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## STRUKTURA RELACIJA PETOFAKTORSKOG MODELA LIČNOSTI I MOTIVACIONIH DIMENZIJA KOD KARATISTA JUNIORA<sup>1</sup>

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**Apstrakt:** Cilj ove studije bio je ispitivanje latentne strukture relacija između osnovnih osobina ličnosti i motivacionih dimenzija kod karatista u juniorskom uzrastu. Empirijsko istraživanje je sprovedeno na prigodnom uzorku (N = 148) valjevskih karatista prosečne starosti 15,18 godina (SD = 1,9). Primenjena su tri merna instrumenta: Upitnik za „Velikih pet“ faktora ličnosti – BFI, Upitnik sportske motivacije – SAI i Upitnik task i ego orijentacije u sportu –TEOSQ. Rezultati Pirsonovog koeficijenta korelacije pokazuju na nivou značajnosti  $p \leq .05$  znatan broj bivarijantnih linearnih povezanosti (niskog ili umerenog intenziteta), između manifestnih varijabli. Modelom kanoničke korelacione analize ekstrahovane su dve značajne kanoničke funkcije. Prvi unipolarni par kanoničkih faktora u prostoru crta ličnosti, uz 44% objašnjenog ukupnog varijabiliteta, maksimalno definišu varijable Savesnost i Ekstraverzija, te u manjem stepenu Otvorenost, kao i motivacione dimenzije (motiv za postizanje dominacije, motiv za postizanje uspeha i ciljna orijentacija na zadatak). Drugi izolovani bipolarni par kanoničkih faktora u domenu osobina ličnosti, uz 21% protumačene ukupne varijanse, izvorno je na negativnom polu determinisan varijablom Neuroticizam i u manjem stepenu varijablama Prijatnost i Savesnost, te motivom za izbegavanje neuspeha i ciljnom orijentacijom na ishod. Dobijeni rezultati su pokazali da primenjeni merni instrumenti imaju primerene konstruktne i konvergentne validnosti, te zadovoljavajuće pouzdanosti tipa interne konzistencije, te se mogu koristiti za procenu ličnosti u adolescenciji i na srpskoj populaciji. Rezultati ovog transversalnog istraživanja sugerišu relevantan empirijski doprinos i važne implikacije za svakodnevnu sportsku praksu i bolje razumevanje istraživanih kompleksnih konstrukata. Takođe, sprovedeno istraživanje podrazumeva relevantan doprinos sportskoj psihologiji, što omogućava veći nivo shvatanja funkcionisanja ličnosti sportiste u adolescenciji.

**Ključne reči:** *crte ličnosti, sportska motivacija, orijentacija u sportu, karatisti juniori, kanonički faktori*

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### UVOD

U relevantnoj psihološkoj literaturi osnovne osobine ličnosti i motivacione dimenzije predstavljaju relevantan predmet teorijskih debata u psihologiji sporta, ali i empirijskih istraživanja jer njihova struktura determiniše u kom stepenu će pojedini sportisti manifestovati svoj biološki, kognitivni, konativni, socijalni, kulturni i zdravstveni potencijal pri izvođenju motoričkih i tehničko – taktičkih zadataka (Blank et al., 2018; Wang et al., 2017). Stoga je neophodno identifikovati konstrukte sklopa ličnosti i motivacije sportiste, navode u svom istraživanju (Meixner et al., 2021).

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Ličnost predstavlja sistem relativno konzistentnih i stabilnih psihičkih dimenzija i mehanizama unutar pojedinca, koji utiču na interakcije i njegovo prilagođavanje na intrapsihičko, fizičko i socijalno okruženje (Eysenck et al., 2021). Navedeni autori smatraju da su osobine ličnosti kontinuirane i bipolarne dimenzije na osnovu kojih se ljudi mogu komparirati, te da latentni konstrukti ličnosti mogu imati diferencirane implikacije na motivacione varijable, što omogućava predikciju relativno konzistentnog ponašanja pojedinca. Ispitivanje ličnosti u dosadašnjim istraživanjima najčešće je vršeno modelom „*Velikih pet*” koji pretpostavlja da se njegova bazična struktura opisuje pomoću pet osobina: ekstraverzija, prijatnost, savesnost, neuroticizam, intelekt ili otvorenost, što pokazuje istraživanje (Rosales et al., 2021). Pomenute osobine sa svojim mehanizmima realizuju teorijski logične korelacije sa sportskim postignućima, psihološkom dobrobiti i aspektima psihopatologije (Poškus & Žukauskienė, 2017). U svojom radu, Larsena i Bussa (2014) skreću pažnju da petofaktorska teorija može dati adekvatan odgovor na pitanje: Koji će sportista napredovati u sportskoj hijerarhiji i na taj način steći relevantan socijalni status u društvu? Prednost petofaktorskog modela je u tome što omogućava jedinstvenu, a parsimonijsku taksonomiju osobina ličnosti, maksimalan segment varijanse i unosi red u skupu strukturiranih dimenzija. Takođe, autori (Reyes-Hernández et al., 2021) u svojoj studiji smatraju da su osobine ličnosti organizovane, te da su interakcije njenih dimenzija ključne za sportistu i njegovu takmičarsku karijeru.

Motivacija je psihički proces u kojem je pojedinac iznutra podstakut pojedinim potrebama, porivima i težnjama, orijentisan ka realizaciji zadatog cilja koji djeluje spolja kao motiv na njegovo ponašanje (Horga, 2009). Ukoliko nema motivacije, bez obzira na formirano znanje i sposobnosti, ciljevi se otežano postižu (Ivanović et al., 2015). Prema istraživanju koje je sprovedla Mladenović (2011), motivacija obuhvata sve mehanizme koji postoje u osnovi čovekovog ponašanja, koji ga pokreću i usmeravaju njegovo ponašanje. Zato je pored teorija ličnosti nužno poznavati i teorije motivacije (Larsen & Buss, 2014). Motivacija u sportu se istražuje dugi niz godina, te postoji znatan broj studija koje nastoje da odgovore na pitanja šta orijentiše sportsku aktivnost u određenom pravcu i reguliše intenzitet i vreme njenog trajanja (Šimunić i Barić, 2011). Međutim, iako motivacija kao psihološki proces energičnosti u velikoj meri utiče na pojedinca, njena savremena koncepcija je nedovoljno objašnjena u sportu, smatraju pomenuti autori u svom radu (Van den Akker et al., 2021). Stoga je radi potpunijeg razumevanja osobina ličnosti sportiste neophodno identifikovati i njene emocionalne konstrukte (Mladenović i Trunić, 2015).

