičenjem posude manju ili veću količinu kognitivne ili somatske anksioznosti (Spielberger et al. 1983; Martens, Vealey & Burton, 1990). Te psihološke varijable veličina su značajne za uspěnost u vrhunskom sportu.

Ispitivanja psiholoških karakteristika i razlika između sportista u individualnom i kolektivnom sportu odno-
personality features. For example, significant differences are revealed in psychological skills and motivation for success in performance (Pluhar et al., 2019). Feelings of social acceptance, skill development and coaching influence are more emphasized in team sports. Individual sports involve greater focus on the development of concentration ability and mental strength. The lack of social support in individual sport emphasizes the development of personal responsibility and self-reliance (Boone & Leadbeater, 2006). The negative psychological aspects that develop with respect to the social context specific to both individual and team sports, make team sports more stressful as a result of competition outcomes, team dynamics and coaching approaches in team sports. Individual sport athletes proved to be significantly prone to developing feelings of shame and greater internal attribution of responsibility for failure, which may lead to depressive symptoms. Vulnerability to the development of depression in elite athletes has proven to already exist at the junior competition level (Nixdorf et al., 2016). Anxiety, as the most commonly studied personality trait in elite sport, has been shown to be significantly more prevalent in individual sports where performance depends on a referee’s decision. These athletes feel immense pressure to differentiate themselves from the competition in the pursuit of perfection.

The research of differences in terms of mental states of athletes in individual and team sports were mostly focused on determining differences in anxiety as a mental state. The results mostly underline that cognitive and somatic anxiety scores prior to a competition showed statistically significant difference between individual and team sports. Higher results of pre-competition cognitive and somatic anxiety were found in individual sports (Han et al., 2006; Hanton et al., 2008), although one meta-analysis on the connection between cognitive anxiety, competitive self-confidence and sport performance showed no significant differences between athletes in individual and team sports (Woodman & Hardy, 2003).

Inconsistency in the results of psychological research of pre-competition mental states in individual and team sports is ascribed to different methodology. Time distance between the psychological assessment and competition is also important.

Another factor that must be taken into account is the fact that traditional psychological ‘paper-pen’ methodology does not always provide relevant data for a simple reason: athletes may report to be in an adequate mental state even though they are not (Mladenović, 2016). Athletes are not always necessarily aware of their real sila su se i na druge personalne karakteristike. Pokazalo se, na primer, da postoje razlike u pogledu psiholoških veština i motivacije za uspehom (Pluhar et al., 2019). U kolektivnim sportovima izraženija je osjetljivost na prihvatanje okoline, razvoj veština i uticaj trenera. U individualnim sportovima veći je fokus na razvoju sposobnosti koncentracije i mentalne snage. Izostanak socijalne podrške u individualnom sportu ističe u prvi plan razvoj lične odgovornosti i oslanjanje na sebe (Boone & Leadbeater, 2006). Negativni psihološki aspekti koji se razvijaju s obzirom na socijalni kontekst specifičan za kolektivne i individualne sportove, odnosi se na veći doživljaj stresa koji se povezuje sa ishodom takmičenja, grupnu dinamiku i pristup trenera u timskim sportovima. Kod sportista iz individualnih sportova pokazalo se da je značaj negativan psihološki faktor razvoj osećaja krivice i unutrašnje atribucije odgovornosti za neuspeh, što je značajno povezano sa razvojem depresivne simptomatologije. Vulnerabilnost na razvoj depresije kod vrhunskih sportista, pokazalo se da postoji već na juniorskom uzraštju (Nixdorf et al., 2016). Anksioznost kao najčešće ispitivana crta ličnosti u vrhunskom sportu, pokazalo se da je značajno više prisutna u individualnim sportovima kod kojih uspešnost zavisiti od procene sudija. U tim slučajevima sportisti lakše podlegaju pritisku da moraju da budu bolji od konkurencije kako bi ostvarili visoke ciljeve.

Ispitivanje razlika u pogledu psihičkih stanja sportista u kolektivnim i individualnim sportovima najčešće su se odnosila na utvrđivanje razlika u pogledu anksioznosti kao mentalnog stanja. Rezultati takvih istraživanja pretežno ukazuju na statistički značajne razlike u količini kognitivne i somatske anksioznosti. Sportisti iz individualnih sportova više doživljavaju anksioznost kao predstavničko stanje, nego sportisti iz timskih sportova (Han et al., 2006; Hanton et al., 2008). Međutim, jedna meta-analiza o povezanosti kognitivne anksioznosti, takmičarskog samopouzdanja i postignuća u takmičarskom sportu, ukazala je da nema značajnih razlika između sportista iz individualnih i kolektivnih sportova (Woodman & Hardy, 2003).

