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Kancelarija/Office

Panevropski univerzitet "Apeiron"
Pere Krece 13, 78 000 Banja Luka,
Bosna i Hercegovina
tel. +387 (0) 51 247 975,
fax +387 (0) 51 430 921
siz@siz-au.com
www.siz-au.com

Pan-European University "Apeiron"
Pere Krece 13, 78 000 Banja Luka,
Bosna i Herzegovina
tel. +387 (0) 51 247 975,
fax +387 (0) 51 430 921
siz@siz-au.com
www.siz-au.com

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Contents

Poštovani čitaoci,

sa velikim entuzijazmom ušli smo u treću godinu časopisa ''Sportske nauke i zdravlje''. Po prvi put, u petom broju časopisa, radovi su objavljeni i na engleskom jeziku.

Naši autori, kao što je to uobičajeno u kineziologiji i njenim komplementarnim disciplinama, pokušavaju dati informacije koje se odnose na interpretaciju antropološkog statusa sportiste i njegovih promjena pod uticajem različitih programa vježbanja.

U ovom broju autori se bave ekstraverzijom kod trenera, kondicionalnim potencijalom vazduhoplovnih vojnih snaga, tumačenjem konstrukta emocionalne regulacije, zdravljem sportista kao psihološkim problemom, razvijanjem snage u kajak kanuu, ulogom i značajem dizača u odbojkaškoj igri i faktorima uticaja na modelovanje procesa promjena u sportu.

Nadamo se da će ovo izdanje časopisa sa autorima iz Bugarske, Crne Gore, Hrvatske, Srbije i Bosne i Hercegovine, biti podstrek svim kolegama da nam i dalje šalju svoje zanimljive radove. Zahvaljujemo svim autorima na zanimljivim radovima sa veoma popularnim temama, ali i na svim sugestijama i prilozima, koji su nam pomogli da budemo još bolji.

''Svakim se danom nešto novo nauči'' (Euripid, starogrčki dramatičar, 480-405. p.n.e)

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Struktura i razlike u ekstraverziji kod hrvatskih sportskih trenera

Joško Sindik
dr. sc., Institut za antropologiju, Zagreb, Hrvatska

Korespondencija:
Joško Sindik
Institut za antropologiju
Gajeva 32, Zagreb, Hrvatska, Telefon: 01 5535-122
e-mail: josko.sindik@inantro.hr

Abstrakt: Cilj istraživanja bio je pronaći latentnu strukturu ekstraverzije i razlike između trenera različitih sportova u facetama ekstraverzije, za skup nezavisnih varijabli, sociodemografskih te vezanih uz bivšu sportsku karijeru i trenerski posao. Ispitana su ukupno 88 trenera različitih sportova u Hrvatskoj, tijekom seminara za trenere Hrvatske olimpijske akademije. Za mjerenje ekstraverzije koristila se skraćena verzija EPQ upitnika. Na temelju odabranih čestica EPQ upitnika moglo se dobiti dvije interpretabilne i pouzdane facete ekstraverzije, ali ne i introverzije. Samo je jedna statistički značajna razlika pronađena u odnosu na dimenziju socijabilnosti, gdje se pokazalo da trenerice imaju izraženiju socijabilnost od muškaraca. U odnosu na dimenziju impulzivnosti, pokazalo se da su impulzivniji treneri koji su u vlastitoj sportskoj karijeri bili osvajači medalja na državnom prvenstvu, kao i oni koji su završili sportsku karijeru odlukom kluba ili svojevoljno. Bivši članovi seniorske reprezentacije impulzivniji su u odnosu na one koji to nisu bili, dok su treneri impulzivniji u odnosu na trenerice.

Ključne riječi: ekstraverzija, facete, impulzivnost, socijabilnost

Structure and differences in extroversion in Croatian sport coaches

Joško Sindik
Ph.D., Institute for Anthropology Research, Zagreb, Croatia

Correspondence:
Joško Sindik
Institute for Anthropological Research
Gajeva 32, Zagreb, Croatia, Phone: +385 1 55 35 122
E-mail: josko.sindik@inantro.hr

Abstract: The aim of the study was to find the latent structure of extraversion and differences between coaches of different sports in the facets of extraversion, according to the set of independent variables, sociodemographic and related to former athletic career and coaching. A total of 88 coaches of various sports in Croatia were examined, during a seminar for coaches-Croatian Olympic Academy. For the measurement of extraversion a shortened version EPQ questionnaire was used. Based on the selected items of the EPQ questionnaire, two interpretable and reliable facets of extraversion were found, but not for the introversion. Only one statistically significant difference was found in the dimension of sociability, where it was shown that the female coaches are more sociable than men. In the dimension of impulsivity, it was shown that more impulsive are the coaches who won medals at the national championships during their own sport career, as well as those who have terminated a carrier by decision of their sport club and those who terminated their career voluntarily. Former members of the national team are more impulsive than those who were not, while the male coaches are more impulsive than the female coaches.
Keywords: extroversion, facets, impulsivity, sociability

Uvod

Trener je vjerojatno najbitniji stručnjak u području sporta, i s aspekta postizanja sportskih postignuća, i s aspekta razvoja karijere sportaša koje vodi/trenira i s aspekta značenja koje ima za sportaša. On je bitan čimbenik kvalitete rada u sportu (Milanović i sur., 2006). Trener posjeduje opsežna stručno-pedagoška i specifična trenerska metodološka znanja, razumije i znanstveni i stručni rad te usmjerava pripremu i trening sportaša u svrhu postizanja najviših sportskih dometa (Milanović i sur., 2006). Trenerova ličnost i način kako on vidi svoju ulogu trenera, doprinosi razvoju njegova trenerskog stila,

Introduction

Coach is probably the most important expert in the field of sports and in terms of achieving sporting achievements, both in terms of career development of athletes who leads / trains and in terms of the importance that he/she has for the athletes. It is an important quality factor of working in the sport (Milanovic et al., 2006). Trainer has extensive professional and educational coaching and specific methodological knowledge, understanding and scientific and technical work, directing the preparation and training of athletes in order to achieve the highest range of sports (Milanovic et al., 2006). Coach's personality and

u kojem on kao pojedinac može najbolje koristiti svoje osobne prednosti (Gilbert i Jackson, 2004). Ličnost je dobar prediktor ponašanja, u odnosu na opće mentalne sposobnosti, znanja, vještine ili specifične situacije, jer su ponašanja pojedinca ishod obilježja njegove ličnosti i situacijskih čimbenika, koji se mijenjaju vremenom. Nije nužno da samo bivši vrhunski sportaši mogu postati uspješni treneri, ali trebaju imati određena iskustva i znanja o natjecanju (Webber i Collins, 2005). Iskustvo je bitno za mogućnost uživljavanja u osjećaje sportaša i za mogućnost tolerancije različitih stanja sportaša, posebno onih koji nastaju u momčadskim situacijama na sportskom natjecanju (Webber i Collins, 2005). Trenerova ličnost i njegova trenerska uloga kako ju on vidi, dovodi do razvoja njemu primjerenog trenerskog stila koji iskorištava njegove osobne prednosti (Gilbert i Jackson, 2004), a minimalizira utjecaj njegovih mana. Treneri posjeduju različita znanja o trenerskim metodama i u interakciji vlastite ličnosti i tih saznanja stječu vlastito mišljenje o tome koje su metode uspješne a koje nisu. Treniranje vide kao njihov način da ohrabre sportaša da više vjeruje u sebe, da potaknu razvoj njegove ličnosti.

Ekstraverzija je važnu osobina ličnosti koja ima značajnu ulogu i u svakodnevnom životu i u radnom ponašanju (Trbuščić, 2010), pa većina modela ličnosti prepoznaje ekstraverziju kao primarni faktor ličnosti (Weiner, 2003). Pojam ekstraverzije uveo je Jung (1921), koji ju je u svojoj teoriji ličnosti koristio za opisivanje razlika u orijentaciji prema svijetu: ekstravertirani ljudi usmjereni su prema vanjskom svijetu, dok su introverti „suprotni pol“ istog obilježja koji su usmjereni prema unutarnjem (osobnom) svijetu. Jednim od glavnih svojstava ekstraverzije najčešće se navodi društvenost (Leary i Hoyle, 2009). Međutim, ekstraverti su često opisani kao asertivni, aktivni i razgovorljivi, dobro se snalaze u velikim skupinama ljudi, dobro su raspoloženi, optimistični i puni energije (Costa i McCrae, 2005). Ekstraverzija se povezuje i s pozitivni osjećajima i motivacijom, pa postoji pretpostavka da su ekstraverti osjetljiviji na nagrade nego na kazne, zbog aktivacije dopaminskog sustava koji dovodi do pozitivnih osjećaja (Depue i Collins, 1999). Eysenck (1967) smatra da je biološka osnova ekstraverzije snižena razina kortikalne pobuđenosti: osobina višeg reda koja je izvedena iz skupa povezanih osobina nižeg reda, odnosno faceta (Larsen i Buss, 2008): društvena dominantnost, pozitivne emocije, društvenost i motorička aktivnost zajedno čine opći obrazac ekstraverzije. Ekstraverzija sastoji od šest faceta (Costa i McCrae, 2005). *Toplina* opisuje srdačnost i dobrohotnost, ljubav prema ljudima i lako stvaranje veza, te je najbitnija u pi-

the way how he/she sees his/her role of the coach, contributes to the development of his coaching style, in which he/she, as an individual, can use personal strengths in the best way (Gilbert & Jackson, 2004). Personality is a good predictor of behavior, in relation to general mental ability, knowledge, skills or specific situations, because the behavior of an individual is the outcome of his/her personality and situational factors that change over time.

It is not necessary that only the former top athletes can become successful coaches, but they need to have some experience and knowledge about competition (Webber & Collins, 2005). Experience is essential for the possibility of empathy regarding athlete's feelings, as well as for the possibility for the tolerance of different states of athletes, especially those that arise in team situations at sporting events (Webber & Collins, 2005). Coach's personality and his/her coaching role, as he/she sees it, leads to the development of appropriate coaching style that leverages his personal advantage (Gilbert & Jackson, 2004) and minimizes the impact of his/her flaws. Coaches have different knowledge about coaching methods and through the interaction of their own personality and knowledge, they can acquire their own opinion on the methods which are successful and which are not. They see coaching as a way to encourage their athletes to believe in themselves and to encourage the development of the personality of the athletes.

Extraversion is an important personality trait that plays an important role in a daily life and work behavior (Trbuscic, 2010), so the majority of personality models recognize extraversion as a primary factor of personality (Weiner, 2003). The term extroversion was introduced by Jung (1921), who used this term in his theory of personality to describe differences in orientation toward the world: extraverted people are directed to the outside world, while introverts were the "opposite pole" of the same characteristic that is targeted toward the inner (personal) world. One of the main traits of extraversion is commonly referred as sociability (Leary & Hoyle, 2009). However, extroverts are often described as assertive, active and talkative, good at coping with large groups of people, well disposed, optimistic and full of energy (Costa & McCrae, 2005). Extraversion is associated with positive feelings and motivations, so there is an assumption that extroverts are more sensitive to rewards than punishment, due to activation of the dopamine system, which leads to positive feelings (Depue & Collins, 1999). Eysenck (1967) considers that the biological basis of extraversion is decreased levels of cortical excitation: characteristic of a higher order that is derived from a set of related properties of a lower order, or facets

tanjima međuljudske bliskosti. *Druželjubivost* je posebna sklonost druženju sa što više drugih ljudi. *Asertivnost* se odnosi na dominantnost i uvjerljivost (asertivni ljudi su često i vođe grupa). *Aktivnost* se očituje u brzom radu i energičnim pokretima, s velikom potrebom bavljenja nekom aktivnošću. *Traženje uzbuđenja* opisuje bijeg od monotonije i bukvalno traženje uzbuđenja, pa vole bučnu okolinu i nove izazove. *Pozitivne emocije* su sklonost doživljavanju pozitivnih čuvstava i sklonost optimizmu, vedrini. Ova faceta pokazala se kao najbolji prediktor sreće, a povezana je s pozitivnim afektivnim raspoloženjima (Costa i McCrae, 2005). S obzirom da su različite facete ekstraverzije jače povezane s pozitivnim afektom nego međusobno, pozitivne emocije smatraju se katkad «srži» ekstraverzije (Watson i Clark, 1997). S drugog aspekta gledano, dva sadržajno različita faktora samoprezentacije uključuju dvije primarne ljudske vrijednosti (Paulhus i John, 1998): djelotvornost (vrednovanje statusa i moći) i zajedništvo (vrednovanje bliskih interpersonalnih veza). Pokazalo se da je široka dimenzija ekstraverzije povezana s faktorom djelotvornosti, dok su druge povezane sa zajedništvom (Depue i Collins, 1999). Depue i Collins (1999) su uvidom u postojeće modele utvrdili da većina njih pretpostavlja da ekstraverzija ima dvije glavne karakteristike: međuljudski angažman (sastoji se od afilijacije i djelotvornosti), te impulzivnost koja uključuje traženje uzbuđenja. Afilijacija opisuje uživanje u bliskim odnosima i vrednovanje bliskih interpersonalnih veza, uz toplinu i srdačnost, dok djelotvornost upućuje na socijalnu dominantnost i asertivnost, uživanje u vođenju te posjedovanju osjećaja moći u postizanju ciljeva. Ekstraverzija je jedna od osnovnih dimenzija razlikovanja ljudi (Leary i Hoyle, 2009), pa tako i trenera. Barrick, Mount i Judge (2001) su meta-analizom utvrdili da ekstraverzija može biti dobar prediktor radne uspješnosti, ali samo u nekim zanimanjima, ponajprije u onima u kojima važan dio posla čine interakcije s drugim ljudima (Barrick i Mount, 1991). U poslovima kao što su prodaja i menadžment važno je da je osoba društvena, asertivna, energična i ambiciozna. Ukoliko važan dio posla čini timski rad, vjerojatno je da će više ekstravertirani biti i uspješniji. Također, ekstravertirani sudionici treninga su najčešće i aktivniji, postavljaju više pitanja, a to im omogućuje da i uspješnije uče (Barrick i Mount, 1991). Na temelju svega navedenog može se očekivati da će ekstraverzija biti pozitivno povezana s pozitivnim pokazateljima uspješnosti u trenerskom pozivu, koji zahtijeva mnoge facete ekstraverzije.

Glavni ciljevi istraživanja bili su utvrditi latentne dimenzije ekstraverzije u skraćenoj verziji upitnika ek-

(Larsen & Buss, 2008): social dominance, positive emotions, sociability and motor activity together make general pattern of extraversion. Extraversion consists of six facets (Costa & McCrae, 2005). Heat describes cordiality and benevolence, love of people, easily creating links, and it is the most important regarding issues of interpersonal closeness. Friendliness is a special affection for socializing with as many other people. Assertiveness is related to dominance and credibility (assertive people are often group leaders). The activity is reflected in the rapid work and energetically movements, in great need of dealing with an activity. Sensation seeking describes escape from monotony and literally seeking excitement, preferring noisy environment and new challenges. Positive emotions are the tendency towards experiencing positive emotions and the tendency towards optimism, serenity. This facet has proved to be the best predictor of happiness, and it is associated with positive affective moods (Costa & McCrae, 2005). Given that the various facets of extraversion are associated with more positive affect than mutual, positive emotions are sometimes considered as "core" of the extraversion (Watson & Clark, 1997). From another point of view, two substantially different factors of the self-presentation that include the self are two primary human values (Paulhus & John, 1998): efficiency (evaluation of status and power) and the communion (evaluation of close interpersonal relationships). It turned out to be that the broad dimensions of extraversion are associated with the factor of effectiveness, while other dimensions are associated with communion (Depue & Collins, 1999). Depue & Collins (1999), while examining the existing models, found that most of these models assume that extraversion has two main characteristics: interpersonal engagement (consisted of affiliation and effectiveness), and impulsivity that includes seeking for the excitement. Affiliation describes enjoying in close relations and evaluation of close interpersonal relationships, the warmth and cordiality, while effectiveness refers to social dominance and assertiveness, enjoying the feeling of owning and managing power in achieving goals.

Extraversion is a core dimension of distinguishing people (Leary & Hoyle, 2009), including the coaches. Barrick, Mount & Judge (2001) conducted a meta-analysis, finding that extraversion may be a good predictor of job success, but only in some occupations, particularly in those where an important part of the work consists of interactions with others (Barrick & Mount, 1991). In jobs such as sales and management it is important that the person is gregarious, assertive, energetic and ambitious. If an important part of the job makes a team work, it is likely to be more extraverted and successful. Also, extraverted par-

straverzije i introverzije te utvrditi razlike u tim (eventualnim) dimenzijama u odnosu na varijable: spol, dob, obrazovanje, momčadski ili individualni sport, prethodno osvajanje medalja na državnom prvenstvu, trenerovi raniji nastupi na natjecanjima bez osvojene medalje, želja postati trener nakon sportske karijere, bivše članstvo u državnoj reprezentaciji, trajanje trenerova iskustva sportskog natjecanja, prestanak karijere zbog – manjka ambicije, ozljede, odluke kluba, kritičnih životnih događaja, svojevoljno.

Metoda

Sudionici

Ispitali smo ukupno 88 trenera različitih sportova u Hrvatskoj, tijekom seminara za trenere u organizaciji Hrvatske olimpijske akademije. Prosječna dob trenera bila je 33 godina (raspon 18-55 godina). U prosjeku, treneri su 17 godina bili uključeni u natjecateljski sport (raspon 0-39 godina). Kao trener, u prosjeku, treneri rade sedam godina (raspon 2-50 godina). U odnosu na vrstu sporta, raspored trenera po sportovima je bio: Tae Kwon Do (n=19), jahanje (n=16), plivanje (n=15), rukomet (n=12), gimnastika (n=11), odbojka (n=6), karate (n=2) te po jedan trener stolnog tenisa, veslanja, ronjenja, nogometa, skokova u vodu, jedan gorski i jedan planinski vodič. Drugim riječima, 19 ih je bilo iz momčadskih sportova, dok su preostali bili treneri individualnih sportova. Po spolu, 51 trener je bio muškarac dok je bilo 37 žena. U pogledu bračnog statusa, u uzorku je od 41 trener bio je neoženjen/ neudana, 41 je u braku, a 5 ih je razvedeno. Ostale karakteristike uzorka vidljive su u tablici 3.

Instrumenti

U istraživanju je korišten Eysenck Personality Questionnaire (EPQ, Eysenck i Eysenck, 1975, Lojk, 1979), tj. skale ekstraverzije-introverzije i psihoticizma, iz koje su analizirane samo čestice r.b.: 1, 5, 10, 14, 17, 21, 25, 29, 32, 36, 40, 42, 45, 49, 52, 56, 60, 64, 70, 82, 86. Odabrane tvrdnje sadržavale su 11 tvrdnji koje su se odnosile na ekstraverziju te 10 koje su se odnosile na introverziju. Sudionici su imali zadatak svako pitanje pažljivo pročitati i odgovoriti slažu li se ili ne slažu (DA ili NE) sa sadržajem tvrdnje.

Metode obrade podataka

Izračunati su temeljni deskriptivni pokazatelji: aritmetičke sredine, standardna raspršenja te podaci o normalitetu distribucija. Glavne komponente ove skraćene verzije upitnika utvrđene su metodom analize glavnih komponenti s varimax rotacijom, uz kriterij intepretabilnosti dobivenih komponenti te Guttman-Kaiserov kriterij

ticipants of the training are usually active, ask more questions, which allows them to learn more effectively (Barrick & Mount, 1991). Based on the abovementioned, it can be expected that extraversion will be positively associated with positive indicators of success in coaching, which requires many facets of extraversion.

The main aims of this study were to identify the latent dimensions of extraversion in a shortened version of the questionnaire for measuring extroversion and introversion, and to determine the differences in these (if any) dimensions in relation to the variables: age, gender, education, team or individual sport, previously winning medals at national championship, coach earlier performances in competitions without winning medals, the desire to become a coach after his/her sports career, a former membership of the national team, the length of coach's experience in sport competition, quitting his/her sport career because of - the lack of ambition, injuries, decisions of the club, critical life events, voluntarily.

Method

Participants

We have examined a total of 88 coaches of various sports in Croatia, during a seminar for trainers organized by the Croatian Olympic Academy. The average age of coaches was 33 years (ranged from18-55). On average, the coaches have been involved in competitive sports for 17 years (ranged from 0-39 years). As coaches, on average, the coaches are working seven years (ranged from 2-50 years). The distribution of coaches, according to the type of sport, was: Tae Kwon Do (n = 19), equestrian sport (n = 16), swimming (n = 15), handball (n = 12), gymnastics (n = 11), volleyball (n = 6), karate (n = 2) and one table tennis coach, one coach of rowing, diving, soccer, one sycamore and one mountain guide. In other words, 19 of them were from team sports, while the rest of the coaches were from individual sports. By gender, 51 coaches were male while 37 were female. In terms of marital status, in a whole sample, 41 coaches were not married, 41 were married, while 5 were divorced. Other characteristics of the sample are visible in Table 3.