Centralna varijabla sportiste je njegovo doživljavanje sposobnosti, pri čemu on usvaja ciljeve (npr. usmerenost na zadatak i usmerenost na ishod) koji maksimalno odgovaraju njegovoj intelektualnoj predstavi uspeha. Sportista koji je najviše orijentisan na zadatak i ego orijentaciju procenjuje svoj uspeh kroz ulaganje napora, razvoj i usavršavanje sportskih veština. Takmičar koji je maksimalno orijentisan na ishod ili rezultat veruje da je efikasniji ako je bolji od ostalih protivnika ili saigrača. Ukoliko mu ne uspe da pobedi protivnike, on odustaje od zadatka ili napušta sport (Ring & Kavussanu, 2018). U istraživanju koje su izvršili (Beni et al., 2017) pokazalo se da su dimenzije ličnosti i motivacija korelirane, odnosno da su pojedinci sa niskom ekstraverzijom skloni odbrambenom i izbegavajućem stavu. Oni takođe veruju da je osobina ličnosti prijatnost značajan posrednik društvenih motiva (afilijativnog motiva i motiva moći). Istovremeno smatraju da pojedinci koji imaju visok nivo dimenzije savesnosti nastoje da visoki motiv za postignućem usmere kroz uspešnost u sportu. Naprotiv, rezultati istraživanja (Ahluwalia & Preet, 2018) ukazuju na to da je sportista sa niskim nivoom crte savesnosti, uz visok motiv za postignućem, sklon samosažaljevanju. Osim toga, isti autori signaliziraju da visoka povezanost osobine neuroticizma i afilijativnog motiva generiše nesreću, dok adolescenti s niskim stepenom neuroticizma manifestuju sreću. Takođe, ustanovljene su pozitivne relacije motivacije postignuća, ekstraverzije i neuroticizma, pri čemu su ekstraverzija, otvorenost prema novim iskustvima i savesnost, pozitivno korelirane sa orijentacijom na zadatak, dok je neuroticizam u negativnoj interakciji sa ovladavanjem veštinama. Istovremeno su ustanovili da su osobine ličnosti (otvorenost prema novim iskustvima i prijatnost) u negativnoj korelaciji sa kompetitivnošću. Pored toga, u studiji (Clancy et al., 2016) naglašeno je da su bazične osobine ličnosti savesnost, otvorenost prema novim iskustvima i ekstraverzija pozitivno povezane sa intrinzičnom motivacijom za postignućem, dok su ekstraverzija, savesnost i neuroticizam pozitivno korelirane sa ekstrinzičnom motivacijom za postignućem. Istovremeno u istraživanju (Martínez-Alvarado et al., 2016) ustanovljena je pozitivna interakcija osobine savesnost i motivacije koja se odnosi na „sagorevanje“ u sportu, dok je neuroticizam negativno povezan sa motivacijom.

Očigledno je da rezultati pomenutih istraživanja osobina ličnosti nisu konzistentni. Dosadašnje studije ukazuju da nedostaju istraživanja kanoničkog dizajna između osobina ličnosti i motivacionih dimenzija u sportskoj populaciji, a naročito kod karatista juniora.

Navedeni delimični pregled savremene literature u okviru ovog rada ukazuje na složenost problema, koji je izuzetno značajno istražiti. Takođe, imajući u vidu činjenicu da se dizajn dosadašnjih istraživanja nije u dovoljnoj

meri sprovodio i na srpskoj karate populaciji, cilj ovog transverzalnog istraživanja bio je testiranje kanoničke strukture i intenziteta povezanosti „*Velikih pet*“ osobina ličnosti sportske motivacije i usmerenosti u sportu kod karatista u adolescentnom uzrastu. U istraživanju se pošlo od osnovne hipoteze da takva korelacija postoji, te da se na osnovu nje može izvršiti predikcija varijanse i potencijalnih relacija između ispitivanih konstrukata. Shodno pomenutim dosadašnjim empirijskim nalazima i cilju ovog istraživanja čini se opravdanim da je potrebno proveriti linearnu povezanost crta ličnosti i motivacionih dimenzija, što može imati implikacije na dalja istraživanja, ali i za domaću sportsku praksu.

## METODE

### Ispitanici

*Uzorak ispitanika i procedura.* Metodom transverzalnog preseka obuhvaćeno je 148 karatista. Prosečna starost ispitanika iznosila je 15,18 godina ( $SD = 1,9$ ). Uzorak je bio prigodan, a obuhvatao je karatiste iz upravnih okruga Kolubarskog okruga iz tri kluba: KK „Shodan“ (Valjevo), KK „014 Valjevo“ (Valjevo) i KK „Kizame“ (Valjevo). Svi ispitanici trenirali su minimalno dve godine, u trajanju od najmanje tri puta sedmično. Istraživanje je sprovedeno, tokom septembra 2021. godine.

Neposredno pre anonimnog i dobrovoljnog ispitivanja, ispitanicima je pročitano i protumačeno uputstvo za popunjavanje upitnika, pri čemu je naglašeno da će se podaci koristiti isključivo u naučne svrhe. Osim toga, ispitanici su mogli da odustanu od ispitivanja u bilo kojem trenutku bez ikakvih posledica.

### Instrumenti

Ispitivanje je sprovedeno korišćenjem upitnika za procenu „*Velikih pet*“ fundamentalnih dimenzija ličnosti i dva upitnika za procenu pet motivacionih dimenzija (Upitnika sportske motivacije i Upitnika *task* i *ego* orijentacije u sportu). Kod svih korišćenih instrumenata ispitanici su na petostepenoj skali Likertovog tipa samoprocenjivali koliko se pojedini ajtemi odnose ili ne odnose na njih (od 1 – „*Uopšte se ne slažem*“ do 5 – „*U potpunosti se slažem*“). Testiranje ispitanika je trajalo oko 20 min.

#### **Inventar „Velikih pet“ faktora ličnosti** (*Big Five Inventory - BFI*; Benet-Martinez & John, 1998).

BFI obuhvata ukupno 44 ajtema (npr. „Sebe vidim kao osobu koja je pričljiva“) tj. (samo)procenu pet opštih dimenzija ličnosti: ekstraverzija, prijatnost, savesnosti, neuroticizma i otvorenosti. Procenjivanje se vrši na petostepenoj skali Likertovog tipa i manifestuje nivo slaganja/neslaganja sa stavkom od „uopšte se ne slažem“ (1) do „potpuno se slažem“ (5), na način da ispitanik zaokruži stepen slaganja sa određenim ajtemom na predviđeno mesto. Rezultat ispitanika definiše se sabiranjem procena za odgovarajuće tvrdnje svake pojedine dimenzije ličnosti, što omogućava dobijanje ukupnog skora za dimenzije BFI. Značajna prednost upitnika „*Velikih pet*“ zasniva se u kratkotrajnom zadavanju, jednostavnijim i razumljivijim ajtemima, što je bitno kod vremenski limitiranih ispitivanja. Takođe, instrument predstavlja posebnu povoljnost kada se istraživanja sprovode na adolescentskoj populaciji.

Petofaktorski model ličnosti je u ovom istraživanju pokazao dobre metrijske karakteristike. Kronbahov alfa koeficijent (tip interne konzistencije) za ekstraverziju iznosi ( $\alpha = 0,82$ ), prijatnost ( $\alpha = 0,80$ ), savesnost ( $\alpha = 0,79$ ), neuroticizam iznosi ( $\alpha = 0,75$ ) i za otvorenost ( $\alpha = 0,86$ ), dok za celu skalu, Koeficijenti pouzdanosti ima vrednost ( $\alpha = 0,85$ ).

#### **Upitnik sportske motivacije** (*Sport Attitudes Inventory - SAI*; Willis, 1982).

SAI obuhvata ukupno 40 ajtema, a meri tri osnovna motiva: *MAS* – motiv za postizanje uspeha (sastoji se od 17 tvrdnji), *MAF* – motiv za izbegavanje neuspeha (11 tvrdnji) i *MAP* – motiv za postizanje dominacije (sastoji se od 12 tvrdnji). *MAS* (npr. „Najviše uživam u stvarima u kojima sam uspešan“), predstavlja neskladnost između zbira postavljenog stepena aspiracije i zbira nivoa izvođenja zadatka. Motiv za postizanje uspeha je meren tako što su ispitanicima postavljani psihomotorni zadaci, pri čemu ispitanici za 30 s treba da smeste što više šibica u specijalno pripremljenu drvenu ploču sa otvorima. Ispitanici su na početku bili upitani koliko šibica smatraju da mogu uneti u rupice te table, pri čemu se od njih zahtevalo da procene koliko će biti uspešni. Ovaj postupak se ponavlja u istim uslovima četiri puta, tako što se zapisuju rezultati. *MAF* obuhvata ajteme koji reprezentuju manifestacije težnje za izbegavanjem neuspeha i straha od neuspeha (npr. „Lako odustajem kad sam suočen sa teškim zadatkom“).

Na našem uzorku utvrđena je zadovoljavajuća pouzdanost za sve tri skale ovog instrumenta. Koeficijent pouzdanosti se kretao u rasponu od 0,80 do 0,88.