Nekonzistentost rezultata psiholoških istraživanja mentalnih stanja pred takmičenje u individualnim i kolektivnim sportovima, pripisuje se razlikitoj metodologiji, a od značaja je i vremenska distanca između trenutka sprovođenja ispitivanja i održavanja takmičenja.

Dodatni faktor koji treba uzeti u obzir je i činjenica da tradicionalna psihološka “papir - olovka” metodologija ne donosi uvek verodostojne podatke iz jednostavnog razloga što sportista može da saopšti da je u adekvatnom psihičkom stanju iako zapravo nije (Mladenovic, 2019).
competitive mental state and they may believe to possess a higher degree of self-control of activation and anxiety level than they actually do. Coaches may wrongly conclude that in such cases, athletes have been using psychological manipulation and deliberately reporting to be in a more optimal competitive mental state than they really are, just to be a part of the performing team.

Athletes differ in their degree of awareness of their actual competitive mental state (Mladenović, 2018). In general, athletes can be mentally ready or unready for a competition, and they may or may not be aware of the fact whether they are or are not mentally ready for a competition (Picture 1). An athlete can be mentally ready for a competition and have conscious insight into his mental readiness. A different situation occurs when an athlete is mentally ready for a competition, but for some reason, he believes at the conscious and rational level, that he is not ready to compete (for example, a lack of self-confidence, increased concern and anxiety related to the outcome of the competition). The following two situations occur when an athlete is not mentally ready for a competition, for whatever reason. In one version of this situation, an athlete is consciously and rationally aware of this fact, and in the other version – even though he is generally not mentally ready to compete – at his conscious level he believes he is (which happens in situations when an athlete is highly motivated to compete, even though he is not ready enough for the competitive situation).

Research suggests that self-assessing one’s own mental state at the conscious level is not necessarily accurate. Some neuroscience studies point out the complexity of the relation between the conscious and the unconscious, suggesting that the “authority” of the conscious is overrated (Damasio, 2010; Damasio & Carvalho, 2013). An athlete truly wants to be in the best mental state and give his best at a competition, but in a large number of situations there seems to be something within preventing 2016). Sportisti ne moraju uvek da budu svesni svog realnog psihičkog stanja za takmičenje i mogu da veruju da poseduju veći stepen samokontrole nivoa aktivacije i anksioznosti, nego što to objektivno jeste. Treneri mogu pogrešno da zaključe da je u tim slučajevima reč o psihološkoj manipulaciji od strane sportista i da sportista namerno saopštava da je u optimalnijem psihičkom stanju za takmičenje nego što zapravo jeste, samo da bi bio u sastavu ekipe na terenu.

Sportisti se razlikuju prema stepenu svesnog uvida u aktuelno psihičko stanje za takmičenje (Mladenović, 2018). Generalno, sportisti mogu da budu psihički spremni ili nespremni za takmičenje i mogu da imaju ili da nemaju svestan psihološki uvid u svoju mentalnu spremnost. Druga situacija postoji kad je sportista psihički spreman za takmičenje, ali iz nekog razloga, na svesnom i racionalnom nivou smatra da nije spreman da se takmiči (npr. trenutni nedostatak samopouzdanja, pojačana zabrinutost i anksioznost za ishod takmičenja). Slično tome, u jednoj varijanti ovih situacija sportista ima svestan i racionalan uvid u to, a u drugoj varijanti – iako suštinski nije psihički spreman da se takmiči, na svesnom nivou veruje da jeste (što se događa u situacijama kada je sportista visoko motivisan da se takmiči, iako nije u sportskom ili psihološkom smislu dovoljno spreman za takmičarsku situaciju).

Research suggests that self-assessing one’s own mental state at the conscious level is not necessarily accurate. Some neuroscience studies point out the complexity of the relation between the conscious and the unconscious, suggesting that the “authority” of the conscious is overrated (Damasio, 2010; Damasio & Carvalho, 2013). An athlete truly wants to be in the best mental state and give his best at a competition, but in a large number of situations there seems to be something within preventing...
him from doing so. During a psychological testing using traditional personality inventories, or in a conversation prior to a competition, an athlete may report to be in an optimal mental state for the competition, without that actually being the case. And that is not because athletes want to deceive the coach to place them in the start line-up at a competition, but because they consciously believe they are mentally ready for the competition. Competition as a sort of a stressful situation provokes reaction not only at the conscious and rationally controlled level, but also mental states and reactions that are not controlled by the conscious self. A very significant research-related and practical question concerns the assessments of an athlete’s overall mental state prior to a competition: the conscious and available for introspection, as well as the unconscious.