Instruments

The study used Eysenck Personality Questionnaire (EPQ, Eysenck & Eysenck, 1975, Lojk, 1979), i.e., the scales of extraversion-introversion and psychoticism, from which only the following items number were analyzed: 1, 5, 10, 14, 17, 21, 25, 29, 32, 36, 40, 42, 45, 49, 52, 56, 60, 64, 70, 82, 86. Selected items contained 11 statements that were related to extraversion and 10 pertaining to in-

i Scree Plot. Primjenom opisanog postupka, pokazalo se da prostor introverzije s podacima iz uzorka trenera nije moguće interpretabilno i pouzdano opisati odgovarajućim latentnim dimenzijama pa su daljnje analize provedene isključivo za dvije interpretabilne facete ekstraverzije. Na temelju čestica koje zadovoljavajuće saturiraju glavne komponente, formirani su ukupni rezultati na pojedinim dimenzijama upitnika kao regresijski faktorski bodovi. Potom su primjenom adekvatnog parametrijskog (t-test za nezavisne uzorke) odnosno neparametrijskog

troversion. Participants were asked to read each question carefully and answer whether they agree or disagree (YES or NO), according to the content of the statements.

Methods of data analyses

The basic descriptive indicators were calculated: means, standard deviations and tests of the normality of distributions. The main components of this shortened version of the questionnaire were determined using Principal Component Analysis with Varimax rotation, with the criterions of the interpretability of components obtained, along

Table 1 - Descriptive statistics for all selected items of Eysenck Personality Questionnaire (EPQ) applied to a sample of coaches

Tablica 1. Deskriptivna statistika za sve odabrane čestice Eysenck Personality Questionnaire (EPQ) primijenjenog na uzorku trenera

Tvrdnje/ Items	Minimum	Maximum	Aritm. sred./ *Mean*	Std. Raspr./ *Std. Dev.*	Skewn./ *Skewness*	Kurtosis/ *Kurtosis*
Trebate li često prijatelje, koji imaju razumijevanja i koji vam daju podršku? / *You often need friends who have an understanding and giving you support?*	0	1	0,455	0,501	0,186	-2,012
Da li pričekate i razmislite prije no što se odlučite? / *Do you wait and think before you decide?*	0	1	0,784	0,414	-1,405	-0,027
Da li obično brzo i nepromišljeno nešto učinite ili kažete? / *Do you usually fast and recklessly do anything or say?*	0	1	0,352	0,480	0,629	-1,642
Da li vam naglo postane neugodno kad govorite s privlačnom nepoznatom osobom? / *Do you suddenly become uncomfortable when you speak with an attractive stranger?*	0	1	0,193	0,397	1,581	0,512
Da li često odlučujete bez oklijevanja, u momentu? / *Do you often decide without hesitation, at the moment?*	0	1	0,386	0,490	0,475	-1,816
Da li obično radije čitate nego da odlazite u društvo? / *Do you usually prefer to read than to go to the company?*	0	1	0,261	0,442	1,105	-0,797
Volite li hodati bez cilja? / *Do you like to walk without a goal?*	0	1	0,364	0,484	0,577	-1,707
Imate li prijatelja malo, ali dobrih? / *Do you have a few friends, but good?*	0	1	0,886	0,319	-2,477	4,232
Da li se obično lako opustite i dobro zabavljate u veselom društvu? / *Do you usually get a good time and relax in the company?*	0	1	0,818	0,388	-1,679	0,836
Da li drugi ljudi misle da ste živahni? / *Do other people think you're feisty?*	0	1	0,716	0,454	-0,974	-1,076
Da li u društvu skoro uvijek šutite? / *Do you always shut up in the company?*	0	1	0,182	0,388	1,679	0,836
Da li u slučaju kad želite saznati nešto novo, radije pogledate u knjigu nego da nekog upitate? / *Do you prefer to look in the book rather than to ask someone, in case when you want to learn something new?*	0	1	0,341	0,477	0,683	-1,570
Da li rado obavljate posao koji zahtijeva puno pažljivosti? / *Do you like to perform a job that requires a lot of vigilance?*	0	1	0,648	0,480	-0,629	-1,642
Da li vam je neprijatno među ljudima koji se šale na tuđi račun? / *Do you feel uncomfortable among people who makes jokes about other people?*	0	1	0,330	0,473	0,738	-1,490
Volite li raditi stvari koje zahtijevaju brze odluke? / *Do you like to do things that require quick decisions?*	0	1	0,477	0,502	0,093	-2,038
Da li vam je hod spor? / *Do you walk slowly?*	0	1	0,216	0,414	1,405	-0,027
Razgovarate li tako rado, da ne gubite ni jednu priliku za razgovor, makar s nepoznatom osobom? / *Do you like to talk so much, that you do not lose any opportunity to talk, even with a stranger?*	0	1	0,239	0,429	1,248	-0,454
Da li biste bili vrlo nesretni, ako ne biste duže vremena mogli vidjeti puno ljudi oko sebe? / *Would you be very unfortunate, if you wouldn't longer be able to see a lot of people around you?*	0	1	0,455	0,501	0,186	-2,012
Jeste li uvrijeđeni kada se otkriju pogreške u vašem radu? / *Are you offended when other people discover mistakes in your work?*	0	1	0,091	0,289	2,896	6,533
Da li se na veseloj zabavi uistinu teško zabavljate? / *Do you really hardly enjoy on the joyous party?*	0	1	0,045	0,209	4,440	18,129
Da li s lakoćom raspoložite prilično dosadno društvo? / *Do you easily lighten pretty boring company?*	0	1	0,602	0,492	-0,425	-1,862
Volite li praviti šale na račun drugih? / *Do you like to make jokes at the expense of others?*	0	1	0,420	0,496	0,328	-1,937

(Wilcoxonov W test) postupka određene statističke značajnosti razlika u dimenzijama upitnika i većeg skupa nezavisnih varijabli.

Rezultati

U tablici 1 dane su deskriptivne karakteristike svih čestica Eysenckova upitnika ličnosti (EPQ). Već orijentacionim uvidom očigledno je da veće prosječne vrijednosti rezultata treneri postižu u česticama koje opisuju veću ekstraverziju.

Kaiser-Meyer-Olkinova mjera adekvatnosti uzorka (0,706), kao i Bartlettov test sfericiteta (χ^2= 207,049; df=36; p<0,01) pokazuju da je matrica korelacija čestica Eysenckova upitnika ličnosti (EPQ) primijenjenog na uzorku trenera pogodna za faktorizaciju. Iz tablice 2 vidljivo je da su za česticu Da li često odlučujete bez oklijevanja, u momentu najveći i komunalitet i korelacija s drugom glavnom komponentom (nazvana je Impulzivnost). Za česticu Da li drugi ljudi misle da ste živahni najveći su i komunalitet i korelacija s prvom glavnom komponentom (nazvana je Socijabilnost). Postotak objašnjene varijance ovog upitnika ukupno iznosi oko 52 %. Pouzdanost obje dvije latentne dimenzije (komponente) je srednje visoka i stoga zadovoljavajuća.

Tablica 2. Analiza glavnih komponenti (nakon 3 iteracije i varimax rotacije) za čestice Eysenck Personality Questionnaire (EPQ) primijenjenog na uzorku trenera

Tvrdnje/ Items	Socijabilnost/ Sociability	Impulzivnost/ Impulsiveness	Communalities/ Communalities
Da li drugi ljudi misle da ste živahni? / *Do other people think you're feisty?*	0,786		0,619
Da li s lakoćom raspoložite prilično dosadno društvo? / *Do you easily lighten pretty boring company?*	0,721		0,576
Da li se obično lako opustite i dobro zabavljate u veselom društvu? / *Do you usually get a good time and relax in the company?*	0,691		0,488
Da li biste bili vrlo nesretni, ako ne biste duže vremena mogli vidjeti puno ljudi oko sebe? / *Would you be very unfortunate, if you wouldn't longer be able to see a lot of people around you?*	0,593		0,352
Razgovarate li tako rado, da ne gubite ni jednu priliku za razgovor, makar s nepoznatom osobom? / *Do you like to talk so much, that you do not lose any opportunity to talk, even with a stranger?*	0,556		0,380
Da li često odlučujete bez oklijevanja, u momentu? / *Do you often decide without hesitation, at the moment?*		0,856	0,761
Da li obično brzo i nepromišljeno nešto učinite ili kažete? / *Do you usually fast and recklessly do anything or say?*		0,778	0,642
Volite li raditi stvari koje zahtijevaju brze odluke? / *Do you like to do things that require quick decisions?*		0,670	0,503
Volite li praviti šale na račun drugih? / *Do you like to make jokes at the expense of others?*		0,605	0,369
Karakteristični korijen / *Eigenvalue*	3,172	1,518	
Postotak objašnjene varijance (%) / *Variance Explained (%)*	35,249	16,865	52,115
Pouzdanost (Cronbachov alfa koeficijent) / *Reliability (Cronbach's Alpha coefficient)*	,716	,730	

U tablici 3 pokazane su razlike u izraženosti faceta ekstraverzije kod sportskih trenera u odnosu na veći broj nezavisnih varijabli. Pokazalo se da statistički značajne razlike postoje u odnosu na dimenziju koja je nazvana

with the Guttman-Kaiser criterion and the Scree Plot. By applying this procedure, it was shown that the space of introversion with the data from a sample of coaches cannot be interpretable and reliably described with the corresponding latent dimensions. So, further study is conducted only for two interpretable facets of extraversion. Based on the items that have satisfactorily saturated two main components, the overall results for the facets of the questionnaire have been formed as a regression factor scores. Then, by applying the appropriate parametric (t-test for independent samples) and nonparametric (Wilcoxon's W-test) procedures, statistically significant differences in the dimensions of the questionnaire according to a large set of independent variables are determined.

Results

In Table 1, the descriptive characteristics of all items of Eysenck Personality Questionnaire (EPQ) are presented. Already with an orientation insight, it is apparent that the coaches achieved a higher means in items that describe increased extraversion.

Kaiser-Meyer-Olkin measure of sampling adequacy (0.706) and Bartlett's test of the sphericity (Chi-square = 207.049, df = 36, p <0.01) show that the correlation matrix among items of the Eysenck Personality Questionnaire (EPQ), applied in the sample of coaches, is suitable for factorization. From Table 2 it is evident that for the item Do you often decide without hesitation, at the moment, the

Table 2 - Principal Component Analysis (after 3 iterations and Varimax rotation) for items of Eysenck Personality Questionnaire (EPQ), applied to a sample of coaches

Tablica 3. Razlike u izraženosti faceta ekstraverzije kod sportskih trenera u odnosu na veći broj nezavisnih varijabli

Table 3 - Differences in the facets of extraversion at sport coaches in relation to a large number of independent variables

Facete ekstraverzije / Facets of the extraversion	**Aritmetička sredina (Standardno raspršenje) / Mean (Standard Deviations)**		**Statistički testovi / Statistical tests**
	Osvajači medalja na državnom prvenstvu (47) / *Medals won at the state championships (47)*	Nisu osvojili medalje na državnom prvenstvu (41) / *Without won medals on the state championships (41)*	t-test
Socijabilnost / *Sociability*	-0,111 (1,002)	0,127 (0,995)	1,116
Impulzivnost / *Impulsiveness*	0,243 (1,038)	-0,279 (0,887)	-2,544**
	Natjecanja bez medalja (29) / *Competitions without medals (29)*	Osvajali medalje (59) / *Competitions with medals (59)*	t-test
Socijabilnost / *Sociability*	-0,125 (1,125)	0,062 (0,937)	0,823
Impulzivnost / *Impulsiveness*	0,216 (0,968)	0,106 (1,006)	-1,426
	Ne biti trener nakon karijere (44) / *Without will to be coach after career (44)*	Trener nakon karijere (44) / *Coach after career (44)*	t-test
Socijabilnost / *Sociability*	-0,061 (1,043)	0,061 (0,963)	-0,572
Impulzivnost / *Impulsiveness*	0,038 (1,090)	-0,038 (0,913)	0,355
	Prestanak – kritični događaji (11) / *Termination career – critical events (11)*	Prestanak – drugi razlozi (77) / *Other reasons for termination of sport career (77)*	Wilcoxon W
Socijabilnost / *Sociability*	-0,102 (0,802)	0,015 (1,021)	444
Impulzivnost / *Impulsiveness*	-0,072 (1,018)	0,010 (1,004)	467
	Prestanak ambicija (21) / *Termination career – lack of ambitions (21)*	Prestanak – drugi razlozi (67) / *Other reasons for termination of sport career (67)*	Wilcoxon W
Socijabilnost / *Sociability*	-0,091 (1,058)	0,028 (0,988)	909
Impulzivnost / *Impulsiveness*	0,087 (1,086)	-0,027 (0,978)	2952
	Prestanak odluka kluba (21) / *Termination career by decision of the club (21)*	Prestanak – drugi razlozi (71) / *Other reasons for termination of sport career (71)*	Wilcoxon W
Socijabilnost / *Sociability*	-0,060 (1,121)	0,014 (0,977)	737
Impulzivnost / *Impulsiveness*	0,501 (1,090)	-0,120 (0,946)	2936*
	Prestanak ozljeda (40) / *Termination career - injuries (40)*	Prestanak – drugi razlozi (48) / *Other reasons for termination of sport career (48)*	t-test
Socijabilnost / *Sociability*	-0,039 (0,963)	0,032 (1,039)	0,328
Impulzivnost / *Impulsiveness*	-0,086 (0,964)	0,072 (1,033)	0,738
	Prestanak svojevoljno (23) / *Willful termination of sport career (23)*	Prestanak – drugi razlozi (65) / *Other reasons for termination of sport career (65)*	t-test
Socijabilnost / *Sociability*	-0,052 (0,956)	0,018 (1,022)	0,290
Impulzivnost / *Impulsiveness*	0,341 (1,087)	-0,121 (0,947)	**-1,935***
	Nečlanovi seniorske reprezentacije (70) / *Non-members of senior national team (70)*	Članovi seniorske reprezentacije (18) / *Members of senior national team (18)*	Wilcoxon W
Socijabilnost / *Sociability*	0,065 (1,035)	-0,252 (0,826)	653
Impulzivnost / *Impulsiveness*	-0,167 (0,930)	0,650 (1,022)	2819**
	Trenerice (37) / *Female coaches (37)*	Treneri (51) / *Male coaches (51)*	t-test
Socijabilnost / *Sociability*	0,266 (0,943)	-0,193 (1,004)	2,170*
Impulzivnost / *Impulsiveness*	-0,255 (1,019)	0,185 (0,954)	-2,078*
	Srednja stručna sprema (67) / *High school (67)*	Visoka stručna sprema (21) / *University degree (21)*	t-test
Socijabilnost / *Sociability*	-0,013 (1,016)	0,078 (0,999)	-0,222
Impulzivnost / *Impulsiveness*	0,043 (0,970)	-0,249 (0,987)	1,312
	Dobna grupa - mlađi (51) / *Age group - young (51)*	Dobna grupa - stariji (37) / *Age group - older (37)*	t-test
Socijabilnost / *Sociability*	-0,032 (1,074)	0,044 (0,901)	-0,348
Impulzivnost / *Impulsiveness*	0,027 (1,035)	-0,037 (0,963)	0,291
	Iskustvo natjecanja kratkotrajnije (64) / *Shorter experience in contests (64)*	Iskustvo natjecanja dugotrajnije (23) / *Longer experience in contests (23)*	t-test
Socijabilnost / *Sociability*	-0,106 (1,052)	0,318 (0,798)	-1,758
Impulzivnost / *Impulsiveness*	0,074 (1,014)	-0,214 (0,973)	1,181
	Momčadski sport (19) / *Team sport (19)*	Individualni sport (69) / *Individual sport (69)*	Wilcoxon W
Socijabilnost / *Sociability*	-0,029 (1,213)	0,008 (0,943)	3059,5
Impulzivnost / *Impulsiveness*	-0,016 (0,959)	0,004 (1,018)	3060,5

socijabilnost, postoje jedino za varijablu spol: žene imaju izraženiju socijabilnost od muškaraca. Statistički značajne razlike postoje u odnosu na dimenziju koja je nazvana impulzivnost, pronađene su za sljedeće nezavisne varijable: osvajači medalja na državnom prvenstvu (oni koji su osvajali medalje impulzivniji su u odnosu na one koji nisu osvajali medalje); prestanak karijere odlukom kluba (oni koji su završili karijeru odlukom kluba impulzivniji su u odnosu na one koji nisu završili karijeru odlukom kluba); svojevoljni prestanak karijere (oni koji su samovoljno završili karijeru impulzivniji su u odnosu na one koji to nisu učinili svojom voljom); članstvo u seniorskoj reprezentaciji (oni koji su bili članovi seniorske reprezentacije impulzivniji su u odnosu na one koji to nisu bili); spol (treneri su impulzivniji u odnosu na trenerice).

Diskusija

Glavni nalaz istraživanja je da postoji relativno mali broj statistički značajnih razlika među trenerima različitih sportova u dimenzijama ekstraverzije, u odnosu na veliki skup nezavisnih varijabli: sociodemografskih, vezanih uz prethodeću sportsku karijeru te uz sam trenerski posao. Nadalje, bitan je nalaz da su svi treneri generalno vrlo ekstravertirani, što se može očitovati i u nedovoljno interpretabilnoj i nepouzdanoj latentnoj strukturi introverzije, koju se nije moglo uspješno identificirati, barem u ovom skraćenoj verziji upitnika i na ovom uzorku trenera. Ovakav rezultat mogao je biti i očekivan, s obzirom da je trenerov rad zapravo kontinuiran i blizak rad s ljudima. Dobivene latentne dimenzije, tj. facete impulzivnosti i socijabilnosti, vrlo su bliske onima koje su ranije navedene (Costa i McCrae, 2005): druželjubljivost se može gotovo posve poistovjetiti sa socijabilnošću, dok je impulzivnost kombinacija asertivnosti i traženja uzbuđenja. Odnosno, socijabilnost je više vezana uz zajedništvo, a impulzivnost uz djelotvornost (Paulhus i John, 1998). Različiti smjerovi razlika u ove dvije facete posebno se očituju na području rodnih razlika među trenerima: trenerice su socijabilnije a treneri impulzivniji. Tumačenje ovakvih razlika mogu se pronaći u nalazima vezanim uz rodne uloge i stereotipe (Schaefer i Lamm, 1995), koje čine određena ponašanja, stavovi i aktivnosti koje društvena zajednica očekuje od pripadnika određenog spola. «Tipični» muškarac smatra se asertivnijim, aktivnijim, objektivnijim, racionalnijim i kompetentnijim od tipične žene, a «tipična» žena se smatra pasivnijom, emocionalnijom, submisivnijom, suosjećajnijom i osjetljivijom od tipičnog muškarca (Spence, Deaux i Elmreich, 1985).

highest values of communalities and its correlation with the second principal component (called Impulsiveness) are found. For the item Do other people think you're feisty the highest values of communalities and its correlation with the first principal component (called Sociability) are found. Percentage of explained variance of the questionnaire in total is about 52%. Reliability for both two latent dimensions (components) is a medium-high and therefore satisfying.

Table 3 displays the differences in the facets of extraversion in sport coaches in relation to a large number of independent variables. It was shown that among significant differences which exist in the dimension that was called Sociability, exists only one, for the variable gender: women have higher results in Sociability than men. More statistically significant differences exist in the dimension that is called Impulsiveness. Differences were found for the following variables: medals won at the state championships (those who won medals are more impulsive than those who did not win medals); termination career by the decision of the club (those who terminated their career by the decision of the club are more impulsive than those who had not completed a career by the decision of the club); willful termination of sport career (those who voluntarily ended their career are more impulsive than those who did not do it by their own will); membership in the senior national team (those who were members of the national team are more impulsive than those who were not), gender (male coaches are more impulsive than female coaches).

Discussion

The main finding is that there is a relatively small number of statistically significant differences between coaches of different sports in the dimensions of extraversion, in relation to a large set of independent variables: socio-demographic, related with preceded sport career and coaching job. Furthermore, an important finding is that all coaches are generally very extraverted, which can be reflected by insufficient and unreliable interpretable latent structure of the introversion (this structure could not be successfully identified, at least in this short version of the questionnaire, for this sample of coaches). Such a result could be expected, considering that the coach's job is actually continuously and closely linked with working with people. The resulting latent dimensions, i.e. facets of impulsivity and sociability, are very close to those previously mentioned ones (Costa & McCrae, 2005): friendliness can be almost completely identified with sociability, while impulsiveness can be perceived as a combination of assertiveness and sensation seeking, i.e., sociability is more related to the fellowship, while

Vjeruje se da muškarci u većoj mjeri posjeduju tzv. instrumentalne karakteristike (npr. usmjerenost cilju, neovisnost i odlučnost), dok žene u većoj mjeri posjeduju tzv. ekspresivne karakteristike (orijentirane su na međuljudske odnose, ljubazne i osjećajne). O razlozima zbog čega su više impulzivni pojedinci koji su završili karijeru svojevoljno ili odlukom kluba, kao i oni koji su bili članovi seniorske reprezentacije odnosno osvajači medalja na državnom prvenstvu, možemo samo spekulirati. Međutim, najvjerojatnije tumačenje može dati pretpostavka da je impulzivno djelovanje (u ovom kontekstu) povezano s potencijalnom asertivnošću, traženjem uzbuđenja, što se sve može povezati i s većom djelotvornošću, prije nego s usmjerenošću prema drugim ljudima. Zanimljivo je da nema nikakvih razlika u ekstraverziji u odnosu na trenersko iskustvo, stručnu spremu, a pogotovo s obzirom na činjenicu je li riječ o trenerima momčadskih ili pojedinačnih sportova. Nedostaci istraživanja ponajprije proizlaze iz činjenice da je uzorak ispitanika bio izrazito heterogen, u odnosu na vrste sportova u kojima su treneri angažirani. Zato je mogućnost generalizacije rezultata ovog istraživanja izrazito ograničena. Praktične implikacije istraživanja mogu se ogledati u mogućnosti da se facete ekstraverzije razmatraju kao bitna obilježja koju treba razmatrati kod odabira trenerskog poziva. U budućim bi se istraživanjima moglo proširiti uzorak entiteta, u smislu obuhvaćanja stratificiranog i većeg uzorka trenera različitih sportova. Nadalje, mogli bismo ispitati veći broj faceta ekstraverzije, primjenom različitog instrumentarija, ali i dovodeći ekstraverziju u relaciju s drugim osobinama ličnosti, ili pak pokazateljima uspješnosti pojedinog trenera u svom poslu.