**Upitnik task i ego usmerenosti u sportu** (*Task and ego orientation in sport questionnaire – TEOSQ*; Duda, 1989).

*TEOSQ* obuhvata ukupno 13 ajtema, sa dve nezavisne i ortogonalne podskale – *task* i *ego*. *Task* skala (skala orijentacije na zadatak) procenjuje ličnu ciljnu orijentaciju ka zadatku i usvajanje sportskih veština i sadrži sedam tvrdnji, npr. „Osećam se najuspešnijim u sportu kada učim nove veštine i to me tera da još više vežbam“, dok *ego* skala orijentacije na ishod i rezultat procenjuje ličnu ciljnu orijentaciju ka superiornom izvođenju i rezultatu i sadrži šest tvrdnji, npr. „Osećam se najuspešnijim u sportu kada sam ja najbolji“. Ispitanici odgovaraju zaokruživanjem brojčane vrednosti na petostepenoj Likertovoj skali, pri čemu broj 1 označava „u potpunosti se ne slažem“, a 5 „u potpunosti se slažem“.

Sportsko-specifična mera ciljne orijentacije na zadatak i ciljne orijentacije na ishod imaju zadovoljavajuću internu konzistenciju (0,79 za *task* i 0,90 za *ego* skalu).

### Statistička analiza

Interna pouzdanost korišćenih mernih instrumenata ispitana je pomoću Kronbahovog koeficijenta. Linearna povezanost parametara procenjivana je metodama korelacije po Pirsonu, dok je ispitivanje povezanosti između dva skupa varijabli urađeno kanoničkom korelacionom analizom. Statistički značajan rezultat smatran je za  $p \leq .05$ .

## REZULTATI

### Korelacije između osobina ličnosti i motivacionih dimenzija

U cilju testiranja linearne povezanosti između manifestnih varijabli (fundamentalnih osobina ličnosti i različitih motivacionih dimenzija) ispitanika u Tabeli 1 izračunato je 45 Pirsonovih linearnih koeficijenata korelacije.

**Tabela 1.** *Korelacije između ispitivanih varijabli*

Varijable	1	2	3	4	5	6	7	8	9
1. Ekstraverzija									
2. Prijatnost	0,05								
3. Savesnost	0,43**	0,42**							
4. Neuroticizam	-0,20*	0,53**	-0,39**						
5. Otvorenost	0,28**	0,12	-0,50**	-0,03					
6. Motiv za postizanje uspeha	0,29**	0,07	0,28**	-0,02	0,33**				
7. Motiv za izbegavanje neuspeha	0,02	-0,20*	-0,09	0,41**	0,06	0,22**			
8. Motiv za postizanje dominacije	0,51**	0,03	0,43**	-0,13*	0,24**	0,51**	0,08		
9. Ciljna orijentacija na ishod	0,10	-0,04	0,11	0,07	0,26**	0,30**	0,10	0,03	
10. Ciljna orijentacija na zadatak	0,20*	0,10	0,44**	-0,14*	0,06	0,50**	0,18*	0,13	0,15*

\*\* $p \leq .01$ ; \* $p \leq .05$

Uvidom u ćelije matrice uočava se veliki broj statistički značajnih interkorelacija između merenih varijabli (slabog i umerenog intenziteta) u rasponu od 0,02 do 0,53. Na primer, *motiv za postizanje uspeha* i *motiv za postizanje dominacije* pozitivno su, sa jedne strane, korelirani sa crtama ličnosti ekstraverzija ( $r = 0,51$ ), savesnost ( $r = 0,43$ ) i otvorenost ( $r = 0,24$ ), dok je, sa druge strane, *motiv za izbegavanje neuspeha* u pozitivnoj interakciji sa osobinom neuroticizam ( $r = 0,41$ ) i negativnoj linearnoj povezanosti sa osobinom prijatnost ( $r = -0,20$ ). Takođe, *ciljna orijentacija na ishod* je u pozitivnoj interkorelaciji sa osobinom ličnosti otvorenost ( $r = 0,26$ ), a *ciljna orijentacija na zadatak* sa osobinama savesnost ( $r = 0,44$ ) i ekstraverzija ( $r = 0,20$ ).

U domenu crta ličnosti ekstraverzija je u pozitivnoj bivarijantnoj korelaciji slabog intenziteta sa osobinama savesnost ( $r = 0,42$ ) i otvorenost ( $r = 0,28$ ), dok je u negativnoj interakciji i to veoma slabog intenziteta sa neuroticizmom ( $r = -0,20$ ). Crta ličnosti *neuroticizam* takođe je u statistički negativnoj vezi sa osobinom prijatnost ( $r = -0,53$ ) i savesnost ( $r = -0,39$ ). Sa druge strane, crta savesnost je u pozitivnoj saglasnosti sa crtama prijatnost ( $r = 0,39$ ) i otvorenost ( $r = 0,50$ ).

Takođe i u domenu motivacionih dimenzija nađene su signifikantne korelacije. *Motiv za postizanje uspeha* i *ciljna orijentacija na zadatak* imaju linearnu povezanost umerenog intenziteta (0,50), u pozitivnoj su interkorelaciji sa svim primenjenim motivacionim dimenzijama. Na primer: *motiv za postizanje uspeha* pozitivno je i umereno bivarijantno koreliran sa motivom za postizanje dominacije ( $r = 0,51$ ), ciljnom orijentacijom na ishod ( $r = 0,30$ ) i motivom za izbegavanje neuspeha ( $r = 0,22$ ), dok je *ciljna orijentacija na zadatak* u statistički pozitivnoj i statistički značajnoj interakciji sa motivom za postizanje dominacije ( $r = 0,43$ ), ciljnom orijentacijom na ishod ( $r = 0,22$ ) i motivom za izbegavanje neuspeha ( $r = 0,20$ ).

### Kanonička korelaciona analiza

Relacije dva skupa manifestnih varijabli (crta ličnosti i motivacionih dimenzija), definisane su modelom kanoničke korelacione analize (Tabela 2). Ekstrahovane su dve statistički značajne kanoničke funkcije, koje su testirane Bartletovim  $\chi^2$  kvadrat testom, uz grešku zaključivanja od 5%.

**Tabela 2.** Značajnost karakterističnih korenova i procenat objašnjene varijanse ekstrahovanih kanoničkih faktora

Funkcija	Rc	Rc <sup>2</sup>	$\chi^2$	p
1.	0,61	0,44	111,26	0,05
2.	0,42	0,21	39,35	0,05

**Legenda:** Rc = koeficijent kanoničke korelacije; Rc<sup>2</sup> = koeficijent determinacije;  
 $\chi^2$  = hi-kvadrat test; p = proporcija značajnosti

Standardni koeficijent kanoničke korelacije, tj. mera povezanosti unutar 1. ortogonalnog para kanoničkih faktora je najveći i iznosi ( $r = 0,61$ ), što upućuje na umeren nivo interakcije između linearnih kombinacija dva analizirana skupa varijabli. Koeficijent determinacije ili kvadrirani koeficijent strukture ukazuje na maksimalnu proporciju ukupnog zajedničkog varijabiliteta (44%) koje manifestne varijable dele sa prvim parom kanoničke funkcije. Drugi izolovani nezavisni standardni kanonički faktor, uz nižu vrednost koeficijenta kanoničke korelacije ( $r = 0,39$ ) i 21% objašnjene ukupne varijanse koji dele ispitivane varijable, skreće pažnju na slab intezitet linearne kombinacije ove dimenzije između dva seta varijabli.

U cilju potpunijeg uvida u problem istraživanja, u daljem postupku obrade podataka, prikazani su koeficijenti strukture i koeficijenti funkcija (standardizovani kanonički koeficijenti) sa najreprezentativnijim varijablama u sistemu crta ličnosti i motivacionih dimenzija koje ukazuju kakva je interakcija svake pojedinačne varijable i kanoničke funkcije u svom skupu (Tabela 3).