A significant contribution to the assessment of the unconscious mental state was made by a Swiss psychologist Max Lüscher (1971). In the mid-20th century, Lüscher presented a colour test as a projective technique that measures unconscious mental states (Lüscher, 1971). Unlike other projective techniques, such as the Rorschach test, which are mostly used as assessment instruments in clinical psychology, the Lüscher colour test is a widely used psychological instrument for non-clinical population (Stone, 2003; Singg & Whiddon, 2000). Three decades ago, while using the Lüscher test, Czech psychologist Jiri Simonek came up with an idea to connect colours with words. Uncensored automatic associations that an observed colour triggers in a perceiver are possible to channel in a certain direction by associating a word to a colour. The Colour Association Method (CA) came as a result of Simonek’s work and research (Simonek, Bohonek & Simonek, 2012).

Considering the inconsistency of the research results on differences in competitive mental states among athletes in individual and team sports, the aim of this research was to determine the pre-competition mental state of elite athletes in a team sport (handball) and an individual sport (shooting), using one traditional personal inventory (CSAI-2) and one new method of psychological assessment: the color association (CA) projective test.

**METHOD**

**Instruments**

Two instruments were used for the research: CSAI-2 and the CA method.

Competitive State Anxiety Inventory II, or CSAI-2, measures cognitive anxiety, somatic anxiety and competitive mental state and pokaže svoje najbolje izvođenje na takmičenju, ali u velikom broju situacija, kao da ga nešto iznutra ‘sabotira’ u tome. U situaciji psihološkog testiranja klasičnim personalnim inventarima ili u razgovoru pred takmičenje, sportista može da saopštiti da je u optimalnom psihološkom stanju za takmičenje, a da zapravo to nije slučaj. I to ne zato što želi da obmane trenera da bi bio u startnoj postavi na takmičenju, već zato što na svesnom nivou doživljava da je psihološki spreman za takmičenje. Takmičenje kao svojevrsna strana situacija provocira reagovanje ne samo sa svesnom i racionalno kontrolisanog nivoa, već i psihička stanja i reakcije koje nisu pod svesnom kontrolom. Veoma značajno istraživačko i praktično pitanje tiče se dijagnostike celokupnog mentalnog stanja sportiste pred takmičenje: svesnog i dostupnog introspekcijski, kao i nesvesnog.

Značajan doprinos proceni nesvesnog psihičkog stanja dolazi od Švajcarskog psihologa Maksa Lišera (Lüscher, 1971). Sredinom prošlog veka Lišer je prezentovao test boja kao projektivnu tehniku koja meri nesvesna psihika stanja (Lüscher, 1971). Za razliku od drugih projektivnih tehnika, poput Rorschahovog testa koje su uglavnom korišćene kao dijagnostički instrumenti u kliničkoj psihologiji, Lišerov test boja široko je korišćen psihološki instrument procene na nekliničkoj populaciji (Stone, 2003; Singg & Whiddon, 2000). Pre tri decenije, češki psiholog Jirži Šimonek, radeći sa Lišerovim testom, došao je na ideju da spoji boje sa rečima. Nećenzurisane automatske asocijacije koje u opažaču izaziva posmatrana boja, moguće je kanalizati u određenom smeru, tako što se reč asociira sa bojom. Tako je nastao Metod asocijacije bojama – CA test (Simonek, Bohonek & Simonek, 2012).

Imajući u vidu nedoslednost dosadašnjih rezultata istraživanja razlika u psihičkim stanjima za takmičenje sportista iz individualnih i kolektivnih sportova, cilj ovog istraživanja bio je da utvrdi psihičko stanje pred takmičenje vrhunskih sportista u kolektivnom (rukomet) i individualnom sportu (streljaštvo), koristeći jedan tradicionalni personalni inventar ličnosti (CSAI-2) i jedan novi metod psihološke dijagnostike: projektivni test asocijacije bojama (CA).

**METHOD**

**Instruments**

Two instruments were used for the research: CSAI-2 and the CA method.