Zaključak

U istraživanju se pokazalo da se na temelju odabranih čestica EPQ upitnika može dobiti interpretabilne i pouzdane facete ekstraverzije, ali ne i introverzije. Samo je jedna statistički značajna razlika pronađena u odnosu na dimenziju socijabilnosti, gdje se pokazalo da trenerice imaju izraženiju socijabilnost od muškaraca. U odnosu na dimenziju impulzivnosti, pokazalo se da su impulzivniji treneri koji su vlastitoj sportskoj karijeri bili osvajači medalja na državnom prvenstvu (u odnosu na neosvajače), kao i oni koji su završili sportsku karijeru odlukom kluba ili svojevoljno. Bivši članovi seniorske reprezentacije impulzivniji su u odnosu na one koji to nisu bili, dok su treneri impulzivniji u odnosu na trenerice.

the effectiveness is more related to impulsivity (Paulhus & John, 1998). Different directions of the differences in these two facets are especially evident in the area of gender differences among coaches: female coaches are more sociable, while male are more impulsive. The interpretation of these differences can be found in the findings related to the gender roles and stereotypes (Schaefer & Lamm, 1995) that make certain behaviors, attitudes and actions that the community expects from the members of a particular gender. "Typical" man is considered as more assertive, active, objective, rational and competent than the typical woman, while a "typical" woman is considered to be more passive, emotional, submissive, compassionate and sensitive than the typical man (Spence, Deaux & Elmreich, 1985). It is believed that men have largely so-called instrumental characteristics (e.g., goal orientation, independence and determination), while women largely have so-called expressive features (orientation toward interpersonal relationships, kindness and compassion). The reasons why the individuals who have completed a career voluntarily or by the decision of the club, as well as those who were members of the senior national team or won medals at the national championships, are more impulsive, can be only speculated. However, the most likely explanation may be given based on the assumption that the impulsive action (in this context) is associated with a potential assertiveness and sensation seeking, which can all be linked to increasing efficiency, rather than with orientation towards other people. It is interesting that there is no difference in extroversion compared to coaching experience, educational qualifications, and especially in terms of whether they are coaches of team or individual sports. Disadvantages of research arise primarily from the fact that the sample was highly heterogeneous, with respect to the types of sports for which coaches are hired. So, the possibility of generalization of the results of this study is strongly limited. Practical implications of the research can be extended to a possibility that the facets of extraversion have to be considered as an element important for the selection of the coaching profession. In future research, the sample entities could be expanded, in terms of coverage of a larger and stratified sample of coaches in different sports. In addition, future research can include a number of facets of extraversion, the use of different instruments, but also bringing extraversion in relation to other personality traits, or performance indicators of each coach in his work.

Conclusion

The study showed that, on the basis of the selected items of the EPQ questionnaire, it can obtain reliable and

Izjava autora
Autori pridonijeli jednako.

Konflikt interesa
Mi izjavljujemo da nemamo konflict interesa.

interpretable facets of extraversion, but not of introversion. Only one statistically significant difference was found in the dimension of sociability, where it was shown that female coaches have a higher sociability than male ones. For the dimension of impulsivity, it was shown that more impulsive are coaches who won medals at the national championships in their own sport career (in relation to those who did not won medals), as well as those who have completed their sport career by the decision of the club or voluntarily. Former members of the senior national team are more impulsive than those who were not, while the male coaches are more impulsive than the female ones.

Authorship statement
The authors have contributed equally.

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We declare that we have no confl icts of interest.

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Kondicioni potencijal vazduhoplovnih vojnih snaga u zavisnosti od motoričkih i morfoloških faktora

Kemal Idrizović
Fakultet za sport i fizičko vaspitanje, Nikšić, Crna Gora
Boris Banjević
Vazduhoplovna baza Vojske Crne Gore, Podgorica, Crna Gora

Korespondencija:
Prof. dr Kemal Idrizović
kemo@t-com.me

Sažetak: Na uzorku od 80 pripadnika Vazduhoplovne baze Vojske Crne Gore, muškog pola, starosti 22-45 godina, realizovano je istraživanje sa ciljem utvrđivanja uticaja motoričkih i morfoloških dimenzija na kvalitet izvođenja kompleksnih motornih aktivnosti. Procjena stanja motoričkih sposobnosti izvršena je na osnovu sprovođenja i analize 18 motoričkih testova, dok je morfološki status definisan na osnovu informacija dobijenih mjerenjem i procjenjivanjem 16 antropometrijskih pokazatelja. Kondicioni potencijal je određen primjenom poligona kompleksnih motoričkih znanja. Za utvrđivanje uticaja prediktorskog motoričkog i morfološkog sistema varijabli na kriterijumsku varijablu poligon kompleksnih motoričkih znanja (PLKMZ) primijenjena je regresiona analiza. Rezultati regresione analize ukazuju na statistički značajnu linearnu povezanost između prediktorskih sistema varijabli i kriterijumske varijable. U motoričkom sistemu od 18 varijabli, njih 5 pokazuje statistički značajan prediktivni uticaj na kriterijum, dok je u morfološkom sistemu utvrđena prediktivna baterija mjernih instrumenata od 2 antropometrijska pokazatelja.

Ključne riječi: vojno vazduhoplovstvo, motoričke sposobnosti, morfološke karakteristike, kompleksne kretne strukture.

Uvod

Kondiciona priprema je sastavni dio globalnog sistema vojne obuke, a podrazumijeva dinamičan proces treninga i oporavka, namijenjen razvoju i održavanju funkcionalnih i motoričkih sposobnosti, te morfoloških obilježja vojnika. U okviru integralne borbene gotovosti, fizička pripremljenost, koja nastaje kao rezultat kondicijske pripreme, ima ulogu preduslova za kasniju uspješnu manifestaciju borbenih potencijala vojnika (Jukić i sar., 2008).

Fitness Potential of Air Forces Depending on the Motor and Morphological Factors

Kemal Idrizović
Faculty for Sport and Physical Education, Niksic, Montenegro
Boris Banjević
Air Force Base of Montenegro, Podgorica, Montenegro

Correspondence:
Prof. Dr. Kemal Idrizovic
kemo@t-com.me

Abstract: Research was realized on the sample of 80 men, soldiers of Montenegro Army Air Base, age 22-45, with the aim to determine the influence of motor and morphological dimensions on the quality of performing complex motor activities. The assessment of the status of motor abilities was performed based on the realization and analysis of 18 motor tests, while the morphological status was defined based on the information received by measurement and assessing 16 anthropometric indicators. The fitness potential is defined by the application of polygons of complex motor knowledge. In order to define the influence of predictor motor and morphological system of variables on the complex motor knowledge polygon criteria variable (PLKMZ), the regression analysis was applied. The results of regression analysis show the statistically significant linear connection between the predictor system of variables and criteria variables. In the motor system of 18 variables, 5 of them show the statistically significant predictive influence on the criteria, while in the morphological system, the predictive battery of measuring instruments of 2 anthropometric indicators was determined.

Key words: military aviation, motor abilities, morphological characteristics, complex movement patterns.

Introduction

Fitness preparation is an integral part of the global system of a military drill and it means a dynamic process of training and recovery intended to the development and maintenance of functional and motor abilities and morphological traits of solders. Within an integral military readiness, physical preparedness, emerging as a result of conditioning preparation, has a role of precondition for later successful manifestation of military potential of soldiers (Jukić et al., 2008).

U savremenim armijama svijeta velika pažnja se poklanja kondicionoj pripremi vojnika, za koju se smatra da je vrlo bitan preduslov za kvalitetno ispoljavanje njihovih profesionalnih kapaciteta. Struktura kondicione pripreme vezana je za analizu vojne aktivnosti, analizu dimenzija vojnika (dijagnostika kondicione pripremljenosti), metodičke aspekte kondicionog treninga, te planiranje i programiranje istog. Prepoznavanje stepena treniranosti važna je informacija u svim fazama vojničke pripreme i nezaobilazna pretpostavka za postizanje optimalne borbene gotovosti vojnika. Kondicioni zahtjevi za vojnike određeni su karakteristikama vojne aktivnosti kojom se bave. Karakteristike vojne specijalnosti mogu se definisati različitim fizičkim, fiziološkim i biohemijskim parametrima. Za utvrđivanje tih parametara se koriste razne analize, od kojih su najvažnije: motorička, funkcionalna, strukturalna, biomehanička, te anatomska analiza. Vojne aktivnosti analiziraju se radi definisanja određenih karakteristika konkretne vojne specijalnosti, na temelju kojih je kasnije moguće pravilno usmjeriti programe kondicione pripreme i vojne obuke, te unaprijediti upravo one sposobnosti i osobine vojnika koje najviše doprinose uspješnom obavljanju konkretne aktivnosti. Budući da u vojnoj obuci samo specifični adaptacioni procesi osiguravaju uspjeh, i trenažni se podražaji moraju približiti uslovima koji preovladavaju u borbenim prilikama. Nepoznavanjem najvažnijih karakteristika vojne aktivnosti, mogu se ne samo zapostaviti važne sposobnosti vojnika, već i razviti one koje mogu biti remeteći faktor u vojnoj djelatnosti.

Dijagnostikom vojnih sposobnosti procjenjuje se trenutno stanje kondicione pripremljenosti pojedinca, odnosno vojnih jedinica. Na temelju analize vojne djelatnosti i statusa kondicione pripremljenosti, donose se odluke o mjerama koje treba preduzeti za promjenu, poboljšavanje ili održavanje stanja. Smisao dijagnostike je utvrditi trenutno stanje, te planirati i programirati treninge kako bi se postigao i održao potreban nivo treniranosti, tj. vojne gotovosti. Dakle, dijagnostika kondicione pripremljenosti je jedna od temeljnih aktivnosti za unaprijeđivanje kondicione sposobnosti vojnika. Takvi postupci omogućavaju i vrijednovanje potencijalnih kandidata za pojedine rodove vojske kroz adekvatnu selekciju i analiziranje sličnosti između antropološkog profila ispitanika i onih dimenzija koje se nalaze u hijerarhijskoj strukturi jednačine specifikacije pojedinog roda vojske (jedinice), kao i ispunjavanje eksplicitno određenih modelnih karakteristika individualno za svakog ispitanika (Aračić, 2005).

Može se zaključiti da je temeljni cilj kondicione dijagnostike i kondicionog treninga postizanje optimalne

In contemporary armies in the world, a huge attention is paid to the conditioning preparation of soldiers and it is considered to be a very important precondition for a quality manifestation of their professional capacities. The structure of conditioning preparation is related to the analysis of a military activity, analysis of soldier's dimensions (diagnostics of conditioning preparedness), methodical aspects of conditioning training and to the planning and designing of it. The recognition of the level of training is important information in all phases of a military drill and unavoidable precondition for the accomplishment of an optimal preparedness of the soldiers. The conditioning demands for soldiers are determined by the characteristics of a military activity they are included in. The characteristics of combat specialty can be defined by different physical, physiological and bio-chemical parameters. The various analyses are used for the determination of these parameters and the most important among these analyses are; motor, functional, structural, biomechanical and anatomic analysis. The military activities are analyzed in order to determine particular characteristics of a given military specialty, on the basis of which is latter possible, i.e. to properly direct conditioning preparation programs and military drill, and to improve only those abilities and traits of soldiers that contribute most to the successful realization of particular activity. Having in mind that only specific adaptation process ensures a success in a military drill, training stimulations must be adequate to the dominant conditions in combat contexts. By unfamiliarity with most important military activity characteristics, not only important soldier's abilities can be neglected but also it can develop those features that can be a disturbing factor in a military activity.

The current state of an individual conditioning preparedness, namely of military units, is estimated through the diagnostics of military abilities. The decisions about measures that should be taken for a change, improvement or maintenance of a state are taken on the basis of a military activity and the state of conditioning preparedness. The meaning of diagnostics is to determine a current state , to plan and program trainings in order to accomplish and maintain a necessary level of readiness, namely military preparedness. Therefore, the diagnostics of conditioning readiness is one of the base activities for the improvement of conditioning abilities of soldiers. Such activities also enable an estimation of potential candidates for particular military services through an adequate selection and the analysis of similarities among anthropologic profile of the examinee and those dimensions that are related to a hierarchical structure of an equation of a particular military

kondicione pripremljenosti i stvaranje fizičkih pretpostavki za manifestaciju vojnikovih vještina i psiholoških kvaliteta u realnim borbenim uslovima.

Konkretni učinci kondicionog treninga trebali bi se ogledati u usavršavanju psihofizičkih sposobnosti, odgađanju reakcije umora, ubrzavanju procesa oporavka i smanjenju broja i težine ozljeda vojnika (Keul, 1984, prema Milanović, 1997).

Posljednjih godina je provedeno nekoliko kineziooloških istraživanja (Jukić i sar., 2006, 2007, Eisinger i sar., 2006) koja su vrijednovala mjerne postupke za procjenu kondicione pripremljenosti pripadnika oružanih snaga. Na temelju dobijenih rezultata je definisan i osnovni skup testova kojim je moguće kvalitetno procjenjivati kondicionu pripremljenost vojnika.

Stanje kondicione pripremljenosti vojnika definisano je skupom informacija dobijenih nekim sastavom mjerenja, a čine ga stanja: antropoloških obilježja, motoričkih sposobnosti i znanja, funkcionalnih karakteristika, zdravlja nekog subjekta, odgojnih efekata itd. (Marić, 2010).

Dijagnostika kondicijske pripremljenosti različitih vojnih specijalnosti korišćenjem odgovarajućih skupova testova i u svijetu predstavlja temu za brojna naučna istraživanja. Izbor mjernih instrumenata temelji se na potrebama za evaluacijom određenih antropoloških karakteristika, koje su vrlo važne za kvalitetno obavljanje vojne službe, ali i prema nekim drugim kriterijumima, kao što su kvalitetne metrijske karakteristike testova i jednostavnost korišćenja, dostupnost potrebne opreme, te postojanje baza normativnih vrijednosti (Jukić i sar., 2008).

Dijagnostikom kondicijskih sposobnosti procjenjuje se trenutno stanje kondicijske pripremljenosti pojedinca, odnosno vojnih jedinica. Na temelju analize vojne djelatnosti i statusa kondicijske pripremljenosti, donose se odluke o mjerama koje treba preduzeti za mijenjanje, poboljšavanje ili održavanje stanja. Smisao dijagnostike je utvrditi trenutno, aktuelno stanje, te planirati i programirati treninge kako bi se postigao ili održao potreban nivo treniranosti, tj. vojne gotovosti (Jukić i sar., 2007).

Prema svemu istaknutom sistem morfoloških, motoričkih i funkcionalnih dimenzija čini osnovu za procjenjivanje kondicionih sposobnosti čovjeka. Upravo je zbog toga, i cilj ovog istraživanja, bio da se utvrdi uticaj motoričkih sposobnosti i morfoloških karakteristika na izvođenje kompleksnog motoričkog zadatka, koji bi mogao označavati ocjenu kondicionog statusa pripadnika vazduhoplovnih vojnih snaga.

service (unit), and to the fulfillment of explicitly determined model characteristics for each examinee individually. (Aračić, 2005).

It can be concluded that the basic aim of conditioning diagnostic and training is the accomplishment of an optimal conditioning readiness and the creation of a physical precondition for the manifestation of soldier's skills and psychological qualities in real combat contexts.

The specific effects of a conditioning training should be reflected in the specialization of psychophysical abilities, postponement of a response of tiredness, accelerating of recovery process and the reduction of the number and severity of soldier's wounds. (Keul,1984, Milanović, 1997).

Several kinesiological researches have been done in recent years (Jukić et al., 2006, 2007, Eisinger et al., 2006) that have evaluated measurement activities for the estimation of conditioning readiness of military force members. A base group of test is defined on the basis of the obtained results and these tests enable quality estimation of conditioning readiness of soldiers.

The state of conditioning preparedness of soldiers is defined by the information obtained by some measurement concept and it consists of anthropologic features, motor abilities and knowledge, functional characteristics , health of some aspect , upbringing effect etc. (Marić, 2010).

The diagnostics of a conditioning readiness in various military specialties using adequate groups of tests represents the topic of numerous scientific researches in the world. The choice of measurement instruments is based on the needs for an evaluation of particular anthropologic characteristics that are very important for a quality execution of military tasks, and also on some other criteria like quality measurement test characteristics and simple use, availability of necessary equipment and the existence of bases of normative values (Jukić et al., 2008).

The current state of conditioning readiness of soldiers, namely military units, is estimated by the diagnostics of a conditioning ability. The meaning of diagnostics is to determine current, actual status and to plan and program trainings in order to attain or maintain a necessary level of an ability namely military preparedness (Jukić et al., 2007).

According to all mentioned the system of morphological, motor and functional dimensions makes a base for the estimation of conditioning abilities of soldiers. Just because of this, the aim of this research was to determine the effects of motor abilities and morphologic characteristics on the realization of complex motor tasks which could denote a mark of conditioning state of members of air forces.

Metod rada

Uzorak ispitanika koji je bio obuhvaćen programom ovog istraživanja su sačinjavali osamdeset (N=80) pripadnika Vazduhoplovne baze Vojske Crne Gore, muškog pola, starosti 22-45 godina. Svi ispitanici su bili muškog pola, kao i, adekvatno njihovim profesionalnim zadacimi kvalitetnog zdravstvenog statusa.

Istraživanjem je obuhvaćen sistem prediktorskih varijabli za procjenu motoričkih dimenzija (18 motoričkih testova) i morfoloških karakteristika (16 antropometrijskih pokazatelja), kao i kriterijumska varijabla (motorički zadatak) kojom se procjenjuju kompleksne motorne aktivnosti.

Procjena stanja motoričkih sposobnosti izvršena je na osnovu sprovođenja i analize sljedećih motoričkih testova: ciljanje dugim štapom, test preciznosti (MPCDŠ); gađanje horizontalnog cilja rukom, test preciznosti (MPHCR); stajanje na dvije noge uzdužno na klupici za ravnotežu sa otvorenim očima, test ravnoteže (MRSOO); stajanje na dvije noge uzdužno na klupici za ravnotežu sa zatvorenim očima, test ravnoteže (MRSOZ); pretklon sa dosezanjem u sjedu, test fleksibilnosti (MFPDS); iskret palicom, test fleksibilnosti (MFISP); taping rukom, test brzine alternativnih pokreta (MBTAR); trčanje 20 m iz visokog starta, test brzine trčanja (MBT20); penjanje i silaženje po klupi i švedskim ljestvama, test koordinacije (MKPIS); osmica sa sagibanjem, test agilnosti (MKOSM); bacanje medicinke sa grudi na stolici, test eksplozivne snage gornjih ekstremiteta (MEBMS); skok udalj s mjesta, test eksplozivne snage donjih ekstremiteta (MESDM); zgibovi na vratilu, test repetitivne snage gornjih ekstremiteta (MRZNV); čučnjevi u 60 sekundi, test repetitivne snage donjih ekstremiteta (MRČUČ); podizanje trupa u dva minuta, test repetitivne snage trbušne muskulature (MRPT2); sklekovi u dva minuta, test repetitivne snage gornjih ekstremiteta (MRSK2); trčanje 300 jardi sa promjenom smjera (300 yard shuttle run), test anaerobnog energetskog kapaciteta (MAI3Y); trčanje na 3200 m, test aerobnog energetskog kapaciteta (MAI32).

Procjena stanja morfološkog statusa izvršena je na osnovu uzimanja i analize sljedećih antropometrijskih pokazatelja: visina tijela (AVITI), dužina ruke (ADURU), dužina noge (ADUNO), dužina stopala (ADUST); širina ramena (AŠIRA), širina kukova (AŠIKU), širina stopala (AŠIST), dijametar koljena (ADIKO); masa tijela (AMATI), srednji obim grudnog koša (ASOGK), obim natkoljenice (AONAT), obim podlaktice (AOPOD); kožni nabor nadlaktice (AKNNA), kožni nabor trbuha (AKNTR), kožni nabor leđa (AKNLE), kožni nabor potkoljenice (AKNPO).

Methods

The examinee sample comprised in this program was created of eighty (N=80) members of Air-Force base of Montenegrin army, male, aged 22-45. All examinees were male and with a quality health state according to their professional task.

The research comprised the system of predictive variables for the estimation of motor dimension (18 motor tests) and morphological characteristics (16 anthropological indicators), and criterion variable (motor task) which is aimed to estimate complex motor activities.