**Tabela 3. Struktura kanoničkih faktora**

Konstrukt	Varijable	KF <sub>1</sub>	KF <sub>2</sub>
Crte ličnosti	Ekstraverzija	0,74	0,20
	Prijatnost	0,09	-0,49
	Savesnost	0,79	-0,44
	Neuroticizam	-0,38	0,80
	Otvorenost	0,48	0,22
Motivacione dimenzije	Motiv za postizanje uspeha	0,75	0,15
	Motiv za izbegavanje neuspeha	0,17	0,70
	Motiv za postizanje dominacije	0,79	0,07
	Ciljna orijentacija na ishod	0,05	0,27
	Ciljna orijentacija na zadatak	0,47	-0,24

Strukturu *prvog* izolovanog unipolarnog *kanoničkog para faktora* u domenu crta ličnosti, koja je povezana umerenom korelacijom, maksimalno maksimalno kanonički opterećuju manifestne varijable savesnost (0,79) i ekstraverzija (0,74) i otvorenost (0,48), dok u domenu motivacionih dimenzija najveći doprinos u definisanju prve kanoničke funkcije imaju motiv za postizanje dominacije (0,79), motiv za postizanje uspeha (0,75) i ciljna orijentacija na zadatak (0,47). Sažeto, ova utvrđena kanonička funkcija signalizuje na maksimalnu pozitivnu povezanost crta ličnosti i motivacionih dimenzija.

Strukturu *drugog* izdvojenog bipolarnog *para kanoničkih faktora* u domenu crta ličnosti, koja je korelirana slabom interakcijom, dominantno sa jedne strane determinišu pozitivni predznaci manifestnih varijabli neuroticizam (0,80), a sa druge strane na negativnom polu, sa slabijim intenzitetom varijable prijatnost (-0,49) i savesnost (-0,44), dok domen motivacionih dimenzija značajno opisuju varijable motiv za izbegavanje neuspeha (0,70) i u veoma slabom intenzitetu ciljna orijentacija na ishod (0,27).

## DISKUSIJA

Cilj ovog istraživanja bio je identifikovanje strukture i intenziteta korelacije „*Velikih pet*“ osobina ličnosti, sportske motivacije i usmerenosti u sportu kod karatista u periodu adolescencije. Sprovedena kanonička analiza ekstrahovala je dva para kanoničkih faktora ličnosti karatista. Sa teorijskog aspekta, prvi integralni par kanoničkih faktora sadrži dva različita sistema varijabli, osnovne osobine ličnosti savesnost, ekstraverzija i otvorenost, kao i motiv za postizanje dominacije i motiv za postizanje uspeha i ciljnu orijentaciju na zadatak. Dobijena pozitivna korelacija između osobina ličnosti i motivacionih dimenzija je identična nalazima (Rogowska, 2020), koji je ustanovio pozitivnu povezanost između osobina ekstraverzija, otvorenost i savesnost, te ciljne orijentacije na zadatak. Ova kanonička korelacija sadrži pozitivne osobine ličnosti i signalizira na svojstvenu kombinaciju osobina ličnosti koje karakteriše pouzdanost i otvorenost i uvećanje pozitivnih učinaka, kao i efikasno uzajamno dejstvo nekih činilaca (sredinskih i personalnih) na treningu i takmičenju. Istovremeno, ovi karatisti će ispoljavati tendenciju uvođenja u izazovne situacije. Sa druge strane, nepouzdati i nedisciplinovani sportisti mogu manifestovati manju motivaciju koja je usmerena na zadatak, što će negativno uticati na korelaciju sa njihovim osobinama ličnosti.

Rezultati istraživanja (Kim et al., 2018) su pokazali da je osobina ličnosti otvorenost više u korelaciji sa kreativnošću i divergentnim razmišljanjem, dok ekstraverzija više stupa u interakciju sa pozitivnom afektivnošću i senzibilitetom. U empirijskoj studiji (Le Thi My & Tran Minh, 2021) pretpostavlja se da sportisti sa manifestnijom dimenzijom otvorenost fleksibilnije funkcionišu u ponašanju, maštovitiji su i skloniji novim trenaznim i takmičarskim iskustvima, te individualnom razvoju. U svom radu (Abhar et al., 2021) skreću pažnju da je motivacioni faktor orijentacija na zadatak i ego orijentacija u korelaciji sa pomažućim socijalnim vrednostima u sportu, što motivira razvoj samokontrole i prihvatanje kooperativnosti. Osim toga, ovi autori smatraju da ciljna orijentacija sportiste na učenje usredsređuje njegovu pažnju na ovladavanje veštinama, motoričke zadatke i minimalna negativna osećanja.

Istraživački nalazi (Litwiniuk et al., 2019) signaliziraju da visoka ciljna orijentacija na zadatak podrazumeva optimalan motivacioni model u sportu. Prilikom trenažnog procesa efikasno izvršavanje zadataka, može se prognozirati pomoću osobine savjesnost i motivacionih dimenzija. Sportisti sa intenzivnijom dimenzijom savjesnost i motivacijom za postignuće verovatno imaju kvalitetniju motoriku u komparaciji sa sportistima sa niskim nivoom savjesnosti i motivacije za postignućem. Istraživački nalazi (Rogowska, 2020) pokazali su povezanost između osobina ličnosti i motivacionih sistema. Prema istraživanju koje su sproveli (Navas et al., 2021) prvi par kanoničkih faktora povezan je sa sistemom aktivacije ponašanja koji reguliše motivaciju za pristupanje – prilaženje. Rezultati istraživanja (Kang et al., 2016) utvrdili su pozitivne korelacije između varijabli ekstraverzija i temperamenta kao i između temperamenta i pozitivne emocionalnosti. Zaključno, izdvojena prva kanonička funkcija komponovana je od dimenzija ličnosti i motivacionih latentnih varijabli, što predstavlja relevantne prediktore sportskih rezultata.

Ekstrahovani integralni drugi par kanoničkih faktora na našem uzorku teorijski podrazumeva dva različita skupa varijabli: na negativnom polu dimenzije neuroticizam, prijetnost i savjesnost, te na pozitivnom polu motiv za izbegavanje neuspeha i ciljnu orijentaciju na ishod. Pretpostavlja se da ova kanonička korelacija koja obuhvata negativne osobine ličnosti inhibira socijalizaciju karatista na trenažnim procesima i takmičenjima.

Emocionalna nestabilnost i visok nivo anksioznosti podstiču pritisak na izvođenje kod pojedinih sportista, kao i upečatljivu *ego* usmerenost, zaključuje se u studiji (Stambulova, 2020). Verovatno temeljne osobine ličnosti neuroticizam, inhibirana savjesnost i prijetnost redukuju manifestovanje sposobnosti pri trenažnim procesima ili inhibiraju orijentaciju na zadatak, ishod. Istovremeno, visok nivo upečatljivosti osobine i motiva za izbegavanje neuspeha u adolescenciji manifestuje se u nestabilnom izvođenju i neuspešnom suočavanju sa takmičarskim stresom.

Nalaz druge kanoničke funkcije upućuje na to da karatisti koje integrišu osobine ličnosti i motivacione dimenzije teže ka izbegavanju neuspeha u takmičarskim okolnostima radi zaštite sopstvenog samopoštovanja. Autori (Paweł et al., 2019) u svojoj studiji ističu činjenicu da sportisti sa minimalnim stepenom osobine otvorenosti i/ili emocionalne stabilnosti se u većoj meri suočavaju sa izbegavanjem poteškoća, dok su sportisti sa sa izraženijim osobinama, savjesnosti, ekstraverzije i/ili emocionalne stabilnosti naklonjeniji suočavanju sa poteškoćama. Očekuje se da sportisti senzibilniji na stres pri treningu i takmičenju manifestuju upečatljiviju osobinu neuroticizam, minimalnu emocionalnu stabilnost i maksimalan motiv za izbegavanje neuspeha. Hipotetički, sportisti sa upečatljivim konstruktom neuroticizma, orijentisani ka sebi i na svoj stres, naklonjeni su nepovoljnoj emocionalnoj percepciji.