Competitive State Anxiety Inventory II, or CSAI-2, meri kognitivnu anksioznost, somatsku anksioznost...
The subsample of examinees from the individual (shooting) and team sport (handball) was from 16 to 34 years of age (11 males and 30 females). The CA test range from zero to 100 (Mladenović, 1990). Sastoji se od tri subskele. Prva subskała meri koliko su sportisti pred nastup na takmičenju zabrinuti za svoje izvođenje, da li su se plaše neuspeha, slabe igre, da neće razočarati važne osobe (kognitivna anksioznost). Druga subskała meri koliko su kod sportista izraženi simptomi somatske anksioznosti: napetost u telu i stomaku, nervoza, uzruvanost, lupanje srca, znojenje ruku, sušenje grla, vlažne i hladne ruke itd. Treća subskała utvrđuje nivo samopouzdanja i sigurnosti da će nastup biti dobar, da će se postići ciljevi, osloboditi napetosti i prihvatiti izazov. Svaka subskała ima po 9 ajtema. Rezultat po subskalama može se teorijski kretati od minimalnih 9 do maksimalnih 36 poena. Viši skorovi su indikator većeg prisustva kognitivne anksioznosti, somatske anksioznosti i samopouzdanja.

Metod asocijacije bojama (CA) je projektivna tehnika zasnovana na Lišerovom testu boja (Lüscher, 1971). CA meri samopercepciju sportiste na parametrima nazvanim bol, napor, strah, umor, povreda, spremnost za takmičenje i trening, kapacitet da se preduzme rizik u situaciji takmičenja i tendencija da se sportista oslanja na navike i automatizme na takmičenju. Test asocijacije bojama danas je u formi kompjuterskog softvera. Sastoji se od inputa koji sadrže osam boja (crvena, plava, zelena, žuta, siva, crna, braon, ljubičasta), sferičnog oblika, koje su poredane u krug. Na početku i na kraju testiranja ispitanik bira sve boje redom, prema trenutnoj preferenciji. Ostali inputi, pored boja sadrže i jednu reč u sredini kruga, a ispitanik bira tri boje koje se u nameću kao trenutna asocijacija zadatoj reči. Test generiše još dve mere. Jedna je operacionalizovana kao odnos između voljne i telesne realnosti organizma u situaciji takmičenja. Pa tako, na jednom kraju tog kontinuuma, nalazi se potpuna dominacija telesne realnosti i fizičkog stanja organizma, a na drugom kraju je potpuna dominacija volje i prevazilaženja telesne realnosti ulaganjem mentalnog napora. Druga meru operacionalizovana je kao ukupnost psihičke energije u datom momentu, što uslovjava mogućnost aktivacije i uključivanja u trenutnu aktivnost. Reč je zapravo o motivacijno voljnom momentu u takmičarskoj situaciji. Vrednosti svakog parametra na testu CA kreću se od nula do 100 (Mladenović, 2015).
ual sport involved members of men and women senior national shooting team of Serbia ($N_1=24$), while the sub-sample of athletes from the team sport comprised members of women’s senior national handball team of Serbia ($N_2=17$).

**Procedure**

As part of the psychological preparation for major international competitions in 2016 and 2017, the examinees underwent psychological testing with CSAI-2 and the CA test. With the athletes’ consent, the data acquired in these tests is used anonymously and for scientific and research purposes.

**Statistical analysis**

Descriptive statistics and analysis of variance (ANOVA) were applied in the statistical program SPSS, version 20. Mean values, Standard Deviations, Minimum and Maximum values were calculated for each CA test variable (mental balance, overall mental energy, risk, effort, pain, fear, tiredness, injury, training, match, habits) and CSAI-2 inventory (cognitive and somatic anxiety, competitive self-confidence). The statistical significance of the differences between mean values in individual and team sport was examined using analysis of variance.

**RESULTS**

Table 1 presents the results of descriptive statistics in the CA test, Table 2 presents the results of descriptive statistics in the CSAI-2 test. The differences between athletes in individual sport (shooting) and team sport (handball) are shown in Table 3.