The estimation of a state of motor abilities is made on the basis of an execution and the analysis of the following motor tests: aiming by a long rod, precision test (MPCDS), throwing at horizontal target by hand, precision test (MPHCR), standing on both legs longitudinally on the bench for a balance with open eyes, balance test (MRSOO), standing on both legs longitudinally on the bench with closed eyes, balance test (MRSOZ), forward bend with reach in sitting position , flexibility test, (MFPDS), round bend by stick, flexibility test (MFISP), taping by hand, test of speed of alternative movements (MBTAR), running 20 m from high start, test of fast running (MBT20), ascending and descending by bench and Swedish bars, coordination test (MKIPS), 8-path with bend, agility test (MKOSM), medical ball throwing from chest on the chair, test of explosive strength of upper limbs (MEMBS), standing jump, test of explosive strength of bottom limbs (MESDM), chin-ups on a bar, test of repetitive strength of hands (MRYNV), crouches for 60 seconds, test of repetitive strength of legs (MRCUC), body hoisting for two minutes, test of repetitive strength of abdomen muscles (MRPT2), push-ups for two minutes, test of repetitive strength of hands (MRSK2), running 300 yards with direction change (300 yards shuttle run), test of anaerobic energy capacity (MAI3Y), running 3200 m, test of aerobic energy capacity (MAI32).

The state estimation of morphologic status is made on the basis of realization and the analysis of the following anthropometric indicators: body height (AVITI), hand length (ADURU), leg length (ADUNO), foot length (ADUST): shoulder width (ASIRA), hip length (ASIKU), foot width (ASIST), knee diameter (ADIKO), body mass (AMATI), mean circumference of thorax (ASOKG), thigh circumference (AONAT), forearm circumference (AOPOD), skin crease of upper arm (AKNNA), skin crease of abdomen (AKNTR), skin crease of back (AKNLE), skin crease of thigh (AKNPO).

The estimation of conditioning potential is made on the basis of execution and the analysis of motor task

Procjena kondicionog potencijala izvršena je na osnovu sprovođenja i analize motoričkog zadatka poligon (test baterija) kompleksnih motoričkih znanja (PLKMZ) (Eisinger i sar., 2006).

Kako bi se ispitao uticaj primijenjenih motoričkih i morfoloških pokazatelja na kvalitet izvođenja kompleksnih motoričkih zadataka upotrijebljena je linearna regresiona analiza.

Za matematičko tretiranje originalnih podataka korišćen je statistički aplikacioni program SPSS (Statistical Package for Social Sciences) 16.

Rezultati

U tabeli 1 su predstavljeni rezultati regresione analize kompleksnog motoričkog zadatka u prostoru motoričkog sistema, koji je primijenjen u ovom istraživanju. Za utvrđivanje uticaja prediktorskih varijabli na kriterijumsku varijablu, izračunati su sljedeći pokazatelji: multipla korelacija (RO), koja označava najveću moguću korelaciju između prediktorskog sistema varijabli i kriterijumske varijable, koeficijent determinacije (DELTA-Δ), koji znači mjeru zajedničkog varijabiliteta onoga što se proučava (kriterijumska varijabla), i onaga što na to utiče (prediktorske varijable), nivo statističke značajnosti re-

(test of squads) of complex motor knowledge polygon (PLKMY) (Eisinger et al., 2006).

A linear regression analysis was applied in order to examine the effects of applied motor and morphologic indicators on the quality of performing of complex motor tasks.

A statistical application program SPSS 16 (Statistical package for Social Sciences) is used for a mathematical treatment of original data.

Results

Table 1 gives the results of regression analysis of complex motor tasks in the space of motoricity system which is prepared in this research. The following indicators are calculated for the determination of predictor variables impact on a criterion variable, the following indicators are calculated: multiple correlation (RO) which denotes the biggest possible correlation between the predictor variable system and criterion variable, coefficient of determination (DELTA-Δ) which purports to a measure of mutual variability of what is being calculated (criterion variable) and what influences it (predictor variable) level of statistical significance of regression coefficient (Q-BETA), partial regression co-

Tabela 1. Regresiona analiza varijable PLKMZ sa motoričkim varijablama

Table 1. Regression analyze of variable PLKMZ with motor variable

VARIJABLE	r	PART-r	BETA	Q-BETA / *p-level*
MPCDŠ	.12	.13	.08	.28
MPHCR	-.35	-.12	-.09	.33
MRSOO	-.30	-.04	-.02	.73
MRSOZ	-.19	-.02	-.01	.84
MFPDS	-.26	.04	.03	.70
MFISP	.14	.08	.05	.50
MBTAR	-.45	.09	.07	.46
MBT20	.71	.37	.43	.00
MKPIS	.66	.27	.25	.02
MKOSM	.48	-.07	-.06	.57
MEBMS	-.23	.25	.20	.04
MESDM	-.53	-.25	-.20	.04
MRZNV	-.49	.16	.15	.19
MRČUČ	-.54	-.08	-.07	.48
MRPT2	-.48	-.14	-.13	.25
MRSK2	-.54	.02	.02	.86
MAI3Y	.58	.33	.28	.00
MAI32	.51	.00	.00	.97
DELTA=.71 RO=.84 Q=.00				

gresionog koeficijenta (Q-BETA), parcijalni regresioni koeficijent (BETA-β), koji označava značajne informacije, ili veličine uticaja u predikciji uspjeha kriterijumske varijable.

Pored navedenih parametara u tabeli 1, kao i u tabeli 2 su predstavljeni koeficijent korelacije (r) između svake prediktorske i kriterijumske varijable, kao i parcijalna korelacije (PART-r), koja označava povezanost parova varijabli uz pretpostavku da sve ostale varijable iz istog skupa nemaju varijabilitet, tj. da su konstantne, ove vrijednosti su oslobođene uticaja svih ostalih varijabli, kao i drugih uticaja.

U tabeli 2 su predstavljeni rezultati regresione analize kompleksnog motoričkog zadatka u prostoru antropometrijskog sistema koji je primijenjen u ovom istraživanju.

efficient (BETA-β) which denotes serious information, or the size of the influence in the prediction of success of a criterion variable.

Beside the mentioned parameters, in table 1, and in table 2, we presented a coefficient of correlation (r) between each predictor and criterion variable, and partial correlation (PART-r), which denotes links of variable pairs with the assumption that all other variables from the same group do not have variability, namely that they are constant and that these values are free of the influence of all other variables, and of other influences.

The results of regression analysis of complex motor task in the area of anthropometrical system, which is applied in this research, are given in table 2.

Tabela 2. Regresiona analiza varijable PLKMZ sa morfološkim varijablama

Table 2. Regression analyze of variable PLKMZ with morphological variables

VARIJABLE	r	PART-r	BETA	Q-BETA
AVITI	.03	-.00	-.02	.94
AMATI	.49	.38	.99	.00
ADURU	.02	-.04	-.08	.70
ADUNO	-.01	-.04	-.08	.69
ADUST	.08	-.13	-.18	.28
ASIRA	.06	.00	.00	.94
ASIKU	.40	.15	.18	.21
ASIST	.15	.04	.05	.70
ADIKO	.27	-.21	-.28	.08
ASOGK	.44	.07	.11	.57
AONAT	.12	-.01	.01	.92
AOPOD	.22	-.26	-.37	.03
AKNNA	.23	-.18	-.19	.13
AKNTR	.34	.22	.28	.06
AKNLE	.32	-.21	-.34	.08
AKNPO	.37	.07	.09	.54
DELTA=.42 RO=.65 Q=.00				

Diskusija

Pregledom tabele 1 može se konstatovati da je povezanost cjelokupnog sistema primijenjenih motoričkih varijabli i uspješnosti u izvođenju kompleksnih motoričkih aktivnosti (varijabla poligon kompleksnih motoričkih znanja-PKMZ) veoma visoka jer iznosi RO=.84. Ova vrijednost multiple korelacije objašnjava zajednički varijabilitet između prediktorskog motoričkog sistema i kriterijuma oko 71% (DELTA=.71). Takva povezanost je bila značajna na nivou Q=.00. Preostalih 29% u objašnja-

Discussion

By analyzing the table 1, it can be concluded that the link of complete system of applied motor variable and the successfulness in performing of complex motor activities (variable of complex motor knowledge polygon-PKMZ) is very high because it amounts to RO=0.84. This value of a multiple correlation explains a common variability between a predictor motor system and a criterion of about 71% (DELTA=0.71). The level of significance of such link was Q=0.00. Remaining 29% in

vanju ukupnog varijabiliteta testa poligon kompleksnih motoričkih znanja (PLKMZ) može se pripisati ostalim karakteristikama i sposobnostima ispitanika koje nijesu bile uzete u razmatranje ovim istraživanjem.

Dobijene vrijednosti koeficijenta multiple korelacije i kvadrata multiple korelacije (koeficijenta determinacije), pokazuju zadovoljavajuću informisanost i prediktivnu vrijednost, koja zapravo predstavlja linearnu kongruentnost vektora kriterijumske varijable i linearnih kombinacija skupa primijenjenih motoričkih varijabli.

Analizom međusobnih linearnih korelacija između svake pojedinačno uzete determinante prediktorskog sistema i kriterijuma, utvrđeno je da postoji statistički značajan uticaj većine motoričkih testova (15 od 18), čiji se koeficijenti korelacije kreću od r=-.30 kod varijable stajanje na dvije noge uzdužno na klupici za ravnotežu sa otvorenim očima (MRSOO), do r=.71 kod varijable trčanje na 20 m iz visokog starta (MBT20). Ovakav nivo koeficijenta korelacije govori o značajnom stepenu povezanosti prediktora i kriterijuma.

Analizom parametara parcijalnih standardizovanih regresionih koeficijenata (BETA), vidljivo je da statistički značajan doprinos u objašnjenju (predikciji) varijabiliteta kriterijumske varijable ima pet motoričkih testova iz prediktorskog sistema. To su: skok udalj s mjesta (MESDM) BETA=-.20 na nivou Q-BETA=.04, bacanje medicinke sa grudi na stolici (MEBMS) BETA=.20 na nivou Q-BETA=.04, penjanje i silaženje po klupi i švedskim ljestvama (MKPIS) BETA=.25 na nivou Q-BETA=.02, trčanje na 300 jardi sa promjenom smjera (MAI3Y) BETA=.28 na nivou Q-BETA=.00 i trčanje na 20 m iz visokog starta (MBT20) BETA=.43 na nivou Q-BETA=.00. Uzimajući u obzir numeričke vrijednosti BETA koeficijenata, koji zapravo signaliziraju kako pojedini pokazatelji utiču na kriterijum, proističe, hipotetski gledano, da najveći nivo efikasne predikcije rezultata u testu poligon kompleksnih motoričkih znanja (PLKMZ) imaju varijable koje su predstavnici sistema unutar motoričkih sposobnosti brzine, koordinacije, anaerobne izdržljivosti i eksplozivne snage, čiju sinergiju u testovnom smislu predstavlja kriterijum.

Sasvim je izvjesno da su na kriterijum u velikoj mjeri uticale motoričke sposobnosti koje su vrlo bitne za obavljanje redovnih i vanrednih zadataka u vojnom vazduhoplovstvu, odnosno bitan su dio ukupne specifične kondicione pripremljenosti pripadnika vazduhoplovnih snaga. Poligon kompleksnih motoričkih znanja ustvari je poslužio kao prostor za ispoljavanje pomenutih sposobnosti, a sam je simulirao veliki broj kretnji koje su dominantno zastupljene u izvršavanju zadataka vojnika vazduhoplovaca. Ovakvo stanovište se potkrijepljuje či-

the explanation of the total variability of test of complex motor knowledge polygon (PLKMZ) can be assigned to other characteristics and abilities of examinees that were not taken into consideration in this research.

The obtained values of multiple correlation coefficients and the square of multiple correlations (coefficient of determination) show a satisfying familiarity and predicative value which actually represents a linear congruence of criterion variable vector and linear combinations of a cluster of applied motor variable.

By the analysis of the mutual linear correlation among each linear determinants of the predictor system and criterion, taken individually, it is defined that there is a significant influence of the majority of motor tests (15 of 18), whose correlation coefficients range from r=0.30 for a variable of standing on both legs longitudinally on the bench for a balance with open eyes (MRSOO) to r=0.71 for a variable of running 20m from a high start (MBT20). Such a level of correlation coefficient informs us about an important level of a link between predictors and criteria.

By the analysis of parameters of partial standardized regression coefficients (BETA), it can be seen that a statistically important contribution to the explanation (prediction) of a criterion variable variability origins from five motoricity tests from the predictor system. These are: standing jump (MESDM) BETA=-.20 on the level of Q-BETA=0.04, medical ball throwing from chest on a chair (MEBMS) BETA=.20 on the level Q-BETA=-0.04, ascending and descending from a bench and Swedish ladders (MKPIS)BETA=-0.25 on the level Q-BETA=-0.02 and running 300 yards with direction change (MAI3Y) BETA=-0.28 on the level Q-BETA=0.00 and running 20 m from a high start (MBT20) BETA=0.43 on the level Q-BETA=0.00. Having in mind numerical values of BETA coefficients which actually signal how some indicators influence a criteria, hypothetically speaking, it can be seen that a highest level of an efficient result prediction in test complex motor knowledge polygon (PLKMZ) have variables which are representatives of a system inside motor abilities speed, coordination, anaerobic stamina and explosive strength whose synergy in terms of test is represented by a criterion.

It is quite obvious that motor abilities which are very important for performing ordinary and extraordinary tasks in air forces highly influenced the criterion, namely these are an important part of a total conditioning readiness of air force members. Such a viewpoint is substantiated by the fact that a mentioned polygon was taken from a complex study (Eisner et all.,2006) where it was

njenicom da je pomenuti poligon preuzet iz kompleksne studije (Eisinger i sar., 2006) u kojoj je on tretiran kao sredstvo za ispitivanje kompleksne motorike austrijskih specijalaca, i to onih koji su ciljno vezani upravo za vojne vazduhoplovne snage: padobranci, desantni diverzanti, helikopterski timovi za spašavanje u slučajevima prirodno i vještački izazvanih katastrofa itd. Dakle, jasno je određeno da kod vazduhoplovaca, koji su bili dio ovog istraživanja na definisani kriterijum najviše utiču brzina, koordinacija, anaerobna izdržljivost i eksplozivna snaga donjih ekstremiteta. Podaci koji su dobijeni direktno upućuju na mogućnost korigovanja ili definisanja adekvatnih kondicionih trenažnih programa, koji će sa druge strane pružiti pravilno i pravovremeno tretiranje kondicionih kompomenti, od kojih direktno zavisi ukupni kondicioni status pripadnika vazduhoplovnih snaga, odnosno njihova pripremljenost za izvođenje svakodnevnih profesionalnih aktivnosti.

Vrijednost parametra sadržanog u tabeli 2, koeficijenat multiple korelacije (RO=.65), daje informaciju da postoji statistički značajna linearna povezanost između prediktorskog-morfološkog sistema varijabli i kriterijumske varijable na nivou značajnosti od Q=.00. Vrijednost kvadrata multiple korelacije, koji zapravo objašnjava odnos između mjere protumačene varijanse i opsega ukupne neprotumačene varijanse, upućuje na to da je zajednički varijabilitet kriterijumske varijable poligon kompleksnih motoričkih znanja (PLKMZ) i cjelokupnog sistema antropometrijskih obilježja 42% (DELTA=.42). Dakle, evidentno je da na suprotnoj strani preostalo 58% rezidualnog, neobjašnjenog varijabiliteta kriterijuma, koji se pripisuje drugim antropološkim karakteristikama (motoričkim, morfološkim, funkcionalnim, konativnim, kognitivnim, socijalnim). Kao i u svim dosadašnjim istraživanjima ovog tipa, stepen zajedničkog varijabiliteta je najvjerovatnije uzrokovan egzistencijom specifiteta, odnosno kompleksnog rezidualnog segmenta varijanse koji je uobičajen za date varijable.

Statistički značajne korelacije imaju sljedeće prediktorske varijable: obim podlaktice (AOPOD) r=.22, kožni nabor nadlaktice (AKNNA) r=.23, dijametar koljena (ADIKO) r=.27, kožni nabor leđa (AKNLE) r=.32, kožni nabor trbuha (AKNTR) r=.34, kožni nabor potkoljenice (AKNPO) r=.37, širina kukova (AŠIKU) r=.40, srednji obim grudnog koša (ASOGK) r=.44, masa tijela (AMATI) r=.49.

Statističku značajnost u smislu predikcije kriterijuma, ostvaruju dvije varijable, i to masa tijela (AMATI) BETA=.99 na nivou Q-BETA=.00 i obim podlaktice (AOPOD) BETA=-37 na nivou Q-BETA=.03.

treated as a tool for the investigation of complex motoricity of Australian special force members, actually those that were intentionally linked just for air force: parachutists , rangers , chopper rescue squads in cases of naturally and artificially caused catastrophes etc. Therefore, it is obviously determined that for air force members which are an important part of this research the speed, coordination , anaerobic stamina and explosive strength of legs mostly influence the criterion. The obtained data directly refer to the possibility of correction or definition of adequate conditioning training programs which, on the other side, will give right and timely treatment of conditioning components, from which a total conditioning status of air force members depends, namely their preparedness for performing regular everyday activities.

The value of a parameter comprised in table 2, multiple correlation coefficient (RO=0.65) gives information that there is a statistically important linear link between a predictor-morphologic system of variables and a criterion variable on the significance level of Q=0.00. The value of a multiple correlation square, which actually explains the relation between a measure of the determined variance and a range of a total undetermined variance , refers to the fact that mutual variability of a criterion variable of complex motor knowledge polygon (PLKMZ) and total system of anthropometric signs is 42%(DELTA=-0.42). Therefore, it is evident that, at the opposite side, there is 58% of residual unexplained variability of criterion which is assigned to other anthropological characteristics (motor, morphological , functional, conative , cognitive, social). As in all previous researches of this type , the degree of mutual variability is most probably caused by the existence of a specificity , namely complex residual segment of a variance which is common for given variables.

Statistically important correlations have the following predictor variables: forearm circumference (AOPOD) r=0.22, skin crease of thigh (AKKNA) r=0.23 , knee diameter (ADIKO) r=0.27, skin crease of back (AKNLE) r=0.32, skin crease of abdomen (AKNTR)r=0.34, skin crease of lower leg (AKNPO)r=0.37, hip width (ASIKU) r=0.40 ,main circumference of chests (ASOGK) r=0.44, body weight (AMATI) r=0.49.

The statistical significance in terms of a criterion prediction is attained by two variables and these are; body weight (AMATI) BETA=0.99 on the level Q-BETA=0.00 and forearm circumference (AOPOD) BETA=-0.37 on the level Q-BETA=-0.03.

On the basis of the given values of some parameters (taking into consideration their number signs and time determinant of criterion, i.e. PLKMY test) it can be

Na osnovu iznijetih vrijednosti pojedinih parametara (uzimajući u obzir njihove predznake, kao i vremensku odrednicu kriterijuma tj. testa PLKMZ) može se konstatovati da su ispitanici koji imaju manju tjelesnu masu i veći obim podlaktice postizali bolje rezultate u testu poligon kompleksnih motoričkih znanja (PLKMZ).

Odnos povećane mase tijela na račun potkožnog masnog tkiva kao balastne mase i samostalne mišićne mase kao i struktura i zahtjevnost poligona kompleksnih motoričkih znanja u smislu ispoljavanja motoričkih kvaliteta (dominantno koordinacija, brzina, anaerobna izdržljivost i eksplozivnost donjih ekstremiteta), ukazuju da masa tijela u ovom slučaju predstavlja limitirajući faktor u izvođenju navedenog zadatka, što su definisali i relevantni pokazatelji regresione analize. Dakle, balastna masa (kod pripadnika sa većom ukupnom tjelesnom masom) uticala je na smanjenje brzine i agilnosti, kao i remećenje izvođenja koordinaciono složenijih kretnji (ovdje se prvenstveno misli na neodmjerenost u ispoljavanju snage prilikom izvođenja pojedinačnih pokreta, što značajno ugrožava optimalnu koordinacionu šemu kretnog zadatka).

Antropometrijski pokazatelj obim podlaktice imao je negativni regresioni koeficijent, tako da se sa sigurnošću može objasniti takav uticaj na kriterijum obzirom na vrijednost pomenutog parametra. Naime, obim podlaktice je odigrao važnu ulogu, prvenstveno zbog ispoljavanja statičke snage prilikom hvatova na pojedinim preprekama, kao i u slučajevima sinergijskog dejstva sa ostalim mišićima ruku i ramenog pojasa, a u izvođenju raznih prostih i složenih kretnji.

Zaključak

Imajući u vidu numeričke vrijednosti i karakteristike svih dobijenih parametara (predznaci i vremenske odrednice kriterijuma i pojedinih varijabli prediktorskog sistema), zaključni komentar ovog istraživanja u dijelu koji se odnosi na uticaj motoričkih parametara na izvođenje kompleksnog motoričkog zadatka bi bio da ukoliko su ispitanici, pripadnici vazduhoplovnih snaga, postizali bolje rezultate u testovima trčanje na 20 m iz visokog starta (MBT20), trčanje na 300 jardi sa promjenom smjera (MAI3Y), penjanje i silaženje po klupi i švedskim ljestvama (MKPIS) i skok udalj s mjesta (MESDM), utoliko su imali i bolje rezultate u kriterijumskoj varijabli poligon kompleksnih motoričkih znanja (PLKMZ). To znači da bi skladu sa osnovnom postavkom ovog rada dominantne komponente kondicionog potencijala pripadnika vazduhoplovnih snaga bile eksplozivna snaga, brzinska izdržljivost i koordinacija.

concluded that the examinees which have a smaller body weight and a bigger forearm circumference had accomplished better results in test complex motor knowledge polygon (PLKMZ)

The relations of an increased body weight on the expense of hypodermic fat tissue as a ballast mass, independent muscle mass as a structure and demands of complex motor knowledge polygon in terms of motor quality showing (dominant coordination, speed, anaerobic stamina and explosiveness of legs), indicate that a body weight in this case represents the limiting factor in the derivation of the mentioned task that is defined by relevant indicators of regression analysis. Therefore, the ballast mass (of members with bigger total body mass) influenced the reduction of speed and agility, and disturbing of execution of coordinative complex activities (first of all, it is about irrationality and showing the strength during execution of some movements , that significantly endangers an optimal coordination scheme of movement task).