Ekstrahovane signifikantne kanoničke funkcije na našem uzorku upućuju na sliku o korelacijama između osnovnih osobina ličnosti i motivacionih dimenzija karatista u juniorskom uzrastu, kao i na strukturu latentnih mehanizama merenih psiholoških konstrukata. Oba statistički značajna ekstrahovana kanonička para s velikom verovatnoćom ukazuju da su varijable ličnosti karatista u interakciji sa motivacionim dimenzijama, što podrazumeva da su one zajednički usklađivač orijentisanog ponašanja karatista. Na osnovu nalaza u ovoj studiji može se formirati teorijski strukturalni obrazac karakterističnih veza konstrukata osobina ličnosti i motivacionih dimenzija.

Identifikacija ispitivanih osobina ličnosti i motivacionih dimenzija karatista omogućuju treneru efikasan razvoj samoregulativnih sposobnosti i veština, kao i upravljanje prilikom sportske pripreme sportista. Empirijski nalazi u ovom istraživanju rada upućuju da na treningu i posle treninga treba stvarati motivacionu klimu usmerenu na specifičan zadatak i ishod (pobeđivanje protivnika), pri čemu trener pohvaljuje mlade sportiste, što će umanjiti anksioznost, a povećati njihovo samopouzdanje. Istovremeno potrebno je intenzivirati motiv za postizanje uspeha. Tokom višegodišnjeg sistematskog trenažnog procesa, pod uticajem stručnog trenera, moguće je smanjiti nivo osobine neuroticizma, a povećati nivo savjesnosti i ciljne orijentacije na zadatak.

Rezultati istraživanja u kojima su ispitivane relacije osobina ličnosti „*Velikih pet*“, sportske motivacije, i orijentacije na zadatak i ego orijentacije omogućili su značajno polazište za potpunije razumevanje osobina ličnosti i motivacionih dimenzija kod karatista juniora. Dobijeni nalazi mogu se koristiti pri selekciji sportista i upravljanju mehanizmima sveukupnog antropološkog razvoja sportista, npr. podsticanje emocionalno stabilnih percepcija i manifestacija, sportske motivacije i regulacije sopstvenog ponašanja tokom trenažnih procesa i takmičenja.

Ovo korelaciono istraživanje ima izvesna ograničenja. Prvi metodološki nedostatak predstavlja transversalni istraživački nacrt, tj. ispitivanje ispitanika isključivo muškog pola na prigodnom uzorku u jednoj vremenskoj tački, umesto da im se temeljne osobine ličnosti i motivacione dimenzije mere u različitim biološkim uzrasnim periodima. Drugi metodološki nedostatak istraživanja je primena mera samoprocene na upitniku, te isključivo korišćenje petofaktorskog modela ličnosti.

Buduća istraživanja treba da uključe veći i heterogeniji uzorak karatista različitog uzrasta i polova, procene trenera, kao i podatke o sportskoj karijeri, što bi omogućilo celovitiju analizu strukture relacija fundamentalnih osobina ličnosti i motivacionih dimenzija, selekciju sportista i sistematsko upravljanje procesom razvoja vrhunskih

sportista. Osim toga, kod istraživanja latentnog konstrukta ličnosti sportista osim transverznog, treba primenjivati i longitudinalni nacrt istraživanja, sa eksperimentalnom i kontrolnom grupom, koji omogućava uticaj latentnih varijabli i treninga na pozitivne biopsihološke transformacije ličnosti pojedinca u dužem vremenskom periodu. Istovremeno, nužno je konstruisati nove validne merne instrumente koji će, uz interdisciplinarni i multidisciplinarni pristup, npr. strukturalno modeliranje, omogućiti merenje karakterističnih osobina ličnosti sportiste i generalizaciju kauzalno-posledičnih interakcija između merenih varijabli.

## ZAKLJUČAK

Cilj istraživanja bio je ispitivanje relacije između bazičnih osobina ličnosti i motivacionih dimenzija u adolescenciji. Dobijeni podaci u ovoj studiji preseka su potvrdili pouzdanost i validnost primenjenih mernih instrumenata, što ukazuje na njihovu zadovoljavajuću internu konzistenciju i prikladnost za upotrebu i na srpskoj populaciji.

Istraživački nalazi su, uz grešku procene od 5%, identifikovali veliki broj značajnih korelacija, niskog i umerenog intenziteta, između manifestnih varijabli osobina ličnosti i motivacionih dimenzija.

Modelom kanoničke korelacione analize izolovane su dve signifikantne kanoničke funkcije. Prvi par kanoničkih faktora u domenu crta ličnosti, uz 44% protumačene ukupne varijanse, maksimalno određuju konstrukti savesnost, ekstraverzija i otvorenost, dok ga u domenu motivacionih dimenzija najviše determinišu motiv za postizanje dominacije, motiv za postizanje uspeha i ciljna orijentacija na zadatak.

Drugi par kanoničkih faktora u domenu crta ličnosti, na negativnom polu, uz 21% objašnjenog ukupnog varijabiliteta, dominantno sa jedne strane definišu varijable neuroticizam, prijatnost i savesnost, dok u domenu motivacionih dimenzija njegovu strukturu dominantno determinišu motiv za izbegavanje neuspeha i ciljna orijentacija na ishod. Rezultati sprovedene multivarijantne analize su empirijski potvrdili inicijalnu pretpostavku u ovom istraživanju, a to je da se kod karatista adolescenata očekuje povezanost između većine manifestnih varijabli osobina ličnosti i motivacionih dimenzija, kao i ekstrakcija značajnih kanoničkih faktora.

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Original scientific paper

## THE STRUCTURE OF RELATIONS BETWEEN FIVE-FACTOR MODEL AND DIMENSIONS OF MOTIVATION AMONG JUNIOR KARATEKAS<sup>1</sup>

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**Abstract:** The aim of this study was to examine the latent structural relations between the main personality traits and dimensions of motivation among junior karatekas. Empirical research was conducted on a pertinent sample (N = 148) of karatekas from Valjevo, aged 15.18 on average (SD = 1.9). Three measuring instruments were used: the Big Five Inventory - BFI, the Sport Attitudes Inventory - SAI, and the Task and Ego Orientation in Sport Questionnaire – TEOSQ. The results of the Pearson's correlation coefficient have shown the significance level of  $p \leq .05$ , and a significant number of bivariate linear correlations (of low or moderate intensity) between the manifested variables. Using the canonical correlation analysis, two significant canonical functions were extracted. The first unipolar pair of canonical factors in the personality traits section, with 44% of the explained variance, was maximally defined by Conscientiousness and Extraversion, and was defined to a lesser degree by the Openness/Intellect variable, as well as dimensions of motivation (motives to achieve power, motives to achieve success and orientation aimed towards the task). The second isolated bipolar pair of canonical factors in the personality traits domain, with 21% of the explained variance, was determined by the Neuroticism variable, and to a lesser degree by Agreeableness and Conscientiousness, as well as the motive to avoid failure and orientation aimed towards the goal. The obtained results have shown that the measuring instruments used in this research have satisfactory construct and convergent validities, as well as satisfactory reliability of internal consistency, and can therefore be used in personality assessment of Serbian adolescents. The results of this transversal research offer relevant empirical contribution and important implications to everyday sports practice and better understanding of the complex constructs mentioned in this research. In addition, this research contributes to sports psychology, which enables higher level of understanding of the functioning of an athlete's personality during adolescence.