**Table 1.** Mean ($M$), standard deviations ($SD$), minimum and maximum value in the Colour Association test for elite shooters ($N_1=24$) and elite handball players ($N_2=17$)

|        | N  | AS  | SD  | Min | Max  |
|--------|----|-----|-----|-----|------|
| **CA1** |    |     |     |     |      |
| $N_1$  | 24 | 46.27 | 31.88 | 2.47 | 94.89 |
| $N_2$  | 17 | 61.90 | 11.05 | 45.67 | 89.10 |
| Total  | 41 | 52.75 | 26.34 | 2.47 | 94.89 |
| **CA2** |    |     |     |     |      |
| $N_1$  | 24 | 44.55 | 26.05 | 5.00 | 88.00 |
| $N_2$  | 17 | 48.10 | 6.68  | 36.57 | 60.70 |
| Total  | 41 | 46.02 | 20.27 | 5.00 | 88.00 |
| **CA3** |    |     |     |     |      |
| $N_1$  | 24 | 47.95 | 11.95 | 30.71 | 70.17 |
| $N_2$  | 17 | 45.68 | 9.79  | 27.33 | 63.33 |
| Total  | 41 | 47.01 | 11.03 | 27.33 | 70.17 |

**Table 2.** Aritmetičke sredine (AS), standardne devijacije (SD), minimalne (Min) i maksimalne vrednosti (Max) varijabli na CA testu, kod vrhunskih sportista u streljaštvu ($N_1=24$) i rukometu ($N_2=17$)

|        | $N_1$ | $N_2$ | AS  | SD  | Min | Max  |
|--------|-------|-------|-----|-----|-----|------|
| **CA4** | 24    | 17    | 45.25 | 14.91 | 20.78 | 67.96 |
| **CA5** | 24    | 17    | 47.92 | 17.41 | 20.80 | 85.02 |
| **CA6** | 24    | 17    | 49.10 | 17.73 | 23.69 | 86.91 |
CA1: mental balance; CA2: overall mental energy; CA3: risk; CA4: effort; CA5: pain; CA6: fear; CA7: tiredness; CA8: injury; CA9: training; CA10: match; CA11: habits.

Table 2. Mean (M), standard deviations (SD), minimum and maximum value on the CSAI-2 measures for elite shooters (N1=24) and elite handball players (N2=18)

|       | N1  | M    | SD  | Min  | Max  |
|-------|-----|------|-----|------|------|
| Csai-k| 1   | 24   | 16.08 | 5.90 | 9.00 | 27.00 |
|       | 2   | 17   | 12.44 | 3.16 | 9.00 | 21.00 |
|       | Total | 41 | 14.52 | 5.19 | 9.00 | 27.00 |
| Csai-s| 1   | 24   | 15.24 | 4.88 | 10.00 | 30.00 |
|       | 2   | 17   | 14.05 | 4.99 | 9.00 | 26.00 |
|       | Total | 41 | 14.74 | 5.19 | 9.00 | 30.00 |
| Csai-sc| 1   | 24   | 28.60 | 4.12 | 18.00 | 36.00 |
|       | 2   | 17   | 29.94 | 5.75 | 18.00 | 36.00 |
|       | Total | 41 | 29.16 | 4.85 | 18.00 | 36.00 |

Csai-k: cognitive anxiety; Csai-s: somatic anxiety; Csai-sc: self-confidence

As indicated in Table 3, statistically significant differences between elite shooters and elite handball players were obtained through one measurement in the CSAI-2 test and several parameters of the CA test.

Table 3. Differences between elite shooters and elite handball players on the variables of the Colour Association test and CSAI-2.

| Razlike | Suma kvadrata / Sum of Squares | Stepeni slobode / DF | Srednja vrednost kvadrata / Mean Square Value | F | Nivo značajnosti / Sig. |
|---------|--------------------------------|----------------------|---------------------------------------------|---|------------------------|
| CA1     | između grupa / Between Groups | 2428,727             | 1                                           | 2428,727 | 3,738 | 0,060 |
|         | unutar grupa / Within Groups | 25336,608            | 39                                          | 649,657 |       |       |
|         | Total                         | 27765,335            | 40                                          |        |       |       |
| CA2     | između grupa / Between Groups | 124,719              | 1                                           | 124,719 | 0,298 | 0,588 |
|         | unutar grupa / Within Groups | 16325,279            | 39                                          | 418,597 |       |       |
|         | Total                         | 16449,997            | 40                                          |        |       |       |
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CA1: mentalna ravnoteža; CA2: sveukupna mentalna energija; CA3: rizik; CA4: strah; CA5: bol; CA6: trening; CA7: takmičenje; CA8: navike.