The anthropometric indicator - a circumference of forearm has a negative regression coefficient so that such an impact on a criterion, according to the value of such parameter, can be obviously explained. Namely, a circumference of forearm has a very important role, firstly because of a static strength showing during catches on some obstacles, and in cases of a synergetic activity with other muscles of hands and shoulder strip during the execution of various simple and complex movements.

Conclusion

Having in mind numerical values and characteristics of all obtained parameters (numeric signs and time determinants of a criterion and some predictor system variables), the conclusive comment of this research concerning the part related to the impact of motor parameter on execution of complex motoricity task would be that when the examinees, who are the members of air forces, had accomplished better results in tests running 20 m from a high start (MBT20), running on 300 yards with direction change (MAI3Y) , ascending and descending on a bench and Swedish ladders (MKPIS) and standing jump (MESDM), they also had better results in a criterion variable of complex motor knowledge polygon (PLKMZ). This means that, according to a base setup of this paper, the dominant components of conditioning potential of air force members were explosive strength, speed stamina and coordination.

The conclusion on the basis of obtained results of

Dobijeni rezultati ovog rada u dijelu koji se odnosi na uticaj morfoloških parametara na izvođenje kompleksnog motoričkog zadatka bi bio da su ispitanici sa manjom tjelesnom masom i većim obimom podlaktice bolje savladavali motorički poligon kao pokazatelje kondicionog statusa. Takva konstatacija, upućuju na zaključak, da se u trenažnom procesu pripadnika vazduhoplovnih snaga mora posvetiti značajan prostor ciljanoj transformaciji antropometrijskih karakteristika, koje su podložne pomenutom uticaju, a čije će optimalno stanje zajedno sa zadovoljavajućim nivoom ostalih antropoloških sposobnosti i karakteristika dovesti do efikasnijeg obavljanja profesionalnih vojnih zadataka.

Izjava autora
Autori pridonijeli jednako.

Konflikt interesa
Mi izjavljujemo da nemamo konflict interesa.

this work, concerning the part related to the influence of morphologic parameters on the execution of complex motor task, show that the examinees with a smaller body weight and bigger forearm circumference better overcome a motor polygon as an indicators of conditioning status. Such a statement refers to the conclusion that in the training process of air force members, much attention must be dedicated to the target transformation of anthropometric characteristics which are prone to mentioned impact and whose optimal state, together with satisfactory level of other anthropological abilities and characteristics, will lead to more efficient execution of professional military tasks.

Authorship statement
The authors have contributed equally.

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Kratko saopštenje **Short notice**

Individualne i porodične dimenzije kao determinante emocionalne regulacije odbojkaša kadeta i kadetkinja

Miroljub Ivanović
Visoka škola za obrazovanje vaspitača, Sremska Mitrovica, Srbija
Uglješa Ivanović
Fakultet za menadžment u sportu Alfa univerziteta u Beogradu, Srbija

Korespondencija:
Prof. dr Miroljub Ivanović
miroljub.ivanovic@gmail.com

Sažetak: Cilj ovog istraživanja bio je da se ispitaju parcijalni doprinosi individualnih karakteristika odbojkaša oba pola i emocionalne atmosfere u porodici u tumačenju konstrukta emocionalne regulacije. U istraživanju učestvovalo je 286 ispitanika (142 kadeta i 144 kadetkinja), uzrasta od 16 do 17 godina. Primenjeni su merni instrumenti (Upitnik emocionalne regulacije i kontrole, Skala percepcije roditeljskog ponašanja, Skala dečje percepcije sukoba među roditeljima, Upitnik temperamenta u ranoj adolescenciji i Skala pubertetskog razvoja). Dobijeni rezultati pokazali su da su individualne karakteristike i dimenzije temperamenta odbojkaša i odbojkašica značajne determinante njihove emocionalne regulacije. Adolescenti koji su imali intenzivniju samokontrolu minimalno su ispoljavali negativne emocije i uspešnije kontrolisali svoja osećanja. Dimenzije roditeljskog ponašanja, značajno su uticale na tumačenje konstrukta emocionalne regulacije isključivo kod kadeta. Odbojkaši koji su percipirali viši nivo prediktorskih varijabli majčine kontrole i očevog odbacivanja, lošije su upravljali sopstvenim emocijama.

Ključne reči: emocionalna regulacija, dimenzije temperamenta, pubertetski status, dimenzije roditeljskog ponašanja, dimenzije roditeljskog sukoba.

Individual and Family Dimensions as Determinants of Volleyball Male and Female Players Emotional Regulation

Miroljub Ivanović
Preschool Teacher Training College, Sremska Mitrovica, Serbia
Uglješa Ivanović
Faculty of Sports Management, Alpha University, Belgrade, Serbia

Correspondence:
Miroljub Ivanović
miroljub.ivanovic@gmail.com

Abstract: The aim of this research was to examine partial contribution of individual characteristics of both male and female volleyball players and emotional atmosphere in a family in interpreting emotional regulation constructs. 286 examinees, aged 16-17, have taken part in the research (142 male and 144 female cadets). Applied measuring instruments (Emotional regulation and control questionnaire, Parental Behavior Perception Scale, Children's Perception of Interparental Conflict Scale, Questionnaire of Temperament in Early Adolescence and Pubertal Development Scale). Achieved results have shown that individual characteristics and temperament dimensions are significant determinants of male and female volleyball players' emotional regulation. Adolescents with intensive self control have minimally manifested negative emotions and their emotions were more efficiently controlled. Dimensions of parental behavior statistically and significantly influenced interpretation of emotional regulation construct, especially one of the male players. Male volleyball players who perceived higher level of mother's control and father's rejection, predictor variables were less successfull in their emotions control.

Keywords: emotional regulation, temperament dimensions, pubertal status, parental behavior dimensions, interparental conflict dimensions.

Uvod

Istraživanja konstrukta emocionalne regulacije, koja predstavlja sposobnost pojedinca da upravlja i usmerava emocionalne reakcije, tek su se u poslednjoj deceniji XX veka počela u većoj meri sprovoditi, pokazuju u svom istraživanju (Cole *et al*., 2004). S obzirom na to da odgovarajuće kontrolisanje emocija ima značajan uticaj na afektivno iskustvo i međulično funkcionisanje, važan segment razvoja adolescenta obuhvata dobro odabrano

Introduction

Research of the emotional regulation construct, which represents the ability of an individual to control and direct emotional reactions, have begun in the last decade of the twentieth century, which is proved by the research of Cole et al., (2004). Taking into consideration that appropriate emotional control has significant influence on affective experience and interpersonal relations, mastering emotional control reprents an important seg-

učenje za kontrolisanje osećanja, što pokazuje istraživanje koje su sproveli (Rivers *et al*., 2007; Suveg *&* Zeman, 2004). Značajan doprinos razvoju emocionalne regulacije ima genetski faktor *temperament* ličnosti. U svojoj studiji, (Gross *&* John, 2003) naglašavaju da su procesi emocionalne regulacije formirani preodređenošću temperamenta i zato je određivanje funkcije temperamenta važno za shvatanje genetskih povoljnosti predadolescenta za samostalnu emocionalnu regulaciju.

Autori (Zeman, *et. al*., 1997) konstatovali su da *pol roditelja* doprinosi socijalizacijskim naporima u zavisnosti od pola deteta. Moris i saradnici (Morris *et al*., 2002), smatraju da su devojčice u najvećoj meri uspešnije u upravljanju emocijama u odnosu na dečake, što se može pripisati genetskim razlikama u nivoima reaktivnosti.

Emocionalna atmosfera u porodici vrši upravljanje osećanjima zbog emocionalnih dečjih želja. U vreme nepovoljne, prinudne ili nepredvidive emocionalne porodične atmosfere, dete je dovedeno u opasnost da postane veoma emocionalno reaktivno, zbog učestalih, neobičnih osećajnih načina izražavanja misli ili zbog emocionalnih postupaka. U ovakvim okolnostima, deca nedovoljno ili preterano percipiraju osećanja svojih roditelja i manje su emocionalno zaštićena, navode (Cummings *et al*., 2000). U svom istraživanju (Parke, 2004) smatra da roditelji koji imaju ozbiljne nesuglasice u braku najčešće su neprijateljski usmereni prema deci i manje emocionalno odgovaraju na njihove potrebe.

Treba naglasiti i činjenicu da se većina ranijih istraživanja usmerila isključivo na školsku populaciju. Međutim, još uvek se malo zna o emocionalnoj regulaciji, dimenzijama temperamenta, pubertetskom statusu, dimenzijama roditeljskog ponašanja i dimenzijama sukoba u sportskoj populaciji. Ispitivanje takvih problema može da ima važne metodološke i teorijske primene. Metodološke primene odnose se na primerenost korišćenja različitih mera nadgledanja individualnih karakteristika i emocionalne klime u porodici, a teorijske na mogućnost izvođenja uopštavanja o prirodi procesa nadgledanja na osnovu rezultata istraživanja. Upravo je zbog toga ovo istraživanje važno, pošto je jedno od prvih istraživanja ove teme u našoj zemlji i na populaciji sportista.

Cilj u ovom transferzalnom istraživanju jeste da se ispita prediktivan doprinos individualnih dimenzija (temperament, pol i pubertetski status) i dimenzija roditeljskog ponašanja očeva i majki, kao i dimenzije sukoba među roditeljima) u objašnjenju emocionalne regulacije kod adolescentske populacije odbojkaša oba pola.

Polazeći od cilja u našem radu, postavljena je osnovna **hipoteza** prema kojoj se pretpostavlja da je spo-

ment of adolescent development, which is proved by the research done by Rivers et al., (2007) and Suveg & Zeman (2004). Genetic factor – *individual temperament* has an important contribution to the emotional development regulation. In their study, Gross *&* John (2003) emphasize the fact that emotional regulation processes are formed by temperament determinants which are predetermined. Therefore, definition of temperament function is important for understanding of genetic advantages of preadolscents for independent emotional regulation.

Authors (Zeman, *et. al*., 1997) stated that *parental gender* contributes to the process of socialization according to child's gender. Morris et al. (2002) claim that girls control their emotions better than boys, which can be attributed to genetic differences in reactional level.

Emotional atmosphere in a family governs the feelings because of children's emotional wishes. If emotional atmosphere is unfavourable, forced or unpredictable, child may express strong emotional reactions because of frequent, unusual affective ways of thought expression or beacuse of emotional acts. In these circumstances children perceive their parents emotions either too excessively or neglect them and they are less emotionally protected (Cummings *et al*., 2000). In his research, Park (2004) states that parents who have serious disputes are mostly hostile to their children and do not emotionally respond to their needs.

It should be pointed out that the majority of researches have included school-age population. However, there is not enough information about emotional regulation, temperament dimensions, pubertal status, parental behavior dimension and conflict dimensions concerning athletes' population. Investigation of these problems can have significant methodological and theoretical implications. Methodological implications refer to appropriateness of different measures of guidance of individual characteristics application and family emotional atmosphere, whereas theoretical implications refer to the possibility of generalization of the nature of the guidance process according to the results of the research. Thus, this research is important, since it represents one of the first investigations of this subject in our country applied to athletes' population.

The aim of transversal research was to examine predictive contribution of individual dimensions (temperament, gender and puberty status) and dimensions of parental behavior, as well as parental conflict dimensions in order to be able to explain emotional regulation within adolescent population of volleyball players of both genders.

sobnost emocionalna regulacija pored individualnih karakteristika kadeta i kadetkinja određena i emocionalnom atmosferom u porodici, koja se ispoljava u roditeljskom ponašanju prema detetu i kroz kvalitet roditeljskog ponašanja na koji negativno mogu uticati učestali sukobi roditelja.

Metode

Uzorak ispitanika i procedura istraživanja

Istraživanje je sprovedeno na odgovarajućem uzorku od 286 ispitanika (142 odbojkaša i 144 odbojkašice) uzrasta od 16 do 17 godina iz 10 odbojkaških klubova Međuregionalne kolubarsko–mačvanske lige Srbije: „Bravo“ (Valjevo), „Proleter“ (Loznica), „Zaslon“ (Šabac), „Spartak“ (Ljig); **„Železničar“,** (Lajkovac); „Osečina“ (Osečina), „Mladost“ (Ub), „Tamnava“ (Koceljeva), „Ribnica“ (Mionica) i „Rađevac“ (Krupanj). Prosečna starost ispitanika je 16,40 godina (*SD* = .85). Svi ispitanici imali su najmanje jednu godinu sistematskog i organizovanog odbojkaškog treninga i takmičenja u odbojkaškom klubu.

Pre sprovođenja anonimnog ispitivanja, ispitanicima je objašnjen cilj istraživanja. Zamoljeni su za učestvovanje i objašnjeno im je da mogu da odustanu kad god požele. Ispitivanje je sprovedeno grupno, tokom redovnih treninga u oktobru 2012. godine. Sprovodili su ga autori ovog istraživanja, a ostvareno je uz dozvolu odbojkaških klubova. Ispitanici su dobrovoljno ispunjavali upitnike u proseku za oko 60 min.

Merni instrumenti

I Upitnik emocionalne regulacije i kontrole, (*ERIK;* Takšić, 2003) obuhvata 20 ajtema. Zadatak ispitanika je da na skali Likertova tipa od 5 stepeni (1 – *uopšte ne*, 2 – *uglavnom ne*, 3 – *kako kada*, 4 – *uglavnom da* i 5 – *potpuno*) odredi koliko se pojedina čestica odnosi na njih. Dobijeni koeficijent (Cronbach alfa) unutrašnje konzistencije na celom uzorku u ovom istraživanju iznosi α = .91.

II Skala percepcije roditeljskog ponašanja, (*SPRP;* Macuka, 2007) sastoji se od 25 ajtema koji sadrže dve osnovne dimenzije roditeljskog ponašanja – emocionalnost (prihvatanje/odbacivanje) i kontrolu. Zadatak ispitanika je da na skali Likertova tipa od tri stepena (*1 – netačno*, *2 – delimično tačno*, *3 – potpuno tačno*), za svaku tvrdnju, zabeleži odgovor koji najbolje opisuje način na koji se njegovi roditelji ponašaju prema njemu. Utvrđena interna konzistencija izražena koeficijentom (Cronbach alfa) u ovom istraživanju za supskalu majčinog prihvatanja α = .74, za ispitivanje očevog prihvatanja iznosi α

Bearing in mind the afore-mentioned aim of research, we have stated general hypothesis according to which emotional regulation is determined not only by individual characteristics of male and female players, but also by emotional atmosphere in a family, which is expressed through parental behavior towards a child and through the quality of parental behavior which can be negatively influenced by frequent inter-parental conflicts.

Methods

Examinees sample and research procedure

The research included the sample of 286 examinees (142 male volleyball players and 144 female volleyball players) aged from 16 to 17 from 10 volleyball clubs of Interregional League of Kolubara and Mačva (Serbia): “Bravo“ (Valjevo), “ Proleter“ (Loznica), “Zaslon“, (Šabac), “Spartak“ (Ljig), **“Železničar“,** (Lajkovac), “Osečina“ (Osečina), “Mladost“ (Ub), “Tamnava“ (Koceljeva), “Ribnica“ (Mionica) and “Rađevac“ (Krupanj). Average age of examinees is 16,40 (*SD* = .85). All examinees were enrolled in organized volleyball trainings and competitions in their volleyball clubs for at least a year.

Before the testing, which was anonymous, the examinees were informed about the aim of the research. They were asked to take part in it and explained they were free to quit whenever they want. The research was conducted during regular trainings in October 2012. It was conducted by the authors of this paper, whereas the permission from volleyball clubs was obtained. The examinees fulfilled the questionnaires in approximately 60 min.

Measuring instruments

I Questionnaire of emotional regulation and control (*ERKQ;* Takšić, 2003) includes 20 items. The task of examinees was to define if particular statement refers to them at the Liquert’s scale of five levels (1 – *absolutely not*, 2 – *mostly not*, 3 – *depends*, 4 – *mostly* and 5 – *absolutely*) Obtained coefficient (Cronbach alfa) of internal consistency for general sample is α = .91.

II Parental Behavior Perception Scale, (PBPS*;* Macuka, 2007) consists of 25 items which comprise two basic dimensions of parental behavior – emotions (acceptance/rejection) and control. The examinees had to mark the answer which describes in the best possible way the behavior of their parents towards them on Liquert’s scale of three levels. (*1 – false*, *2 – partially true*, *3 – absolutely true*), for each statement. Internal consistency shown by coefficient (Cronbach alpha) in

= 72, potom α = .70 za ispitivanje majčinog odbacivanja i α = .68 za ispitivanje očevog odbacivanja. Za supskalu kontrola takođe su dobijene zadovoljavajuće pouzdanosti koje iznose α = .82 za ispitivanje majčine kontrole i α = .78 za supskalu ispitivanje očeve kontrole.

III Skala dečje percepcije sukoba među roditeljima, (*CPIC; Children's Perception of Interparental Conflict Scale;* Grych, Seid i Fincham, 1992, adaptirana verzija Macuka, 2011) sadrži 45 ajtema. Skala sadrži 9 supskala (frekvencija sukoba, jačinu sukoba, razrešenje sukoba, sadržaj sukoba, opažena pretnja, uspešnost suočavanja, samookrivljavanje, triangulacija i stabilnost), koje predstavljaju tri faktora sukoba višega reda: faktore sukoba (Cronbach alfa iznosi α = .79), pretnju (Cronbach alfa iznosi α = .81) i samookrivljavanje (Cronbach alfa iznosi α = .81). Zadatak ispitanika je da odredi koliko se pojedina čestica odnosi na njihovo doživljavanje sukoba među roditeljima označavanjem odgovarajućeg broja na skali Likertova tipa od tri stepena (*1 – netačno*, *2 – delimično tačno* i *3 – tačno*).

IV Upitnik temperamenta u ranoj adolescenciji, (Ellis *&* Rothbart, 2001, adaptirana verzija Macuka, 2011), meri različita svojstva temperamenta (samoregulacija, reaktivnost i emocionalnost) dece u uzrastu 9–15 godina. U ovom istraživanju, ispitivane su dve dimenzije temperamenta: samokontrola (Cronbach alfa iznosi α = .77) i negativna afektivnost (Cronbach alfa iznosi α = .68). Zadatak ispitanika je da odredi koliko se pojedini ajtem odnosi na njih označavanjem odgovarajućeg broja na skali Likertova tipa od pet stepeni (*1 – gotovo uvek neistinito* do *5 – gotovo uvek istinito*).

V Skala pubertetskog razvoja, (*PDS; Pubertal Development Scale;* Petersen, Crockett, Richards & Boxer, 1988, adaptirana verzija Keresteš i sar., 2010) sadrži pet pitanja, od čega su tri pitanja zajednička, a odnose se na određivanje naglog rasta u visinu, određivanje promena na koži i telesne dlakavosti kod devojčica i dečaka. Preostala dva pitanja različita su u odnosu na pol: dečaci imaju pitanja o dlačicama na licu i promenama glasa, a devojčice o rastu grudi i menarhi.

Unutrašnja konzistencija Skale pubertetskog razvoja na uzorku kadetkinja izražena koeficijentom (Cronbach alfa) iznosi α = .74, a na uzorku kadeta α = .71.

Dobijene vrednosti Kronbahovih alfa – koeficijenata ajtema na uzorku odbojkaške populacije upućuju na relativno dobru internu pouzdanost primenjenih mernih instrumenata, jer koeficijent reprezentativnosti znatno prevazilazi minimalnu vrednost procene pouzdanosti od .70, navodi se u studiji (Revelle & Zinbarg, 2009).

this research is α = .74 (acceptance – mother) and α = 72 (acceptance – father), α = .70 (rejection – mother) and α = .68 (rejection – father). Coefficients α = .82 (control – mother) and α = .78 (control – father) were also obtained for control subscale.

III Children's Perception of Interparental Conflict Scale (*CPIC;* Grych, Seid i Fincham, 1992, adapted version Macuka, 2011) consists of 45 items. The scale consists of 9 subscales (conflict frequency, conflict intensity), conflict solution, conflict content, perceived threat, successfull dealing with it, self-guilt, triangulation and stability), which represent three factors of higher level conflict: conflict factors (Cronbach alpha α = .79), threat (Cronbach alpha α = .81) and self-blame (Cronbach alpha α = .81). Examinees had to define if particular statement refers to their perception of interparental conflict by marking suitable number on Liquert's scale of three levels (*1 – false*, *2 – partially true* and *3 – true*).

IV Questionnaire of Temperament in Early Adolescence, (Ellis *&* Rothbart, 2001, adapted version, Macuka, 2011), measures different temperament characteristics (self-regulation, reactivity and emotions) of children aged from 9-15. Two dimensions of temperament: self-control (Cronbach alpha α = .77) and negative emotional state (Cronbach alpha α = .68). The task of examinees was to define if particular item refers to them marking appropriate number on the Liquert's scale - five-level scale (1- *almost always false* to 5 – *almost always true*).