**Keywords:** *personality traits, sports motivation, sport orientation, junior karatekas, canonical factors*

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### INTRODUCTION

According to the relevant literature on psychology, the main personality traits and dimensions of motivation have been a relevant topic of theoretical debates in sports psychology, as well as in empirical research studies because their structure determines the degree to which certain athletes manifest their biological, cognitive, conative, social, cultural, and health potential while performing motor and technical-tactical tasks (Blank et al., 2018; Wang et al., 2017). It is therefore necessary to identify the constructs of the personality type and motivation of an athlete (Meixner et al., 2021).

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Personality is a system of relatively consistent and stable psychological dimensions and mechanisms within an individual, which influence interactions and psychological adjustment to intra-psychical, physical and social environment (Eysenck et al., 2021). The aforementioned authors believe that the personality traits are continuous and bipolar dimensions based on which people can be compared and that latent constructs of personality can have differential implications to motivational variables, which enables the prediction of a relatively consistent behaviour of an individual. In the research studies conducted so far, personality has been most often explored using the Big Five model which is based on the assumption that its basic structure can be described using five traits: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Intellect or Openness, which is shown in the research (Rosales et al., 2021). The aforementioned traits with their mechanisms make theoretically logical correlations to sports achievements, psychological wellbeing and the aspects of psychopathology (Poškus & Žukauskienė, 2017). In their study, Larsen and Buss (2014) point out that the five-factor theory can give a satisfactory answer to the question: Which athlete will make progress in sports hierarchy and achieve relevant social status? The advantage of the five-factor model is that it enables simple, but parsimonious taxonomy of personality traits, the maximum segment of variance and that it brings order to the set of structural dimensions. In addition, the authors (Reyes-Hernández et al., 2021) consider that personality traits are organized, and that therefore interactions between their dimensions are the key for an athlete and their career.

Motivation is a mental process in which an individual is internally prompted by certain needs, urges and strivings, and is oriented towards the realization of a given goal which works as an external motive for their behaviour (Horga, 2009). If there is no motivation, despite the gained knowledge and skills, it is difficult to achieve a goal (Ivanović et al., 2015). According to a research study conducted by Mladenović (2011), motivation includes all mechanisms that exist in the essence of human behaviour, and which move and guide their behaviour. That is why, apart from theories of personality, one has to know the theories of motivation (Larsen & Buss, 2014). Motivation in sport has been the subject of research for many years, and there is a significant number of studies that aim to answer the question about what orients sports activity in a certain direction and regulates its intensity and duration (Šimunić & Barić, 2011). However, even though motivation as a psychological process of activity has a great influence on an individual, its modern concept is insufficiently explained in the area of sports, the authors claim (Van den Akker et al., 2021). Therefore, to better understand the personality traits of an athlete, it is necessary to identify the emotional constructs as well (Mladenović & Trunić, 2015).

The central variable for an athlete is how they perceive competition, and then set their goals (for example, task-orientation and outcome-orientation) which maximally suit their Intellectual vision of success. An athlete who is primarily task- an ego-oriented assesses their success through the invested effort, and the development and improvement of their sports skills. A competitor who is mostly outcome- or result-oriented believes that they are more efficient if they are better than their opponents or teammates. If they do not succeed in defeating their opponents, they give up the task or quit the sport (Ring & Kavussanu, 2018). Another research study (Beni et al., 2017) has shown that personality dimensions and motivation correlate, meaning that individuals with low Extraversion are prone to avoidance and defence mechanisms. The authors also believe that the personality trait Agreeableness is a significant medium for social motives (affiliation motive and power motive). They also believe that the individuals who have a high level of the Conscientiousness dimension tend to be highly motivated to achieve success in sport. On the other hand, the results of a study by Ahluwalia & Preet (2018) indicates that an athlete with a low level of Conscientiousness, and big motive for achieving success, is prone to self-pity. In addition, the same authors point out that a high correlation between the personality trait Neuroticism and the affiliation motive generates unhappiness, while adolescents with a low level of Neuroticism manifest happiness. Also, there have been determined the positive relations between achievement motivation, Extraversion and Neuroticism, whereby Extraversion, Openness towards new experiences and Conscientiousness positively correlate with the task-orientation, while Neuroticism interacts negatively with mastering skills. At the same time, they also revealed that personality traits (Openness towards new experiences and Agreeableness) correlate negatively with competitiveness. In addition, the study (Clancy et al., 2016) pointed out that the main personality traits Conscientiousness, Openness towards new experiences and Extraversion are in positive correlation with intrinsic achievement motivation, while Extraversion, Conscientiousness and Neuroticism positively correlate to extrinsic achievement motivation. Another research (Martínez-Alvarado et al., 2016) determined that there is positive interaction between the personality trait Conscientiousness and motivation which refers to “burnout” in sport, while Neuroticism is in negative correlation to motivation.

It is clear that the results of the aforementioned studies are not consistent. The studies conducted so far indicate that there is a lack of research concerning the canonical design between personality traits and dimensions of motivation among athletes, especially among junior karatekas.

A partial review of the literature shown in this research indicates that this is a complex problem that should be thoroughly examined. Keeping also in mind the fact that the design of the studies conducted so far has not been applied enough to the Serbian karateka population, the aim of this transversal study is to test the canonical structure and the intensity of correlation between the Big Five personality traits, sports motivation and focus on sport among karatekas during adolescence. The starting point of this research was the hypothesis that such correlation exists and that it can be used to predict the variance and the potential relations between the constructs in question. Based on the aforementioned empirical research and the aim of this research, it seems reasonable to look into the linear correlation between personality traits and dimensions of motivation, which can have implications on further research, as well as practical implications for domestic use.

## METHOD

### Participants

The transverse cross-section method was used in this study that included 148 participants. The average age of participants was 15.18 ( $SD = 1.9$ ). The sample was pertinent and it included karatekas from three clubs from the Kolubara district: KC "Shodan" (Valjevo), KC "014 Valjevo" (Valjevo), and KC "Kizame" (Valjevo). All participants had minimum two years of training, at least three times a week. The research was conducted during September 2021.

Just before anonymous and voluntary testing, the instructions were read and explained to the participants, and it was emphasized that the data would solely be used for scientific purposes. In addition, participants had the option to quit the process at any time with no consequences.

### Instruments

The research was conducted using the questionnaire for assessing the Big Five fundamental personality traits and two questionnaires for assessing the dimensions of motivation (Sport Attitudes Inventory and Task and ego orientation in sport questionnaire). With all the measuring instruments, the participants used a five-point Likert scale to assess to which degree the given items relate to them (from 1 – "I strongly disagree" to 5 – "I strongly agree"). The testing process took approximately 20 minutes.

#### **Big Five Inventory** (*BFI*; Benet-Martinez & John, 1998)

The BFI includes 44 items (for example "I see myself as a talkative person.") or (self)evaluation of the big five dimensions of personality: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness/Intellect. The evaluation is conducted using a five-point Likert scale to manifest the level of agreement/disagreement from "I strongly disagree" (1) to "I strongly agree" (5) by circling the level of agreement with a certain item. The total score for the dimensions of the BFI is calculated by adding evaluations for each claim for each dimension of personality. A significant advantage of the Big Five Inventory can be found in its short, simple and comprehensive items, which is important for time-limited questioning processes. In addition, this instrument has a great advantage when used on the adolescent population.

In this research, the five-factor model of personality has shown good metric characteristics. Cronbach's alpha coefficient (internal consistency type) for Extraversion is ( $\alpha = 0.82$ ), Agreeableness ( $\alpha = 0.80$ ), Conscientiousness ( $\alpha = 0.79$ ), Neuroticism ( $\alpha = 0.75$ ), and for Openness ( $\alpha = 0.86$ ), while the value of reliability coefficient for the entire scale is ( $\alpha = 0.85$ ).