CSAI-k: kognitivna anksioznost; CSAI-s: somatska anksioznost; CSAI-sc: samopouzdanje

Značajno više vrednosti na meri kognitivne anksioznosti dobijene su za vrhunske strelce (AS=16,08; SD=5,09), nego za vrhunske sportiste u kolektivnom sportu - rukometu (AS=12,44; SD=3,16). Pokazalo se da postoje značajne razlike između vrhunskih sportista u streljaštvu i rukometu na CA merama bol, strah, trening, takmičenje.
and relying on habits. Shooters showed statistically signif-
ificantly higher Mean values on the CA parameter for
pain (M=47.92; SD=17.42), fear (M=49.1; SD=17.74),
relying on habits (M=49.42; SD=17.74) than the mem-
ers of the national handball team (pain: M=36.96;
SD=14.47; fear: M=37.73; SD=14.07; habits: M=39.16;
SD=14.03). Elite athletes in the team sport – handball,
showed significantly higher scores on the CA parameters
for training (M=67.06; SD=22.05) and match (M=64.24;
SD=20.50), when compared to elite shooters (training:
M=54.11; SD=14.32; match: M=53.61; SD=13.85).

**DISCUSSION AND CONCLUSION**

In psychological research that sought to identify dif-
f erences between athletes in individual and team sports,
the emphasis was mainly on differences in personality
traits. The results of some research studies indicate that
athletes from individual sports are more self-aware and
care more about their personal autonomy, while athletes
from team sports are more cooperative and with more
prominent sociotropy (Nia & Besharat, 2010). It was also
revealed that athletes in individual sports score higher on
traits such as positivity, perseverance, resilience, self-eff-
cacy, and self-esteem (Laborde et al, 2016). The expla-
nation for the differences regarding positive personality
traits in favour of athletes from individual sports lies in
individual responsibility for the sporting outcome, which
requires the development of adequate personality traits.
In terms of motivational characteristics, the main moti-
vation drives for individual sport athletes are set goals,
while athletes from team sports put intrinsic motivation
and enjoyment in the chosen sport first. Potential differ-
ences in mental health risk were also identified. Athletes
in individual sports are at greater risk of developing de-
pressive symptoms (Pluhar et al, 2019).

When it comes to mental states in sports psychology,
anxiety has traditionally been considered to be a ‘leitmotif’
of a psychological state in competition that impedes sports
achievement, although different theoretical approaches
and instruments are used to measure competitive anxiety
(Spielberger et al. 1983; Hanin, 1999; Martens et al, 1990;
Wilson, Raglin & Harger, 2000). There are different ways
of measuring anxiety: physiological, cognitive, and behav-
ioral, but a predominant opinion in sports psychology is
that the least intrusive one is the use of self-report ques-
tionnaires (Raglin, 1992). It is believed that even subse-
quent testing of pre-competitive anxiety can provide valid
measures of an athlete’s mental state prior to and during a
competition (Hanin, 1997; Wilson et al, 2000). Some au-
thors believe that it would be better to use specific instru-
i oslanjanje na navike. Strelci su pokazali statistički zna-
čajno više vrednosti aritmetičkih sredina na CA parametru
bol (AS=47,92; SD=17,42), strah (AS=49,1; SD=17,74),
oslanjanje na navike (AS=49,42; SD=17,74) nego član-
ovi rukometne selekcije (bol: AS=36,96; SD=14,47; strah:
AS=37,73; SD=14,07; navike: AS=39,16; SD=14,03). Vr-
hunski sportisti u timskom sportu, rukometu, pokazali su
značajno više skorove CA parametrima trening (AS=67,06;
SD=22,05) i takmičenje (AS=64,24; SD=20,50), u odnosu
na sportiste u strljaštvu (trening: AS=54,11; SD=14,32;
takmičenje: AS=53,61; SD=13,85).

**DISKUSIJA I ZAKLJUČAK**

U psihološkim istraživanjima koja su nastojala da
utvrde razlike između sportista u individualnim i kolektiv-
im sportovima, uglavnom je naglasak bio na razlikama u
crtama ličnosti. Rezultati nekih istraživanja ukazuju da su
sportisti iz individualnih sportova samosvesniji i važnija
im je lična autonomija, dok su sportisti iz kolektivnih spor-
tova saradljiviji i sa istaknutijom sociotropijom (Nia &
Besharat, 2010). Takođe se pokazalo da sportisti iz indivi-
dualnih sportova pokazuju više skorove na crtama kao što
su pozitivnost, istrajnost, rezilijentnost, samo-effakasnost
i samopoštovanje (Laborde et al, 2016). Objasnjenje za ra-
zlike u pogledu pozitivnih crta ličnosti u korist sportista iz
individualnih sportova nalazi se u individualnoj odgovor-
nosti za sportski ishod, što zahteva razvijanje adekvatnih
crta ličnosti. U pogledu motivacionih karakteristika, spor-
tistima iz individualnih sportova glavni motivacioni po-
kreti su postavljeni ciljevi, dok se kod sportista iz kolek-
tivnih sportova u prvi plan postavlja intrinzička motivacija
i uživanje u izabranom sportu. Utvrđene su i potencijalne
razlike u pogledu rizika po mentalno zdravlje. Sportisti iz
individualnih sportova pod većim su rizikom da razviju de-
presivne simptome (Pluhar et al, 2019).