V Pubertal Development Scale, (*PDS; Pubertal Development Scale;* Petersen, Crockett, Richards & Boxer, 1988, adapted version Keresteš et all., 2010) contains five questions, whereas three questions are mutual and they refer to the definition of sudden growth, skin changes and physical hairiness of boys and girls. Two questions differ according to the gender: boys have to answer the questions about beard and voice mutation, and girls have to answer the questions about breasts and menstruation. Internal consistency of Pubertal Development Scale is shown by coefficients (Cronbach alfa) α = .74 (female cadets) and α = .71 (male cadets).

Obtained values of Cronbach's alpha – coefficients of items of the sample of volleyball population show relatively high internal validity of applied measuring instruments, since representativeness coefficient significantly exceeds minimum value of validity estimation of .70 (Revelle & Zinbarg, 2009).

Rezultati

U Tabeli 1a i 1b, prikazani su rezultati deskriptivne statistike ispitivanih supskala, posebno za poduzorke kadeta i kadetkinja.

Tabela 1a. Aritmetičke sredine, standardne devijacije i t-test – komparativno

Skale / *Scale*	Deskriptivni parametri / *Descriptive parametres*	Kadeti / *Male players* (*N* = 102)	Kadetkinje / *Female players* (*N* = 120)	*t* *df* = 221
Emocionalna regulacija / *Emotional regulation*	AC / *AM*	1.96	1.92	1.45
Emocionalna regulacija / *Emotional regulation*	СД / *SD*	.61	.73	
Dimenzije temperamenta				
/ *Temeprament dimensions*	AC / *AM*	3.47	3.52	2.48**
Samokontrola / *Self-control*	СД / *SD*	.64	.60	3.26**
Negativna afektivnost	AC / *AM*	2.95	3.08	
/ *Negative emotional state*	СД / *SD*	.62	.60	

Табела 1b. – Aritmetičke sredine, standardne devijacije i t-test – komparativno

ПУБЕРТЕТСКИ СТАТУС				
ПУБЕРТЕТСКИ СТАТУС	AC / *AS*	2.31	2.59	8.68**
/ *PUBERTAL STATUS*	СД / *SD*	.50	.51	
Dimenzije roditeljskog ponašanja				
Parental behaviour dimensions				
Prihvatanje-otac / *Acceptance-father*	AC / *AS*	2.42	2.40	.89
Odbacivanje-otac / *Rejection-father*	СД / *SD*	.40	.43	3.18**
	AC / *AS*	1.48	1.38	
	СД / *SD*	.33	.31	
Контрола – отац / *Control – father*	AC / *AS*	.37	.35	
Прихватање –мајка / *Acceptance –mother*	СД / *SD*	2.45	2.49	3.96**
Odbacivanje –majka / *Rejection –mother*	AC / *AS*	1.40	1.-38	3.90**
Kontrola – majka / *Control– mother*	СД / *SD*	.41	.33	3.86**
	AS / *AS*	1.60	1.51	2.97**
	CD / *SD*	1.59	1.51	
	AC / *AS*	.49	.44	
	CD / *SD*			
Dimenzije sukoba među roditeljima				
Parental conflict dimensions				
Faktori sukoba / *Conflict factors*	AC / *AS*	1.51	1.47	1.42
Samookrivljenje / *Self-blame*	СД / *SD*	.30	.34	5.53**
Pretnja / *Threat*	AC / *AS*	1.38	1.30	.60
	СД / *SD*	.40	.31	
	AC / *AS*	1.49	.1.52	
	СД / *SD*	.28	.36	

**$p < .01$

Na osnovu izračunatih vrednosti parametrijskog testa značajnosti Studentovog *t*-testa, vidljive su statistički značajne razlike između aritmetičkih sredina odbojkaša i odbojkašica u merenim varijablama temperamenta, pubertetskog statusa, dimenzijama roditeljskog ponašanja majki i očeva, na nivou $p < .000$, uz broj stepeni slobode $df = 221$. Analiza odgovora na nivou pojedinačnih manifestnih varijabli pokazala je da statističku značajnost između polova ne pokazuju samo dimenzije prihvatanja oca i samookrivljavanje oca. Dobijene razlike na odbojkaškom uzorku ukazuju na to da kadetkinje više percipiraju dimenziju temperamenta (samokontrolu i negativnu afektivnost),

Results

The results of descriptive statistics of examined subscales, respectively for male and female players subsamples, are presented in Tables 1a and 1b.

Table 1a. Arithmetic means, standard deviations and i-test - comparatively

Table 1b. –Arithmetic means, standard deviations and i-test - comparatively

**$p < .01$

According to the obtained values of parametric significance test, Student's t-test, statistically significant differences between aritmetic means of volleyball male and female players were defined in the following variables: temperament, pubertal status, parental behavior dimensions, at the level of $p < .000$, degree of freedom $df = 221$. The analysis of answers at the level of individual manifest variables showed that only father's acceptance and father's self-blame do not have statistical significance. The differences obtained in the sample of volleybal players showed that female players perceive temperament dimensons (self-control and negative emotional state), as

kao i pubertetski status – telesni razvoj, odnosno nivo telesnih promena naprednijim nego odbojkaši. S druge strane, očigledne su polne razlike u smeru viših prosečnih rezultata kod odbojkaša u odnosu na odbojkašice u dimenzijama roditeljskog ponašanja (odbacivanja i kontrole od oca i majke i manje prihvatanje od majke), međutim, kadeti, u većem stepenu nego kadetkinje, samokrivljuju sebe za pojavu dimenzije sukoba među roditeljima.

U cilju dobijanja uvida u relativne parcijalne uticaje prediktorskih varijabli na procenu kriterijuma, izračunate su dve hijerarhijske regresione analize u skladu s preporukom (Preachera & Hayesa, 2008), pri čemu je *emocionalna regulacija* predstavljala kriterijum, a prediktore ili nezavisne varijable *individualne karakteteristike* i *emocionalna atmosfera u porodici* odbojkaša. Prediktorske varijable uvođene su u dva koraka. U prvom koraku, analize uključene su dimenzije temperamenta (samokontrola, negativna afektivnost i pubertetski status), a u drugom koraku dimenzije – emocionalna atmosfera u porodici – roditeljsko ponašanje majki (prihvatanje, odbacivanje i kontrola), roditeljsko ponašanje očeva (prihvatanje, odbacivanje i kontrola) i dimenzije sukoba među roditeljima (varijable sukoba, samookrivljavanje i pretnja).

Tabela 2. Rezultati hijerarhijske regresione analize: predikcija emocionalne regulacije adolescenata na osnovu individualnih karakteristika i emocionalne atmosfere u porodici

PEDIKTORI / ***PREDICTOR***	**KRITERIJUM** / ***CRITERIUM*** **Emocionalna regulacija Emocionalna regulacija kadeti kadetkinje** / ***Emotional regulation Emotional regulation Male players Female players***					
Prvi korak: individualne karakteristike adolescenta / First step: individual characteristics of adolescents	***β***	***R²***	***ΔR²***	***β***	***R²***	***ΔR²***
Samokontrola / *Self-control*	.33**	.21	.08	.30**	.22	.02
Negativna afektivnost / *Negative emotional state*	.44**			-.49**		
Pubertetski status / *Pubertal status*	-.05			-.06		
Drugi korak: emocionalna atmosfera u porodici / *Second step: emotional atmosphere in a family*						
Prihvatanje –majka / *Acceptance –mother*	.03	.19		.03	.38	
Odbacivanje –majka / *Rejection –mother*	.04			.03		
Kontrola – majka / *Control – mother*	-.19**			-.06		
Prihvatanje – otac / *Acceptance – father*	.04	.31	.05	.07	.38	.02
Odbacivanje – otac / *Rejection – father*	-.17*			.08		
Kontrola – otac / *Control – father*	-.09			.03		
Faktori sukoba / *Conflict factors*	.04	.32	01	-.01	.39	.04
Samookrivljavanje / *Self-blame*	.09			-.03		
Pretnja / *Threat*	-.10			-.15*		

*$p < .05$;**$p < .01$

U Tabeli 2, prikazani su osnovni rezultati prve i druge hijerarhijske regresione analize. Regresioni model pokazuje da je skup prediktora – individualne karakteristike uzorka ***odbojkaša*** kadeta u prvom koraku protumačio 21% proporcije varijanse kriterijumske varijable. Pritom,

well as pubertal status – physical development, i.e. the level of changes, better than the male players. On the other hand, there are obvious gender differences since male players had better average results than the female players concerning parental behavior dimensions (parental rejection and mother's acceptance). However, male players perceive themselves to be guilty for parental conflict more than female players.

Two hierachal regression analyses (according to Preachera & Hayesa, 2008) were applied in order to get an insight into relative partial influence of predictor variables on criterium assessment, whereas *emotional regulation* represented criterium and *individual characteristics* and *emotional atmosphere in a family* represented predictors, or independent variables. Predictor variables were introduced in two steps. In the first step of the analysis, only temperament dimensions (self-control, negative emotional and pubertal status) were included, and in the second step of the analysis, dimensions of emotional atmosphere – mothers' parental behavior (acceptance, rejection and control), fathers' parental behavior (acceptance, rejection and control) and interparental conflict dimensions (conflict, self-guilt and threat variables) were included.

Table 2. Hierarchal regression analysis results: adolescents' emotional regulation prediction according to individual characteristics

*$p < .05$;**$p < .01$

The results of the first and second hierarchal regression analysis are presented in the Table 2. Regression model shows that the set of predictors – individual characteristics of the sample of ***male volleyball players*** in the first set explained 21% of the proportion of criterium vari-

dimenzije temperamenta statistički značajno utiču na tumačenje varijabiliteta emocionalne regulacije: samokontrola (β = .33) i negativna afektivnost (β = –.44). Dobijene relevantne vrednosti standardnih parcijalnih regresionih koeficijenata, upućuju na to da kadeti koji imaju intenzivniju samokontrolu, a manju tendenciju ka negativnim osećanjima, uspešnije usklađuju svoje emocije.

Prediktorske varijable *majčino roditeljsko ponašanje* u drugom koraku, statistički značajno povećavaju srazmeru tumačene kriterijumske varijable emocionalne regulacije sa dodatnih 8% varijanse. Majčina kontrola (β = –.19) značajno utiče na tumačenje emocionalne regulacije, a dobijeni β-koeficijent signalizira na to da odbojkaši koji prosuđuju veći stepen majčine kontrole, lošije usklađuju sopstvena osećanja. Isto tako, i skup prediktora *očevo roditeljsko ponašanje* značajno utiče na tumačenje emocionalne regulacije odbojkaša kada se prethodno podvrgne kontroli doprinos roditeljskog ponašanja majke sa dodatnih 5% varijanse kriterijumske varijable. U tom skupu nezavisnih varijabli, jedino je varijabla *očevo odbacivanje* statistički značajna (β = – .21), što skreće pažnju na to da odbojkaši koji procenjuju više odbacivanja od oca, lošije usklađuju sopstvena osećanja.

Konačna regresiona jednačina definiše da je sistemom parcijalnih prediktora moguće objasniti sa 32% varijabiliteta emocionalne regulacije odbojkaša u adolescentnom uzrastu, uz tačno određene značajne negativne nezavisne varijable: negativna afektivnost, majčina kontrola i očevo odbacivanje.

U drugom delu Tabele 2. predstavljeni su rezultati hijerarhijske regresione analize na uzorku ***odbojkašica*** kadetkinja. Regresioni model upućuje na to da su prediktorske varijable *individualne karakteristike* objasnile u prvom koraku 22% varijanse kriterijumske varijable emocionalne regulacije. Izračunate relevantne vrednosti standardnih parcijalnih regresionih koeficijenata skreću pažnju na statistički značajan uticaj varijabli individualnih karakteristika – dimenzija temperamenta: *samokontrole* (β = .19) i *negativne afektivnosti* (β = –.41). To znači da odbojkašice koje imaju intenzivniju samokontrolu i niži nivo negativne afektivnosti, uspešnije usklađuju sopstvena osećanja. Međutim, vrednosti standardizovanih β-koeficijenata nezavisnih varijabli *roditeljskog ponašanja majke, roditeljskog ponašanja očeva i roditeljskog sukoba* nisu statistički značajno različite od nule, što naglašava da te dimenzije *nisu statistički značajno uticale na tumačenje varijabiliteta emocionalne regulacije* odbojkašica. Izuzetak čini jedino varijabla *pretnja* (β = –.17), koja je kao značajan prediktor dimenzije roditeljskog sukoba ostvarila statistički značajan negativan doprinos na emocionalnu regulaciju.

able variance. Temperament dimensions have statistically significant influence on emotional regulation variability explanation: self-control (β = .33) and negative emotional state (β = –.44). Obtained relevant values of standard partial regression coefficients show that the players with better self-control, and lower tendency to negative emotions, are better in their emotions harmonization.

Mother's parental behavior predictor variable in the second step statistically significantly explains emotional regulation criterium variable with additional 8% of variance. Mother's control (β = –.19) has statistically significant influence on emotional regulation explanation, and obtained β-coefficient signalizes that the male players who perceive higher level of mother's control are not so successful in their emotions handling. *Father's parental behavior* set of predictors has significant influence on emotional regulation explanation of volleyball players, if contribution of mother's parental behavior, with additional 5% of criterium variable variance is previously examined. Only *father's rejection* variable is statistically significant (β = – .21) in the set of independent variables, which points out that the male players who perceive father's rejection are less successful in emotional regulation.

According to the final regression analysis, the system of partial predictors can explain 32% of variability of emotional regulation of male adolescent volleyball players with precisely set significant negative independent variables: negative emotional state, mother's control and father's rejection.

In the second part of the Table 2, the results of hierarchal regression analysis of the sample of ***female volleyball players*** are presented. Regression model shows that *individual characteristics* predictor variables in the first step explain 22% of variance of emotional regulation criterium variable. Obtained relevant values of standard partial regression coefficients emphasize statistically significant influence of individual characteristics variables – temperament dimensions: *self-control* (β = .19) and *negative* emotional state (β = –.41). Female volleyball players with lower self-control and lower level of negative emotional state are better in their emotions control. However, the values of standardized β-coefficients of independent variables of *mother's parental behavior, father's parental behavior* and *interparental conflict* are not statistically different than zero, which emphasizes that these dimensions *did not have statistically significant influence on emotional regulation variability of female volleyball players.* The *threat* variable (β = –.17) is the only exception which has statistically negative influence on emotional regulation, as significant predictor of parental conflict dimension.

Konačna regresiona jednačina utvrđuje da je sistemom parcijalnih prediktorskih varijabli (individualne karakteristike i emocionalna atmosfera u porodici) protumačila 39% varijanse emocionalne regulacije odbojkašica u kadetskom uzrastu, uz značajne nezavisne varijable *samokontrola*, *negativna afektivnost* i *pretnja* (dimenzija sukoba među roditeljima).

Diskusija

Rezultati u ovom istraživanju pokazali su da nije utvrđena statistički značajna razlika na uzorku kadeta i kadetkinja *na skali emocionalne regulacije*, što je u suprotnosti sa nalazima (Eisenberg *et al*., 1999) koji navode da su devojčice obično bolje u uređivanju osećanja od dečaka. Međutim, (Morris *et al*., 2002) utvrdili su statistički značajne razlike u sposobnosti emocionalne regulacije učenika i učenica. Dobijeni nalaz podudaran je sa rezultatima u našem istraživanju, jer kadetkinje navode više nivoe dimenzije temperamenta u odnosu na kadete. S druge strane, u ovom radu, izračunate deskriptivne vrednosti pokazale su statistički značajne polne razlike kod najvećeg broja ispitivanih determinanti emocionalne regulacije.

Dobijene vrednosti beta-koeficijenata, u prvom koraku, upućuju na to kako među analiziranim individualnim karakteristikama samo *dimenzije temperamenta* značajno tumače emocionalnu regulaciju kadeta i kadetkinja, odnosno bolje usklađuju sopstvena osećanja sportisti koji znatnije ispoljavaju varijablu samokontrole. To znači da odbojkaši koji manje manifestuju negativna osećanja, intenzivnije osećaju niže nivoe straha i niže nivoe ljutnje. Naši nalazi u skladu su sa rezultatima koje su dobili (Grossa & Johna, 2003) koji smatraju da je sposobnost emocionalne regulacije jednim delom formirana duševnim stanjem temperamenta. Izračunate vrednosti standardizovanih parcijalnih regresionih *β*-koeficijenata upućuju na to da su dve varijable: ***samokontrola*** i ***negativna afektivnost***, naročito značajne za emocionalnu regulaciju sportista. Prva dimenzija temperamenta – *samokontrola* – omogućuje odbojkašima oba pola potiskivanje motivacionih i ponašajnih sklonosti usmeravanih afektima i obuhvata vladanje, usmeravanje ponašanja ili njihove pažnje u pojedinim okolnostima, te je zato izuzetno značajna u usmeravanju negativnih osećanja. To potvrđuju i nalazi (Murris & Ollendick, 2005), koji ukazuju na to da adolescenti sa lošijom samokontrolom imaju manju sposobnost emocionalne regulacije, što ih čini manje sposobnim za prilagođavanje. Druga dimenzija temperamenta*, negativna afektivnost,* podrazumeva tendenciju sportista ka intenzivnom osećanju negativnih

Accoriding to the final regression equation, the system of partial predictor variables (individual characteristics and emotional atmosphere in a family) explains 39% of emotional regulation variance of female volleyball players, with significant independent variables *self-control, negative emotional state and threat* (interparental conflict dimension).

Discussion

The results showed that there is no statistically significant difference in the sample of male and female players in the *emotional regulation scale*, which is contrary to the findings (Eisenberg *et al*., 1999) which state that girls control their emotions better than boys. However, (Morris *et al*., 2002) some researches stated statistically significant differences betweeen male and female ability of emotional regulation. Obtained data are compatible with the results of this research, since female players have higher levels of temperament dimensions than male players. On the other hand, obtained descriptive values showed statistically significant gender differences in most of the examined determinants of emotional regulation.

Obtained values of β-coefficients in the first step show that only *temperament dimensions* are significant for male and female players' emotional regulation interpretation, i.e. athletes whose self-control is higher are more successful in their own emotions harmonization. Volleyball players who do not manifest negative feelings, more intensively experience lower levels of fear and lower levels of anger. The results of the research are compatible with the results obtained by Grossa & Johna (2003), which state that emotional regulation ability is partially formed by temperament characteristics. Obtained values of standardized partial regression β-coefficients show that two variables**, self-control** and negative **emotional state**, are significant for athletes emotional regulation. The first temperament dimension – self-control – enables the volleyball players of both genders to suppress motivational and behavioral affects and includes governing and directing of behavior or attention under certain conditions. Therefore, it is very important concerning negative emotions regulation. The findings of Murris & Ollendick (2005) also confirm this and show that adolescents with lower level of self-control have lower ability of emotional regulation, which makes them less capable for adjustment. Second temperament dimension, negative emotional state, includes athletes' tendency towards intensive feelings of negative emotions (anger and fear). According to the research conducted by Morris *et al*. (2002), negative emotional state of boys and

emocija (ljutnje i straha). Prema istraživanju (Morris *et al*., 2002) negativna afektivnost dečaka i devojčica nepovoljno utiče na sposobnost emocionalne regulacije, što je i potvrđeno u ovom istraživanju.

Pubertetski status u našoj studiji jedina je parcijalna prediktorska u skupu individualnih karakteristika koja nije statistički značajno uticala na sposobnost emocionalne regulacije adolescenata oba pola. Dobijene relevantne vrednosti u hijerarhijskoj linearnoj regresiji na Skali pubertetskog razvoja upućuju na to da odbojkaši oba pola svoj telesni razvoj percipiraju u većini slučajeva prosečnim rezultatima vršnjaka i vršnjakinja, te izvesno nisu utvrđeni značajni učinci kod pubertetskog statusa u objašnjenju emocionalne regulacije u ispitivanoj odbojkaškoj populaciji. Međutim, nalazi istraživanja (Negriff *et al*., 2008) signaliziraju na to da su rane pubertetske promene povezane sa višim nivoima problema u prilagođavanju, pri čemu osnovu znatnim delom čine problemi u usmeravanju negativnih osećanja.

U drugom koraku hijerarhijske regresione analize, percepcija negativne majčine kontrole i negativnog očevog odbacivanja utvrđene su kao značajniji prediktori emocionalne regulacije kadeta. Pretnje, ispitivanja, ucenjivanja i ismejavanja osnovni su sadržaji majčine kontrole koja obuhvata ponašanja koje ona koristi da bi ispravila ponašanje i intenzivno osećanje deteta. Kadeti koji percipiraju više nivoe takvog oblika nadzora majki lošije usmeravaju sopstvena negativna osećanja. Očevo odbacivanje odnosi se na nepovoljna osećanja koje on ispoljava u odnosu sa detetom u različitim okolnostima. Kadeti koji percipiraju da ih očevi više odbacuju, lošije usmeravaju lična osećanja. Dobijeni nalazi o odnosu roditeljskog ponašanja i dečje sposobnosti upravljanja emocijama u našem istraživanju aproksimativni su rezultatima dobijenim u istraživanju (Gottman *et al.,* 1996).