#### **Sport Attitudes Inventory** (*Sport Attitudes Inventory - SAI*; Willis, 1982)

The SAI includes 40 items, and it measures three basic motives: MAS – motive to achieve success (consists of 17 claims), MAF – motive to avoid failure (11 claims), and MAP – motive to achieve power (12 claims). The MAS (for example "I enjoy most doing things at which I am successful") represents the discrepancy between the sum of the set level of aspiration and the sum of the level of task performance. This motive is measured by giving the participants psychomotor tasks where they are given 30 seconds to put as many matches as they can in a specially made wooden board with holes in it. Participants were first asked how many matches they believe they can manage to put in the holes in that amount of time. They were asked to assess the level of their success. This exact procedure is repeated four times, and

the results are noted. The MAF includes the items which represent the motive to avoid failure, and the fear of failure (for example “I easily give up when I find the task difficult”).

All three scales used on our sample have shown satisfactory reliability of this instrument. The reliability coefficient ranged from 0.80 to 0.88.

#### **Task and ego orientation in sport questionnaire (TEOSQ; Duda, 1989)**

TESOSQ includes 13 items with two independent and orthogonal subscales – task and ego. The task scale (task-oriented scale) assesses personal orientation aimed at task and at perfecting sports skills, and it contains seven claims, for example “I feel most successful in sports when I’m learning new skills and that makes me train more”. The ego scale is goal-oriented and it assesses personal orientation towards superior performance and result, and it contains six claims, for example “I feel most successful in sports when I’m the best”. The participants give answers by circling the numbers on a five-point Likert scale, where 1 means “I strongly disagree” and 5 means “I strongly agree”.

These sports-specific task-oriented and goal-oriented measurements have satisfactory internal consistency (0.79 for the task, and 0.90 for the ego scale).

#### **Statistical analysis**

Cronbach's alpha coefficient was used to examine the internal consistency of the measuring instruments used in this study. The linear correlation of the parameters was assessed using Pearson's correlation, while the canonical correlation analysis was used to examine the correlation between two sets of variables. The result that was perceived as statistically significant was  $p \leq .05$ .

## **RESULTS**

### **Correlation between personality traits and dimensions of motivation**

With the aim of testing the linear correlations between the manifest variables (fundamental personality traits and various dimensions of motivation), 45 Pearson's linear coefficients of correlation were calculated and are shown in Table 1.

**Table 1.** *Correlations between examined variables*

<b>Variables</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>
1. Extraversion									
2. Agreeableness	.05								
3. Conscientiousness	.43**	.42**							
4. Neuroticism	-.20*	.53**	-.39**						
5. Openness	.28**	.12	-.50**	-.03					
6. Motive to achieve success	.29**	.07	.28**	-.02	.33**				
7. Motive to avoid failure	.02	-.20*	-.09	.41**	.06	.22**			
8. Motive to achieve power	.51**	.03	.43**	-.13*	.24**	.51**	.08		
9. Goal orientation	.10	-.04	.11	.07	.26**	.30**	.10	.03	
10. Task orientation	.20*	.10	.44**	-.14*	.06	.50**	.18*	.13	.15*

\*\*  $p \leq .01$  ; \*  $p \leq .05$

With the insight into the matrix of the cells, one can spot a great number of statistically significant inter-correlations between the measuring variables (of low and moderate intensity) ranging from .02 to .53. For example, on the one hand the *motive to achieve success* and the *motive to achieve power* correlate positively to personality traits Extraversion ( $r = .51$ ), Conscientiousness ( $r = .43$ ) and Openness ( $r = .24$ ), on the other hand the *motive to avoid failure* is in positive interaction with the personality trait Neuroticism ( $r = .41$ ) and has a negative linear correlation to Agreeableness ( $r = -.20$ ). In addition *goal orientation* is in positive inter-correlation with the personality trait Openness ( $r = .26$ ), and *task orientation* is in positive inter-correlation with Conscientiousness ( $r = .44$ ) and Extraversion ( $r = .20$ ).

Within the domain of personality traits, Extraversion is in positive bivariate low-intensity correlation with personality traits Conscientiousness ( $r = .42$ ) and Openness ( $r = .28$ ), while it is in very low-intensity negative correlation with Neuroticism ( $r = -.20$ ). Personality trait Neuroticism also statistically negatively correlates to Agreeableness ( $r = -.53$ ) and Conscientiousness ( $r = -.39$ ). On the other hand, personality trait Conscientiousness correlates positively with Agreeableness ( $r = .39$ ) and Openness ( $r = .50$ ).

Significant correlations are found within the domain of dimensions of motivation as well. The *motive to achieve success* and *task orientation* have a moderate-intensity linear connection (.50), are in positive inter-correlation with all the dimensions of motivations used, and the correlation between the two motives in question is high. For example: the *motive to achieve success* is positively and moderately in bivariate correlation to the motive for achieving power ( $r = .51$ ), goal orientation ( $r = .30$ ) and the motive to avoid failure ( $r = .22$ ), while task orientation is in statistically positive and statistically significant interaction with the motive for achieving power ( $r = .43$ ), goal orientation ( $r = .22$ ) and the motive to avoid failure ( $r = .20$ ).

### Canonical correlation analysis

The relations between the two sets of manifest variables (personality traits and dimensions of motivation) are defined using the model of canonical correlation analysis (Table 2). Two statistically significant canonical functions were extracted, and are tested using Bartlett's chi-square test, with the error of conclusion of 5%.

**Table 2.** Significance of characteristic squares and percentage of explained variance of extracted canonical items

Function	$R_c$	$R_c^2$	$\chi^2$	$p$
1.	.61	.44	111.26	.05
2.	.42	.21	39.35	.05

**Legend:**  $R_c$  = canonical correlation coefficient;  $R_c^2$  = coefficient of determination;  $\chi^2$  = chi-square test;  $p$  = significance proportion

The standard coefficient of canonical correlation or the connection within the first orthogonal pair of canonical factors is the greatest ( $r = .61$ ), which indicates that there is a moderate level of interaction between the linear combinations of the two analysed sets of variables. The coefficient of determination or the square coefficient of the structure indicates that there is a maximal proportion of the total variability (44%) that manifest variables share with the first pair of canonical functions. The second isolated independent standard canonical factor, with the lower value of coefficient of canonical correlation ( $r = .39$ ) and 21% of the total variance explained which share the examined variables, indicates that the linear correlation of this dimension between the two sets of variables is of low intensity.

With the aim of having better insight into the research matter, further data analysis has shown the coefficients of structure and functions (standardized canonical coefficient) with their most representative variables within the system of personality traits and dimensions of motivation. This shows the interactions between each variable and canonical function within their set (Table 3).

**Table 3.** *Structure of canonical factors*

Constructs	Variables	CF <sub>1</sub>	CF <sub>2</sub>
Personality traits	Extraversion	.74	.20
	Agreeableness	.09	-.49
	Conscientiousness	.79	-.44
	Neuroticism	-.38	.80
	Openness	.48	.22
Dimensions of motivation	Motive to achieve success	.75	.15
	Motive to avoid failure	.17	.70
	Motive to achieve power	.79	.07
	Goal orientation	.05	.27
	Task orientation	.47	-.24

The structure of the first isolated unipolar canonical pair of factors within the domain of personality traits, linked with the moderate correlation, is maximally canonically loaded by manifest variables Conscientiousness (.79), Extraversion (.74) and Openness (.48), while within the domain of dimensions of motivation the greatest contribution in defining the first canonical function have the motive to achieve power (.79), the motive to achieve success (.75) and task orientation (.47). In short, this canonical function reveals the maximum positive correlation between personality traits and dimensions of motivation.

The structure of the second isolated unipolar pair of canonical factors within the domain of personality traits, linked with the low correlation, is on the one hand predominantly determined by positive indicators of the manifest variable Neuroticism (.80), and on the other hand on the negative side, and with lower intensity, determined by Agreeableness (-.49) and Conscientiousness (-.44), while the domain of dimensions of motivation is significantly characterized by the motive to avoid failure variable (.70) and, in very low intensity, by goal orientation (.27).