Kada je reč o psihičkim stanjima u sportskoj psiholo-
iji tradicionalno se smatra da je anksioznost ‘lajt mo-
tiv’ psihološkog stanja na takmičenju koji ometa sportsko
postignuće, iako se teorijski pristupi i instrumenti kojima
se meri takmičarska anksioznost razlikuju (Spielberger
et al. 1983; Hanin, 1999; Martens et al, 1990; Wilson,
Raglin & Harger, 2000). Postoje različiti načini merenja
anksioznosti, fiziološki, kognitivni i bihevijoralni, ali u
sportskoj psihologiji je dominirao stav da je najmanje
intruzivno koristiti ‘self-report’ upitnike (Raglin, 1992).
Smatra se da čak i naknadno testiranje predrakmičarske
anksioznosti može da pruži validne mere o psihičkom
stanju sportiste pre i tokom takmičenja (Hanin, 1997;
Wilson et al, 2000). Neki autori smatraju da je bolja op-
cija koristiti specifične instrumente namijenjene ispitiva-
ments designed to test anxiety in sport than questionnaires of generalized anxiety (Weinberg & Gould, 1999).

A meta-analysis examining the association between cognitive anxiety, competitive self-esteem, and sports performance showed that there were no differences related to the type of sport (Woodman & Hardy, 2003). However, over the past few decades, researchers across the globe have constantly sought to identify differences in the pre-competitive states of elite athletes from individual and team sports. Athletes from individual sports proved to be at higher risk of developing anxiety symptoms and may experience significantly more pre-competitive anxiety (Pluham et al, 2019). Other studies indicate that there is no significant difference in somatic anxiety in team sports in relation to the athlete’s position on the team (e.g., defensive or offensive player) or amount of contact with the opponent (Allie, Larson & DeBeliso, 2018). Some authors suggest that significant differences may occur in relation to the type of individual sport (Sanioglu, Ulker & Sanioglu Tanis, 2017).

It could be argued that, on the one hand, athletes in individual sports have more opportunity to develop more positive and stable personality traits, while on the other hand, the competitive context in individual sports can provoke inadequate mental states. Research studies also point to the need to introduce new methods in the assessment of pre-competition mental states due to the interplay of psychological and physiological levels of functioning in a stressful pre-competitive situation. Thus, it was proven that when considering certain physiological parameters, athletes from individual sports show greater inclination to succumb to a stressful competitive situation (Radzi, Yusof & Zakaria, 2013).

This research took into account not only the conscious self-perception of mental readiness for competition, as measured by traditional psychological questionnaires, but also the unconscious perception of the stress in a competitive context. A new assessment method was used - the colour association (CA) method. Applying of the CA method indicated significant differences between athletes in individual sport (shooting) and team sport (handball) on a number of psychological parameters. An earlier study, which also used the CA method, found that there were individual differences in the mental state during competition in athletes from the same individual sport (kayaking). Taking into account the Damasio’s thesis (Damasio, 2010) that a person is not always conscious of their current mental state, and pursuing the most adequate strategy of psychological preparation of elite athletes for international competitions, that study also implemented CSAI-2 and the Colour Association method

nujus ansjëoznosti u sportu, nego upitnike generalizovane ansjëoznosti (Weinberg & Gould, 1999).