Individualne karakteristike kod kadetkinja, protumačile su 41% varijanse kriterijumske varijable emocionalne regulacije, dok karakteristike emocionalne atmosfere u porodici nisu značajno dodatno uticale na njeno tumačenje, pri čemu se varijabla pretnja pokazala kao jedini značajni prediktor. To znači da kadetkinje koje procenjuju veću pretnju zbog sukoba među roditeljima lošije kontrolišu svoja osećanja, dok kadeti percipiraju roditeljske sukobe kao beznaznačajne u tumačenju njihove emocionalne regulacije.

Uvidom u dobijene srazmere protumačenog iznosa varijanse kriterijuma emocionalne regulacije kod kadeta i kadetkinja, u ovom istraživanju, zaključuje se da su analizirane porodične nezavisne varijable u većem međusobnom odnosu sa emocionalnom regulacijom odbojkaša nego odbojkašica.

girls negatively influences emotional regulation ability, which is confirmed by this research.

Pubertal status is only predictory characteristic in our study which was not statistically significant for emotional regulation ability of adolescents of both genders. Obtained relevant values of hierarchal linear regression in the Pubertal Development Scale show that volleyball players of both genders perceive their own development the same as they peers do, so that significant contribution of pubertal status in emotional regulation explanation in the sample of volleyball population was not noticed.

However, the research done by Negriff *et al*. (2008) shows that early pubertal changes are associated with higher levels of adjustment problems, whereas problems occuring while trying to regulate negative emotions are mostly responsible for this.

In the second step of hierarchal regression analysis, perception of negative mother's control and father's rejection are recognized as significant predictors of players'emotional regulation. Threats, interrogations, blackmails and mocking represent part of mother's control which includes the behavior she applies to correct the behavior and child's intensive emotions. Players who perceive higher levels of this kind of mother's control are less successful in their own negative emotions regulation. Father's rejection refers to unfavorable emotions he expresses towards his child in different circumstances. Players who think that their fathers reject them are less successful in their own emotions regulation. Obtained results concerning the relation betweeen parental behavior and child's ability to regulate the emotions are approximative with the results obtained by Gottman et al., (1996).

Individual characteristics of female players explained 41% of variance of emotional regulation criterium variable, whereas characteristics of emotional family atmosphere did not have influence on its explanation, but the threat variable showed to be the only significant predictor. Female players who perceive interparetnal conflict as a threat are less successful in emotional control, whereas male players perceive interparental conflicts as unimportant for their emotional regulation explanation.

The analysis of the variance of emotional regulation criterium of both male and female players shows that there is mutually dependant relation between analyzed independent family variables and emotional regulation when male players are concerned, than the female players.

Therefore, some independent variables of parental behavior (mother's control and father's rejection) represent risk factors which contribute to a less successful control of negative emotions of male players, whereas certain

Dakle, neke nezavisne varijable roditeljskoga ponašanja (majčina kontrola i očevo odbacivanje) predstavljaju rizične faktore koji doprinonose lošijoj kontroli negativnih osećanja kadeta, a pojedine dimenzije odnosa roditelja (npr. procenjena pretnja u sukobu roditelja) rizičan je faktor za slabiju kontrolu osećanja kadetkinja. Dobijeni vrlo skroman doprinos porodičnih varijabli u tumačenju emocionalne regulacije ukazuje na to da odbojkaši, posredstvom kognitivnog razvoja, postaju samostalniji u upravljanju sopstvenim osećanjima, te je izvesno da su posredovanja roditelja, kao i njihov doprinos u usmeravanju osećanja u kadetskom uzrastu, manje ispoljeni.

Tumačenje dobijenih rezultata ukazuje na način kako je primenjena hijerarhijska regresiona analiza potvrdila činjenicu da testirana hipoteza u ovom istraživanju može da bude prihvaćena.

Istraživanja individualnih karakteristika i porodičnih determinanti emocionalne regulacije još uvek nedostaju, posebno u sportskoj populaciji, pošto se konstrukt emocionalne regulacije adolescenata tek nedavno počeo intenzivnije istraživati. Značaj našeg istraživanja odnosi se na potvrdu važnosti dimenzija temperamenta odbojkaša kadeta i kadetkinja u objašnjenju njihove emocionalne regulacije.

Osnovna *metodološka ograničenja* ovog istraživanja odnose se na prikupljanje podataka u vrlo kratkom vremenskom periodu, demografsko obeležje analiziranog prigodnog uzorka, relativno malu veličinu i specifičnosti uzorka prosečne starosti oko 16,5 godina, što onemogućuje uopštavanje rezultata na celokupnu sportsku populaciju u Srbiji. Bez obzira na ograničenja, dobijeni nalazi u ovom radu omogućuju poređenje merenih varijabli i sa rezultatima dobijenim u evropskim državama, jer je korišćena jedinstvena metodologija.

Radi dobijanja pouzdanijeg uvida u posledične odnose determinanti ispitivanih varijabli, neophodno je sprovoditi sveobuhvatnije longitudinalno dizajnirane studije, koje će proširiti ovaj nacrt uključivanjem nekih drugugih prediktorskih varijabli, npr. funkcija ličnih dimenzija roditelja (temperamenta, emocionalne regulacije i mentalno zdravlje roditelja) i upotrebom drugih metoda (npr. intervjua, opažanja, kao i korišćenjem višestrukih opažanja dece i roditelja) na veći i reprezentativniji uzorak ispitanika svih uzrasta koji se bave i nekim drugim sportovima.

Zaključak

Istraživanje sprovedeno je na uzorku od 286 ispitanika (142 kadeta i 144 kadetkinje), uzrasta od 16 do 17 godina, koji aktivno treniraju odbojku u 10 klubova u Međuregionalnoj kolubarsko–mačvanskoj ligi Srbije.

dimensions of interparental relation (e.g. perceived threat of interparental conflict) represent risk factor for a less successful control of female players. Modest contribution of family variables to emotional regulation explanation shows that male volleyball players, due to cognitive development, become more independent and govern their own emotions, so that parental influence, as well as their contribution to emotional regulation are less prominent in this period.

Interpretation of the obtained results shows the way in which hierarchal regression analysis confirms the fact that the tested hypothesis can be accepted.

Investigations of individual characteristics and family determinants of emotional regulation among athletes' population are relatively scarce, since adolescents' emotional regulation construct has been investigated lately. The importance of this research refers to the aknowledgment of temperament dimensions importance of male and female volleyball players for emotional regulation explanation.

Methodological limitations of this research refer to the information gathering in a short period of time, demographic characteristcs of analyzed sample, relatively small sample and its specific characteristics (average age 16,5), which makes it impossible to make any generalization about athletes' population in Serbia in general. However, obtained results enable the comparison of variables with the results gathered in European countries, since unique methodology was applied.

More comprehensive longitudinally designed study should be conveyed in order to get more reliable insight in casual relations of determinants of examined variables, which would broaden this research by inclusion of other predictor variables, e.g. parental personal dimensions (temperament, emotional regulation, and parental mental health) and by another method application (e.g. interview, perception, and multiple perception of children and parents) in the bigger and more representative sample which would include examinees of all ages who are engaged in some other sports.

Conclusion

The research included the sample of 286 examinees (142 male players and 144 female players), aged from 16-17, who are actively engaged in volleyball trainings in 10 clubs of Interregional League of Mačva and Kolubara in Serbia. Following measuring instruments were applied: Emotional regulation and control questionnaire, Parental Behavior Perception Scale, Children's Percep-

U ovoj studiji korišćen je skup sledećih mernih instrumenata: Upitnik emocionalne regulacije i kontrole, Skala percepcije roditeljskog ponašanja, Skala dečje percepcije sukoba među roditeljima, Upitnik temperamenta u ranoj adolescenciji i Skala pubertetskog razvoja.

Analizom rezultata hijerarhijske regresione analize uočeno je da ispitanici oba pola u kadetskom uzrastu imaju bolju samokontrolu, manje manifestuju negativne osećanja i efiksnije upravljaju svojim emocijama, na nivou $p <$ .001. Dimenzije roditeljskog ponašanja, statistički značajno su doprinele objašnjenju pojma emocionalne regulacije samo kod odbojkaša. Kadeti koji su opažali viši stepen u prediktorskim varijablama majčine kontrole i očevog odbacivanja, nepovoljnije su kontrolisali vlastita osećanja.

Dobijeni rezultati centralnih i disperzionih parametara i hijerarhijske regresione analize mogu biti važan i utvrđen pravac za naredna longitudinalna istraživanja individualnih porodičnih dimenzija sportista u doba adolescencije koje utiču na tumačenje konstrukta emocionalne regulacije. Takođe, dobijeni nalazi mogu sa sigurnošću *(p* < 95%), pružiti indikativne informacije trenerima o uticaju temperamenta, pola i pubertetskog statusa, dimenzija roditeljskog ponašanja očeva i majki i dimenzije sukoba među roditeljima na emocionalnu regulaciju odbojkaša kadeta i kadetkinja.

Izjava autora
Autori pridonijeli jednako.

Konflikt interesa
Mi izjavljujemo da nemamo konflict interesa.

tion of Interparental Conflict Scale, Questionnaire of Temperament in Early Adolescence and Pubertal Development Scale.

The analysis of the results of hierarchal regression analysis showed that the examinees of both genders show better self-control, do not express negative feelings so often and more efficiently control their emotions, at the level of $p < .00$. Parental behavior dimensions statistically contributed to the explanation of emotional regulation concept only within male volleyball players. Players who showed higher level of predictor variables of mother's control and father's rejection had lower results in their own emotions control.

The results of central and dispersive parameters and hierarchal regression analysis can be important for further longitudinal researches of individual family dimensions of athletes in adolescence, which are important for emotional regulation construct explanation. Therefore, obtained results can with certainty *(p* < 95%), give indicative information to coaches about the influence of temperament, gender and pubertal status, parental behavior dimension and interparental coflict dimension on male and female volleyball players.

Authorship statement
The authors have contributed equally.

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Professional Paper

Sportsperson's Health as a Psychological Problem

Julia Mutafova-Zaberska
National Sports Academy, Sofia

Correspondence:
Prof. dr Julia Mutafova-Zaberska
National Sports Academy, Sofia
E-mail: yulia@gbg.bg

Abstract: Modern education cultivates society and every single person in it through knowledge not only for the wide world/the universe but also for the body and human's health. This is made possible thanks to the continuous, permanent/ incessant education of the specialist – the governing body of the **Panevropsky University "APEIRON"** understands that perfectly well. The endless realm of knowledge itself makes us people of knowledge, and every sportsperson in particular – a **man of knowledge** – a "**knowman**". Only with the help of this force can we overcome the "contamination" of our life, starting with Nature and reaching the body and soul.
We need one **holistic approach** for the study of human as a complex system of hydrosphere, biosphere, atmosphere, lithosphere, ionosphere, nanosphere and noosphere. Knowing this, it is especially important to know the very complicated psycho-somatic human structure - especially in the world of physical education and sports. This means, we have to understand the **main dualisms** of existence - the two main origins of our life (masculinity-femininity, subject-object, nature-culture, mystics-science, human-God). They are the major bearers of **spiritual and material foundations** of the sportsperson's health.

Key words: knowledge; physical education, sport and health; holistic approach; dualisms in the life of the personality.

Knowledge has organizing power. It is literally healing.
Knowledge affects the body and creates health.
Deepak Chopra

Please, accept my congratulations on the occasion of this scientific forum as traditionally held and where the Renaissance point of view towards the world is established – the infinity of knowledge about the inseparable unity and commitment of human and nature.

The experts, who are here today, have perfected themselves in their professional pathways thanks to the evolution of the society, of the knowledge, of the time, in which we live. Knowledge is out light reflected in the sunny smiles of the people, with whom we communicate, to whom our work is dedicated. More the knowledge is, more attractive our purposes on earth are – the horizons in front of us; more the knowledge is – surer the achievement of star heights is (Pythagoras called man *"a walking star");* the new knowledge mastered is often like a mystery, which has created the nanotechnology; knowledge has allowed us even to peer into the space and to wander into unknown areas – our Noosphere has become *"the mind-achievable nature of reality, of the virtual reality as a fruit of the endless expansion of the concepts" (wrote I. Kant in "For the Pure Reason").* Human knowledge today reflects the objectively existing "coloured" aura of human presence – the green energy, the star radiance, the cosmic temptation.

Exactly this endless expansion of our ideas and new knowledge make us *knowmen* – men of knowledge! I believe that anyone, who is present here, has turned his natural curiosity into a permanent, stable interest, into a creative rediscovery of the world, including the world of physical education and sports. *The knowmen* – the representatives of the so-called *neophilia* - are the bearers of love of the new, the unknown, and the unseen – of the creative work in the name of development, success and prosperity in life.

These thoughts are provoked by the program of this conference – its contents reveals organizers' holistic approach synthesizing all the contradictions – in the horizontal and vertical lines - in life in the name of the endless

knowledge. The University itself is named after the European Knowledge, which is endless - "APEIRON" (Greek).

But, regardless of our whole knowledge, we endure the mass "pollution" both of nature and spirit: man becomes a victim of intellectual, emotional, functional stresses. Instead of the good, mobilizing eustress, the distress displaces the personal values – "energy of cold" is created: lies, aggression, alcoholism, smoking, drugs destroy the planet, health, life.

The holistic approach allows us to examine sportsperson's **health** as achievement of harmony of the personality both with itself and with the surrounding world. According to the *"Father"* of Medicine – Hippocrates, health is a *dynamic equilibrium* of life in compliance with natural laws: what happens in mind affects the body, the environment, in which one lives and works. This dynamic equilibrium is a result of the continuous, two-way interaction of the complicated system of connections of human/body with the environment. The disturbance of these two-way connections in the "microsphere" of the body itself disturbs the optimum of its functioning and creates numerous health problems. For instance, the reduction of the optimum in the **"hydrosphere"** leads to the problems in the functioning of the circulatory system; the disturbances in the **"biosphere"** cause diseases of the vital internal organs and systems; the respiratory pathways suffer because of the **atmosphere** polluted; in failures of the **lithosphere** (the Earth's crust), we observe mental derangements; the disturbances in the **ionosphere** lead to sleep disturbances, inability to relax; the **"nanosphere"** suffers with the failures of the functions of the smallest constructive elements of the human body, diseases at cellular level occur (tumour formations); man as a bright **"noosphere"**, in case of incomplete, insufficient or lacking knowledge, then we observe the destruction of the information connections, disorientation of consciousness occurs, the personality loses its stress-resistance. Exactly such a wider point of view for the understanding of health and the individual manifestations of human activity provide the holistic point of view in the human science. Socrates's words sound like of the present times even today*: "There is only one good, knowledge, and one evil, ignorance"*

The holistic approach (from Greek *„holos" – entire, whole, integral)* allows to examine the individual in the inseparable unity of three basic, mutually connected and mutually influencing, mutually determined energy structures –physical, mental, emotional, spiritual ones. Knowing them is especially important in the world of physical education and sports with a view on the overcoming of the main dualisms recognized by the philosophy as the existence of two main origins in our life, bearers of the spiritual/perfect and the material:

a) **Masculinity – femininity;**
b/ **Subject – object;**
c/ **Nature - culture**;
d/ **Mystics – science;**
e/ **Human - God.**

a) ***Gender-role orientation*** in society is a complicated problem although what dominates is the commonly accepted: "there is no man's and woman's job". It is the same with sports. Although interesting, the conception for masculinity – femininity in different cultures has been related to the system of values since ancient times to nowadays, such values being typical and uniform for all the societies around the world, especially in sports. The practical consequence is the ambitiousness, the purposeful competitive orientation for self-perfection with the aspiration for proving oneself, for superiority and victory (metaphorically and literally); professional growth and career are related to the social roles played, which does not question their personal qualities of a man or a woman.

We cannot say that the tenderness and concern about home and children, outbursts of feelings, tenderness, and romantics are a "privilege" only of one of the sexes. While some different trends in this regard in certain countries and cultures can still be observed, education of personality in sports is subordinated to the motivation for superior achievements, being much culturally charged: modesty and self-exigency, mutual aid and readiness to risk, dedication and selflessness reaching heroism. Countless are the examples in this regard. Not to mention the levelling of the problem in the modern practice of APA (Adapted Physical Activity) and Sports. Since being of little age, children are educated in sports with the great examples of the World, Olympic and Paralympic Records, which raise young boys and girls, men and women to the star heights of the super-appreciation by the society.

Of course, we witness some cases of education in super-masculinity which may have negative and disastrous consequences. Sportsperson's morals are one and the same for men and women; they are equal, their behaviour and the expectations from them do not differ essentially.

In his book "*The Archaeology of Knowledge"* (1960), Michel Foucault treats **sexual energy** as *"an element poured on the whole human being, and not as some differentiating function"* (he sees the etymology of the concept from the English „S*elf*" – oneself and the Greek „*Exo - outside*"). It comes to the levelling of sexual differences; "yang" energy is stimulated, in the elite, Olympic sports, with the maximum load when preparing for important competitions. As Berdyaev says, here we have realized *"the strongest connection with life – two worlds meet in one point of intersection"*.

Such a point of intersection: we are looking for too, in the name of the development of the personality, of its health – mental and physical one. As far as we know ourselves, I think that we all suffer from the incurable complex called *"the Leonardo's complex"* – the aspiration for perfectionism, the consideration of particularities, the sculpturing of details: „*Knowledge begins with what is insignificant, then it is proceeded from one to another and so on – without end"* (Leonardo Da Vinci).

Such is our methodical work in sports too – in our everyday dedication to the problems, many are the big small things!

b) We frequently observe levelling of the differences in the relations **subject-object** too. The child will unnoticeably turn into a subject of activity from an object of the psychological and pedagogical influence of the sports educator. This can be very clearly seen as recorded in the "Sportsperson's Register" kept by the competitors: here we can see the moments from the training/competition which are important for the sportsperson in details and diligently recorded, the feelings are "poured out", the emotional experience is analysed, small matters are evaluated and re-evaluated – there recorded is the active work of conscious and body in harmony. Indicative in this regard is the example with Sergey Bubka: his trainer and psychologist and he have for a long time considered, re-examined, discussed, "re-arranged" the details of their mutual work and as a result, Bubka achieved his famous – over 500 world records (indoors and outdoors!). Jose Ortega y Gasset's thought sounds live in this sense: *"A life unexamined is a life wasted"*.

Therefore the memories published in a book are a wish for every one of us: to make sense of and present to the others the positives and negatives achieved in our experience – because of science, but also a personal example with a moral. Thus, the trainer will constantly become an object from a subject, and will many times turn into a student from a master. Teaching the others, we are teaching ourselves for a second time. One of our nice proverbs says: *"Man learns as long as he lives, and he lives as long as he learns"*. This exchange of the roles is a strong long-term motivation driving any conscious personality and a base of its health and life activity!

c/ The dualism ***"nature – culture"*** contains the clearest connection between the material and spiritual world. They are both life. And life is a move – we can see it everywhere! Our body is nature, but also culture, when its proportions are harmonic, the moves are in a proportionate, melodious, orchestral consonance. Move is everywhere, but the movements of the hand of a new-born child are different from those of the training sportsperson– a beginner or a master, and such once again differ from those of the painter, musician, ballet-dancer, gardener or housewife, etc.

Move makes the hand not only an instrument for work, but its product. And what is beneficial for the hand is beneficial for the whole body; it becomes valuable for the whole society. In ancient authors we can read: „*Move is storehouse of life" (Plutarch),* and also „*Move is the healing part of the medicine"* (Plato); yet 2500 years ago, in Ancient Greece there ruled the maxim: *"You want to be healthy – run, you want to be strong – run, you want to be clever – run, you want to be nice – run!"*. There is no clearer illustration of the unity even today, of the unbreakable connection between nature and culture. The Father of the Medicine Hippocrates explains that the doctor is the one who advises, but nature (i.e. the move) cures (*Medicus currant – natura sanet*)!

In the move – our basic instrument, on which we rely – we find both nature and culture included in an unbreakable unity. The great physiologist Sechenov states this punctually and clearly: „*The entire endless diversity of the brain activity, which has created masterpieces for millennia, is a result of only one phenomenon – the moves of the muscles"*. And many are the examples with our Paralympic sportspersons, who have achieved incredible successes, namely thanks to the hard, systematic cultivation of their movements!

d/ ***Mystics – science:*** I will once again quote the Renaissance man, *"the first scientist"* as Leonardo is called: *„All our knowledge has its origin in what we feel, what we experience – in our emotions"*. Even today, the psychologists state that the only reality in our life is our experience. This is reality, which constantly teaches us, educates us. The positive information motivates our acts (*"If you are invited – catch, if you are chased – run!")*.