## DISCUSSION

The aim of this research was to identify the structures and the intensities of the correlation between the Big Five personality traits, sports motivation, and orientation towards sports among adolescent karatekas. The canonical analysis has extracted two pairs of canonical factors for the personality of karatekas. From the theoretical point of view, the first integral pair of canonical factors contains two different systems of variables, main personality traits Conscientiousness, Extraversion and Openness, as well as the motive to achieve power and motive to achieve success, and task orientation. The obtained positive correlation between personality traits and the dimensions of motivation is identical to the findings (Rogowska, 2020), where a positive correlation was established between Extraversion, Openness and Conscientiousness, and task orientation. This canonical correlation contains positive traits and points to the specific combination of personality traits which is characterized by reliability, openness and the increase of positive performance, as well as the efficient mutual effect of certain factors (environmental and personal) during training and competitions. At the same time, these karatekas will exhibit a tendency to get into challenging situations. On the other hand, unreliable and undisciplined athletes can manifest lower motivation of orientation towards task, which will have a negative effect on the correlation between their personality traits.

The research results (Kim et al., 2018) have shown that personality trait Openness correlates more to creativity and divergent thinking, while Extraversion interacts more with positive affectivity and sensibility. In their empirical study, Le Thi My & Tran Minh (2021), stated that athletes who possess the manifest dimension Openness are more flexible in their behaviour, more imaginative and willing to engage in new training processes and competitions, and therefore are more prone to personal growth. In their study Abhar et al. (2021) pointed out that the factor of motivation task orientation and ego orientation correlate to supporting social values in sport, which motivates the development of self-control and acceptance of cooperation. In addition, these authors believe that study orientation of an athlete affects

their focus on mastering skills, on motor tasks and on minimal negative feelings. A research by Litwiniuk et al. (2019) has shown that high task orientation includes the optimal model of motivation in sports. During the process of training, the efficiency of task completion can be predicted with the help of the personality trait Conscientiousness and the dimensions of motivation. Athletes with a more intense level of Conscientiousness and the motive to achieve success will most likely have more developed motor skills compared to the athletes who possess a lower level of Conscientiousness and the motive to achieve success. Another research results (Rogowska, 2020) have shown the correlation between personality traits and motivational systems. According to a research by Navas et al. (2021), the first pair of canonical factors is linked to the system that activates behaviour that regulates motivation for engaging. The research results of Kang et al. (2016) indicate that there is a positive correlation between the variables Extraversion and temperament, as well as between temperament and positive emotionality. In conclusion, the first canonical function consists of personality dimensions and latent motivational variables, which represent relevant predictors of sports results.

The extracted second integral pair of canonical factors of our sample theoretically includes two separate sets of variables: on the negative side, there is Neuroticism, Agreeableness and Conscientiousness, and on the positive one the motive to avoid failure and goal orientation. It is presumed that this canonical correlation which includes negative personality traits inhibits the socialization of karatekas during training and competing.

Emotional instability and high anxiety level incite an athlete's ego and increase pressure to perform, as is stated in a study by Stambulova (2020). It is likely that personality traits Neuroticism, inhibited Conscientiousness and Agreeableness reduce the manifestation of skills during training or inhibit task and goal orientation. In addition, athletes who have distinct negative emotionality perceive a higher degree of negative feelings, and thus social environment can irritate them. At the same time, a high degree of impressionability and motive to avoid failure during adolescence is manifested in the uneven performance and the failure to deal with the stress of competing.

The findings of the second canonical function indicate that karatekas who integrate personality traits and dimensions of motivation tend to avoid failure during competition in order to protect their self-esteem. In their study, the authors Paweł et al. (2019) have pointed out that the athletes who have the minimal level of Openness and/or emotional stability tend to avoid difficulties, while the athletes who have increased level of Extraversion and/or emotional stability tend to face difficulties. It is expected that athletes who are more sensitive to stress during training and competitions more clearly manifest Neuroticism, minimal emotional stability and maximal motive to avoid failure. Hypothetically, athletes with the expressed construct of Neuroticism are more self-oriented and their stress and are prone to unfavourable emotional perception.

The extracted significant canonical functions of our sample reveal the correlation between main personality traits and dimensions of motivation of junior karatekas, as well as the structure of the latent mechanisms of the measuring psychological constructs. Both statistically significant extracted canonical pairs show that there is a high probability that the personality variables of karatekas interact with dimensions of motivation, which means that together they coordinate karatekas' behaviour. Based on the findings of this research, one can form a theoretical structural model of characteristic correlations between the constructs of personality traits and dimensions of motivation.

Identifying the examined personality traits and dimensions of motivation can help trainers to more efficiently develop karatekas' self-regulating skills, as well as manage their process of training. Empirical findings of this research indicate that the period of training and the time after should create a motivational atmosphere directed towards a specific task and goal (beating the opponent), where the trainer praises young athletes, which will decrease anxiety and increase their self-esteem. At the same time, it is necessary to intensify the motive to achieve success. During multi-annual systematic training, guided by an expert trainer, it is possible for an athlete to decrease Neuroticism and increase the level of Conscientiousness and task orientation.

The results of the research that examine the relations between the Big Five personality traits and the motive to achieve success created a starting point for a better understanding of personality traits and dimensions of motivation of junior karatekas. The obtained results can be used for the selection of athletes and for managing the mechanisms for the entire anthropological development of an athlete, such as encouraging emotionally stable perceptions and manifestations, sports motivation and self-regulation of behaviour during training and competition.

This correlational research has certain limitations. The first methodological limitation is the transversal research outline, meaning that the research has been conducted using the sample of only male participants and at one point in time, instead of assessing their personality traits and dimensions of motivation at various stages of growth. The second methodological limitation of this research is using the self-assessment questionnaires, which means using only the five-factor model of personality.

Future research should include a larger and more heterogeneous sample of karatekas of various age and both genders, trainer's evaluation, as well as the data on sports career, which would enable a more detailed analysis of the



structure of the relations between personality traits and dimensions of motivation, the selection of athletes and systematic management of the top athletes' development process. In addition, when examining the latent constructs of athletes' personality, besides transversal, one should apply longitudinal mode of research, using experimental and control group, which would enable the influence of latent variables and training on the positive biopsychological personality transformations of an individual during various stages of growth. It is also necessary to construct new valid measuring instruments which will, with interdisciplinary and multidisciplinary approach, such as structural modelling, enable the measuring of characteristic personality traits of an athlete and the generalization of the cause-effect type of interactions between the measuring variables.

## CONCLUSION

The aim of this research was to examine the relations between the main personality traits and the dimensions of motivation in the period of adolescence. The results obtained in this cross-sectional study confirmed the reliability and validity of the applied measuring instruments, which means that they have satisfactory internal consistency and are suitable to be used on the Serbian population.

The research findings, with the error of estimate being 5%, identified a great number of significant correlations of low and moderate intensity between the manifest variables of personality traits and the dimensions of motivation. Using the model of canonical correlation analysis, two significant canonical functions have been isolated. The first pair of canonical factors within the domain of personality traits, with 44% of the explained variance, is maximally determined by the constructs Conscientiousness, Extraversion and Openness, while within the domain of dimensions of motivation is determined mostly by the motive to achieve power, the motive to achieve success and task orientation.

The second pair of canonical factors within the domain of personality traits, on the negative side, and accounting for 21% of the explained variability, is dominantly defined by Neuroticism, Agreeableness and Conscientiousness, while the structure within the domain of dimensions of motivation is dominantly defined by the motive to avoid failure and goal orientation. The results of the conducted multivariate analysis have empirically confirmed the initial hypothesis of this research, which is that it is expected that the correlation between most manifest variables of personality traits and dimensions of motivation can be found in adolescent karatekas, as can the extraction of significant canonical factors.

The results of this transversal research suggest that there is a relevant empirical contribution and important implications for everyday training practices and a better understanding of the explored complex constructs. In addition, the conducted research gives a relevant contribution in the domain of sports psychology, which enables a higher level of understanding of the functioning of adolescent athlete's personality.

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