Meta-analiza koja je ispitivala povezanost kognitivne ansjëoznosti, takmičarskog samopouzdanja i sportskog izvođenja, pokazala je da nema razlika u odnosu na tip sporta (Woodman & Hardy, 2003). Međutim, istraživači širom sveta tokom proteklih par decenija kontinuirano nastoje da utvrde razlike u predtakmičarskim stanjima vrhunskih sportista iz individualnih i kolektivnih sportova. Pokazalo se da su sportisti iz individualnih sportova pod većim rizikom da razviju simptome ansjëoznosti i da mogu značajno više da doživljavaju ansjëoznost kao predtakmičarsko stanje (Pluham et al, 2019). Neka druga istraživanja pokazuju da u kolektivnim sportovima ne postoje značajne razlike u pogledu somatske ansjëoznosti u odnosu na poziciju sportiste u ekipi (npr, defenzivni ili ofanzivni igrači) ili količinu kontakta sa protivnikom (Allie, Larson & DeBeliso, 2018), dok neki autori navode da mogu postojati značajne razlike i za unos na vrstu individualnog sporta (Sanioglu, Ulker & Sanioglu Tanis, 2017).

Moglo bi se reći da koliko su sa jedne strane sportistit u individualnim sportovima više u prilici da razvijaju pozitivnije i stabilnije crte ličnosti, toliko sa druge strane takmičarski kontekst u individualnim sportovima može da bude provokativan za neadekvatna psihička stanja. Istraživanja takođe ukazuju i na potrebu uvodenja novih metoda u procenu psihičkih stanja pred takmičenje usled isprepletanosti psihološkog i fiziološkog nivoa funkcionisanja u stresnoj predtakmičarskoj situaciji. Pa tako, pokazalo se da kada se uzmu u obzir i neki fiziološki parametri, pokaže se da postoji veća vulnerabilnost sportista iz individualnih sportova za podlegnu stresnoj takmičarskoj situaciji (Radzi, Yusof & Zakaria, 2013).

U ovom istraživanju uzeta je u obzir ne samo svesna samoperceptija psihičke spremnosti za takmičenje, merena tradicionalnim psihološkim upitnicima, već i nesvesna percepcija stresnosti takmičarskog konteksta. U tom cilju korišćen je jedan novi psihodiagnostički metod – metod asocijacije bojama (CA), koji je dodatno ukazao na postojanje značajnih razlika između sportista u individualnom sportu (streljaštvo) i kolektivnom sportu (rukomet) na nizu psiholoških parametara. U jednom ranijem istraživanju u kojem je takode korišćen CA metod, pokazalo se da postoje i značajne individualne razlike u mentalnom stanju na takmičenju kod sportista iz istog individualnog sporta (kajaka). Polazeći od Damasiove teze (Damasio, 2010) da osoba nije uvek svesna svog aktuelnog psihičkog stanja i tragajući za najadekvatnijom strategijom psihološke pripreme vrhunskih sportista za interan-
(CA). The aim was to gain insight into the mental state of athletes in major international competitions. The sample involved only two athletes, members of the Serbian senior national kayak team. Every day for 26 days, in days immediately before and during the 2014 European and World Canoe Sprint Championships, the athletes did the CSAI-2 and CA tests (Mladenovic & Trunic, 2015). The CSAI-2 results were similar for both athletes: a low level of cognitive and somatic anxiety and a relatively high level of competitive self-confidence. The data collected by the CA method indicated difference in the athletes’ mental state. One of the athletes showed higher mental resilience, which means higher scores on the match and training parameters and lower values of the fear and pain parameters. The other athlete scored lower on the match and training parameters and had high values of the pain and fear parameters. The data obtained by the CA test were more congruent to the athletes’ observed behaviour and made a better contribution to the development of an adequate strategy of the athletes’ psychological preparation.

This research showed that in terms of the adequacy of the pre-competitive mental state, athletes in team sports enjoy a psychological advantage. The members of women’s national handball team of Serbia showed statistically significantly higher scores on psychological parameters that measure positive mental state for a competitive situation (CA measures “readiness for training and competition”) compared to athletes from the individual sport (national shooting team of Serbia). On the other hand, elite athletes in individual sport (Serbian shooting team) showed more intrapersonal sensitivity to potential distractors in a competitive situation (CA parameters “self-perception of fear and pain, reliance on habits and automatisms” and higher levels of cognitive anxiety on the CSAI-2).

The drawback of this research is that the number of examinees of both genders is not even, and that it involved a relatively small sample of examinees with a wide age span.

Given that competitive mental state is a complex psycho-physiological response to the stressfulness of the competitive context, it is important that future research in sports psychology uses not only personal inventories, which are based on the conscious introspection of the athlete, but also other methods. The Colour Association (CA) method used in this research may provide a contribution to the new methodology, as it points to the importance of unconscious perception of competition. Unconscious perception may be more accurately associated with actual mental readiness for competition, and that is not only of theoretical but also of practical importance in elite sport.
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