Leonardo Da Vinci himself (Freud gives such examples too) describes in his memories a dream from his early childhood: when he was a baby in a cradle, he saw a bird, which was rushing at him, then it went into his mouth and started beating him many times inside his mouth with its tale, and he was uncomplainingly silent. Leonardo started his career of an incomparable genius at 14 years old, but all his life he racked his brains to interpret this dream and decided that he should create without speaking …. Nowadays, scientists continue discovering some new miracles of artistic and engineering work, which he never shared. Today British Museum keeps his notebook (priced at three million pounds!) with drawings of the skull cavity of a woodpecker – of the beak, the tongue, and the mouth cavity – which structure science did not know! …

The mystics in the World Olympic Records achieved by sportspersons and trainers is in their inspiration, in their intuition while taking decisions, but it is also related to the years of hard creative work, the accumulation of answers, but also the continuous search for new discovery approaches during the sleepless nights. It may be mystic for someone the creation of for instance Finsbury's Style in high jump, if one is not familiar with the Heuristic guesses of its author.

e/ ***Human - God***: Human anthropomorphicity today has started forming since Leibniz's organological model for the world (1600 – 1700 AD) who discovered microbes under microscope in the drop of water and built the model of the Monad as world unity: *"Everything is one and the same"*. We often repeat: *"Everyone carries God inside"*, as well as *"He has wonderful **character** – he is not human, he is just God!"*

The reference in Foucault's book indicates the origin of the word "character": „*charaseo*" (in Greek means *"to draw, to mark, to leave a trace")* and "*tera"* (from Latin *"land")*. Therefore, a man of character leaves behind him (where he shall pass on earth/in the world) a trail, his imprint, mark, signs. Exactly like the sportsperson, the trainer, the educator models himself, but also the others by transforming life in a new, non-standard, inimitable manner. Such a personality turns into a great example – into a creator, who inspires, contributes to the transformation of the soma too, of the body - matter, and of the ideas - spirit. There is no doubt about the inseparability of their unity - vis vitalis! Research definitely shows that any sportsman, who can clearly imagine, see, visualize his purpose and who believes in his potentialities, will succeed. The long-term motivation for the important, vital purposes activates the personal growth, enhances the self-criticism and control over the particular situations, circumstances and events, improves the quality of life stimulating the belief in the own potentialities, to accept oneself. And to believe in yourself is like believing in God – to unite with God.

Typical for such sportspersons-creators is the avoidance of any risky behaviour (like smoking, alcoholism, and aggression), the high level of satisfaction from the quality and way of life, and also of their own mental and physical health.

Yet in ancient times Plato wrote: *„Cosmos is an animal – a living organism - Zoon";* the Middle Ages burned at the stake Giordano Bruno because of his words: *„The world is a living being and all its parts (sense) enjoy living together" (Mundo esse animal totum senties*). Today, Jose de Silva and his passionate, numerous followers teach: "The world is a sense organ – life - body – soul – a statue of the supreme God".

Such is the **holistic approach,** thanks to which we understand how the educators-trainers take into their hands the little sportsmen like soft, shapeless clay and gradually – with the joint, mutual efforts, the masterpieces – *"God-like heroes"* will be sculptured.

The word – the speech, the instructions, the directions, the explanations of trainers, instructors, judges, team-mates, friends, spectators and so on, which word is variously shaped according to the intonation makes the back-ground sounds and gives the images of ideas, schemes, concepts. This word allows to "see", "sense" and "feel" the world of sports – as variously coloured in each event. This verbal richness irradiates at receptor level into the ganglia, the muscles, the bones, the soft tissues, and embraces them in the energy flow as naturally generated. Thus, sports unlock the personal potentialities (the root of the term *sport* is *"port" – door,* which *opens,* „*S*" has left from the Latin *desporte*, in Spanish it drops off - *deporte*).

The Renaissance point of view towards nature and human in an organic unity is nowadays passionately supported by the environmentalists too. I think that today the world wisdom is in the evolution of the sports sciences too: Theory of Physical Education (TPE), Theory of Sports Training (TST), Sports Psychology, Kinesitherapy, Adapted Physical Activity and Sports (APAS) and so on, in order to solve the health problems. In all of them, the effect is achieved through the simplest instrument – ***the move,*** in order to achieve the necessary high-frequency field with the functioning of the various energy generators.

In this way, energies deeply hidden in the sub-consciousness are activated which makes our life a real artistic work, a bright experience of happiness. This is of what the humanism is made – the fourth dimension of life – ethics and aesthetics in sports too. As inheritors of an ancient civilization, we understand how this fact motivated Baron Pierre De Coubertin to revive the ancient Olympic Games, which continue to amaze the world even today.

I would like to thank the esteemed hosts for the invitation and the possibility to join this feast of the Spirit. I know that every man, who has appeared even for a moment, becomes our teacher. These days are a new experience for me which does not come by chance. I have already started to generously obtain power, wisdom, joy and expectation for new meetings from this experience. I would like to wish you having the same wealth!

Authorship statement
The authors have contributed equally.

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Razvijanje snage opštim i specifičnim metodama u kajak kanuu

Toplica Stojanović
Goran Pašić
Fakultet fizičkog vaspitanja i sporta, Banja Luka, Republika Srpska, Bosna i Hercegovina
Zvezdan Savić
Fakultet sporta i fizičkog vaspitanja, Niš, Srbija

Korenspondencija:
Prof. dr Toplica Stojanović
Fakultet fizičkog vaspitanja i sporta
Banja Luka, R. Srpska, BiH
e-mail: toplica.nis@gmail.com
tel. +381 65 8 432 432
+ 387 65 382 622

Sažetak: Sa razvojem kajak kanu sporta (stvaranje različitih disciplina i oblika), popularizacijom i masovnošću svjetskih razmjera, raste i konkurencija. Danas je kajak kanu uz atletiku i plivanje sportska grana sa najviše učesnika i dodjeljenih medalja (Peking, 2008 – 84 medalja) u programu Olimpijskih igara. Nastojeći da pobijede protivnike, sportisti i njihovi treneri koriste iskustva drugih veslača. Primjetna je stalna dinamika napretka sportskog rezultata. Primjenom saznanja iz oblasti medicine, fizike, biomehanike i psihologije stvorena je predstava koliko su sportska tehnika i psihofizičke sposobnosti značajni za postizanje vrhunskog rezultata. Kajak kanu, odnosno svaka od disciplina, ima svoje specifičnosti, gdje razvoj određenih oblika snage zauzima posebno mjesto. Možemo reći da je ona uz izdržljivost i brzinu prva među jednakima. Mnoštvo disciplina u kajak kanu sportu uslovilo je specijalizaciju takmičara za pojedine discipline. Koji su to oblici ispoljavanja snage bitni u kajak kanu sportu, njihove specifičnosti, koje su to metode i sredstva za njihovo razvijanje i unapređenje glavna su pitanja, koja se postavljaju pred struku i nauku.

Ključne riječi: snaga, razvijanje, opšte metode, specifične metode, kajak kanu.

Uvod

Postoje brojne definicije snage. "Snaga sportista se može definisati i kao sposobnost sportista da se suprotstavi i savlada djelovanje spoljašnjih sila ili različite varijante otpora. Sportista se suprotstavlja delovanju sljedećih spoljašnjih sila: inerciji sportskih rekvizita, inerciji sopstvenog tijela (tjelesnoj težini), sili

The Development of Strength Through General and Specific Methods in Kayaking and Canoeing

Toplica Stojanović
Goran Pašić
Faculty of Physical Education and Sport, Banja Luka, Republic of Srpska, Bosnia and Herzegovina
Zvezdan Savić
Faculty of Sport and Physical Education, Niš, Serbia

Correspondence:
Assoc. Prof. Toplica Stojanović, Ph.D.
University of Banja Luka
Faculty of Physical Education and Sport
Banja Luka, R. Srpska, B&H
e-mail: toplica.nis@gmail.com
phone: +381 65 8 432 432, +387 65 382 622

Summary: With the development of canoe kayak sport (creating different disciplines and forms), and with a huge popularization of worldwide proportions, the competition is growing. Today's kayak canoe, along with athletics and swimming is the sport with the most participants and awarded medals (Peking, 2008 – 84 medals) in the Olympics. Trying to beat the opponents, athletes and their coaches use the experience of other rowers. The constant dynamic of sport results progress is notable. With the use of knowledge in the field of medicine, physics, biomechanics and psychology, it is concluded, how much sports techniques and psychophysical skills are important for achieving superior results. Rowing and each discipline has its own peculiarities, where the development of certain forms of strength takes a special place. Among the endurance and speed, strength is the first among the equals. A variety of disciplines in the kayak canoe sport, required specialized competitors for each discipline. Major issues facing the profession and science are which forms of power manifestation are essential in kayak canoe sport, their peculiarities, and which methods and exercises are essential for their development and improvement.

Keywords: strength, development, general methods, specific methods, kayak canoe.

Introduction

There are numerous definitions of strength. "The strength of athletes can also be defined as the ability of an athlete to confront and overcome the effects of external forces or various forms of resistance. Athlete opposes the action of the following external forces: inertia of sports equipment, the inertia of their body (body weight), the force of friction, the

trenja, sili zemljine teže i otporu elastičnih sila rekvizita“ (Stojanović i sar., 2009, 172). Najčešća podjela snage je na maksimalnu (apsolutnu i relativnu), repetitivnu i eksplozivnu. Razlikujemo statičku i dinamičku snagu, te prema angažovanim dijelovima tijela, snagu ruku i ramenog pojasa, nogu, trupa (Herodek, 2006).

Da bi se povećala brzina čamca potrebno je smanjiti otpor i povećati silu. Ako se otpor vode na trup čamca svede na minimum, jedino preostaje povećanje snage veslača. Snaga igra važnu ulogu u postizanju vrhunskog rezultata. Gotovo je nemoguće ostvariti uspjeh bez izuzetne fizičke pripremljenosti. Prilikom zaveslaja se vrši rad, djelujući silom mišića na veslo na određeno rastojanje u određenom vrijemenu, gde su mišićna sila i brzina kontrakcije mišića obrnuto proporcionalne (Stojanović i sar., 2009).

U kajaku i kanuu sila jednog zaveslaja može da iznosi 16-35 kg zavisno od discipline, čamca (kajak, kanu) i pola. Najjača sila se ispoljava u startu, te u periodima ubrzavanja. Nakon ubrzanja sila opada na približno 20 kg kajak ili 25 kg kanu (Adisson, 2000). Veslač za održavanje brzine koristi određenu frekvenciju zaveslaja (50-160 zaveslaja u minuti) zavisno od discipline, čamca i dijela staze (Endicott, 1980). Različiti oblici snage su zastupljeni više ili manje zavisno o kojoj fazi trke, disciplini i čamcu je riječ. U kajaku i kanuu riječ je o dinamičkoj snazi.

Maksimalna snaga najznačajniju ulogu ima na startu. Tada je potrebno u što kraćem roku čamac ubrzati od nule do maksimalne brzine. Takođe, bitno je koliko maksimalne snage veslač uloži u svaki zaveslaj. Jači veslač može održati istu frekvenciju zaveslaja koristeći duže veslo i sa lopaticom veće površine. Kod takmičara istih tehničkih kvaliteta više će ubrzavati onaj koji ima veću mišićnu snagu. Koliko je utrošene snage uloženo u pokret veoma zavisi od tehnike veslača (Endicott, 1983). Kada je riječ o maksimalnoj snazi u kajak kanu sportu, bitnija je relativna maksimalna snaga (snaga veslača u odnosu na njegovu kilažu). Teži veslač više uroni čamac. Time se povećava i dodirna površine sa vodom i raste otpor vode na čamac. Taj veslač mora utrošiti više snage da bi postigao istu brzinu kao lakši veslač. Maksimalna snaga nešto veći značaj ima u brzim disciplinama (kraćim stazama).

Repetitivna snaga ili snaga ponavljanja ima ciklički karakter ispoljavanja. Za nju je karakteristično smjenjivanje naprezanja i opuštanja mišića. Često se ne može naći granica između repetitivne snage i izdržljivosti u snazi. Neki autori sve aktivnosti koje uključuju ispoljavanje snage do 30% maksimalne snage,

force of gravity and the force of elastic resistance of equipment“ (Stojanović et al., 2009, 172). The most frequent division of strength is into maximal strength (absolute and relative), repetitive and explosive. We can distinguish between static and dynamic strength, and also strength based on the engaged parts of the body, arm strength and strength of the shoulder belt, leg strength and torso strength (Herodek, 2006).

In order to increase the speed of the kayak or canoe it is necessary to decrease the resistance and increase the force. If the resistance of the water on the body of the boat is reduced to a minimum, the only thing left is an increase in the strength of the rower. Strength plays an important role in achieving top results. It is almost impossible to achieve success without exceptional physical fitness. During the rowing is made work, who acts with the muscle force on the paddle at a certain distance in a certain time, where the muscle force and speed of muscle contraction are inversely proportional (Stojanović et al., 2009).

In the kayak and the canoe the force of one row can be up to 16-35 kg depending on the discipline, type of vessel (kayak, canoe) and gender. The greatest force is manifested at the start, and thus in the periods of acceleration. Following acceleration, the force decreases to approximately 20 kg for the kayak or 25 kg canoe (Adisson, 2000). The rower, in order to maintain the speed, uses a certain stroke frequency (50-160 strokes per minute) depending on the discipline, boat and part of the course (Endicott, 1980). Different forms of strength are manifested to a greater or smaller extent depending on the phase of the race, discipline and boat. In the case of the kayak or canoe we are dealing with dynamic strength.

Maximal strength is most significant at the start. Then it is necessary to speed up the boat as soon as possible from zero to the maximal speed. In addition, the extent of the maximal strength a rower invests into each stroke is also important. A strong rower can maintain the same stroke frequency using a longer oar and with a greater paddle. Among competitors with the same technical qualities, the stronger of the two can row quicker. The amount of energy that is spent in the movement depends greatly on the rower’s technique (Endicott, 1983). In the case of maximal strength in kayaking and canoeing, what is more important is the relative maximal strength (the strength of the rower in relation to his weight). A heavier rower can make the boat sink deeper into the water. This also increases the contact surface with the water and the resistance of the water on the boat increases. This rower has to invest more strength in order to achieve the same speed as a lighter rower. Maximal strength has a somewhat greater significance in quicker disciplines (short distances).

Repetitive strength or the strength used for repetition is of a cyclical character. What characterizes it is the alternation

smatraju izdržljivošću u snazi (Herodek, 2006). Sve preko te granice smatraju repetitivnom snagom. Drugi poistovjećuju ova dva termina. Na osnovu metaboličkih režima djelovanja (Szanto, 2003) repetitivnu snagu dijeli na aerobnu i anaerobnu i ovdje se vidi bliska veza sa sposobnosti izdržljivosti pa repetitivnu snagu još i zovu izdržljivost u snazi. „Sposobnost izdržljivosti snage označava se kao sposobnost otpora umoru organizma kod dugotrajnih učinaka snage.“ (Harre i sar., 1979 prema: Lenz, 2003, str. 39).

Eksplozivna snaga je značajna, prije svega, prilikom ubrzavanja čamca ili povećavanja frekvencije zaveslaja (start i finiš). To igra posebnu ulogu kod sprinterskih disciplina te u slalomu.

Iz prethodnog se može uočiti da su sve tri vrste snage bitni dijelovi veslačevog fizičkog profila i treba posvetiti pažnju razvijanju svake od njih.

Razvijanje snage

Kako se povećanjem snage povećava i brzina, razvoju snage se treba posvetiti posebna pažnja. Zato je u pripremnom periodu trening snage zastupljen 30-50% od ukupnog vremena treninga. Mehanizam prilagođavanja mišića na trening sile i snage je hipertrofija mišića, odnosno povećanje poprečnog preseka mišićnih vlakana (Stojanović i sar., 2009). Da bi mišići ojačali potrebno im je dati odgovarajući stimulans (trening, vježba). Ako se primijeni adekvatan trening u poriodu od 8-10 sedmica dolazi do hipertrofije mišića. Mišić hipertrofira tako što se povećava: broj miofibrila po mišićnom vlaknu, kapilarna gustoća po mišićnom vlaknu, količina proteina i ukupan broj mišićnih vlakana (Nikolić, 2003).

Od značaja je intenzivno i konstantno razvijati snagu, od puberteta pa tokom čitave sportske karijere. Pri tome, trening snage se razlikuje u zavisnosti koju vrstu snage je potrebno razvijati, od uzrasta, perioda sezone, građe i kvaliteta sportiste. U uzrasnoj dobi od 11-14 godina djeca su u senzibilnoj fazi za razvoj sna-

between contractions and relaxations of the muscles. The line between repetitive strength and endurance is often difficult to determine. Some authors consider all the activities which include the manifestation of strength up to 30 % 1RM endurance in strength (Herodek, 2006). Anything over that limit is considered repetitive strength. Other authors equate the two terms. On the basis of the metabolic regimes of activity (Szanto, 2003) repetitive strength is divided into aerobic and anaerobic strength and here we can see a close connection with endurance, so repetitive strength is also known as endurance in strength. “The ability to maintain strength is known as the ability to resist fatigue of the body over longer strength exertion.” (Harre et al., 1979 in: Lenz, 2003, pg. 39).

Explosive strength is significant, primarily, during the increase in the speed of the boat or the increase in the frequency of the strokes (the start and finish). It plays an important role among sprinting athletic disciplines and thus in the slalom as well.

From the abovementioned we can note that all three types of strength are very important parts of the rower’s physical profile and attention should be paid to the development of each of them.

Strength Development

With the increase of strength and speed increases, the development of strength requires a lot of attention. For that reason, during the preliminary period, strength training makes up 30-50 % of the total training time. The muscle adaptation mechanism to strength training and force is muscle hypertrophy, that is, the increase in the cross-section of the muscle fibers (Stojanović et al., 2009). In order for the muscles to become stronger, they should be given the appropriate stimulus (training, exercise). If adequate training is applied in a period from 8-10 weeks, muscle hypertrophy occurs. The muscle hypertrophies with the increase in the number of myofibrils in the muscle fiber, capillary density per muscle fiber, the amount of protein and overall number of muscle fibers (Nikolić, 2003).

What is important is to intensively and constantly de-

Tabela 1. Faktori uticaja u treningu snage (Harre, prema: Lenz, 2003, 89)

Vježbe / *Exercises*	Obim opterećenja / *Volume of load*	Intenzitet opterećenja / *Intensity of load*	Od značaja je / *Also importance is*
opšte namjene specijalne vježbe takmičarske vježbe / *general purpose* *special exercises* *competitive exercises /*	broj ponavljanja po seriji ukupni obim (broj) vježbi ukupni obim svih vježbi po jedinici treninga, u sedmici, periodu, godini trajanje kontrekcije / *number of repetitions per set* *the total volume (number) of exercises* *the total volume of exercises per unit training, of the week, period, year* *duration of contraction /*	dodatni teret frekvencija vježbanja brzina kontrakcije trajanje pauze učestalost treninga / *additional burden* *frequency of exercise* *speed of contraction* *pause duration* *training frequency /*	fizički razvoj ukupni trening redoslijed vježbi dinamika opterećenja / *physical development* *total training* *order of exercises* *dynamics of loads /*

Table 1. The factors that influence strength training (Harre, in: Lenz, 2003, 89)

ge. U tom periodu upotrebljavaju se samo vježbe za savladavanje sopstvene tjelesne težine. U periodu 15-19 godine postepeno se povećava intenzitet vježbi, uz primjenu dodatnog opterećenja, ali veoma oprezno da bi se izbjeglo preveliko opterećenje kičmenog stuba. Snagu treba razvijati prvo opštim, pa tek onda specifičnim sredstvima.

Sredstva treninga za razvijanje snage

Osnovno sredstvo svakog treninga je vježba. U kajak kanu snagu razvijamo vježbama opšte i specifične namjene. Trening snage opštim i specifičnim sredstvima ne isključuju jedan drugi, već se nadopunjuju i čine jedinstvenu cjelinu u pripremnom periodu veslača.

Trening snage opštim sredstvima se najčešće realizuje opštim vježbama snage sa dodatnim opterećenjem, čime se stvara podloga za kasnije razvijanje specifične snage. Prilikom odabira vježbi potrebno je obratiti pažnju na: vrstu snage (maksimalna, eksplozivna, repetitivna), ciljanu mišićnu grupu (opterećenje 2-3 grupe mišića na jednom treningu), vrstu (da li angažuju iste ili različite grupe mišića) i broj vježbi (4-12 vežbi po treningu), intenzitet ili težinu tegova, broj ponavljanja, serija i odmora između njih, učestalost treninga u toku sedmice (4-7 puta) i ukupno trajanje trenažnog ciklusa razvijanja snage.

Metode treninga za razvijanje snage

Metode su načini kako se koriste opterećenja za razvijanje snage. Izbor metoda u kajak kanu sportu zavisi od adekvatnosti opterećenja za svakog veslača. Osnovni kriterijumi su: da metoda mora da podstiče funkciju CNS-a koja odgovara kajak kanu sportu i funkciji mišića u tom sportu, da regulišu broj uključenih mišiča u mišićnom kinetičkom lancu koji se koristi u tehnikama veslanja, da se ne remeti unutarnja i međumišićna koordinacija veslača, da se usklade njihove tjelesne karakteristike i antropomotoričke sposobnosti i da vježbanje bude usklađeno sa tehnikama veslanja. U praksi se najčešće koriste: 1. metod maksimalnih naprezanja (opterećenja od 1RM i više), 2. metod submaksimalnih naprezanja (opterećenja od 90-95 % od 1RM i više), 3. metod ponavljanja istog opterećenja, 4. metod mjenjanja opterećenja i 5. dinamičke metode (doziranje sa doziranom brzinom kretanja).

Metode za razvijanje maksimalne snage: Razvijanje maksimalne snage zahtjeva veći intenzitet u

velop strength, starting from puberty and during the entire course of one's sports career. At the same time, strength training differs depending on the type of strength which should be developed, the age, phase of the competitive season, build and quality of the athlete. At the age of 11-14 children are in the sensitive phase of strength development. During that period only exercises meant for overcoming own body weight are used. In the period between the ages of 15-19 the intensity of the exercise increases gradually, with additional weight, but very carefully so that excessive load on the spinal column can be avoided. The development of strength should start first with general, and then with specific exercises.

Means of developing strength through training

The basic means of every training is exercise. In canoeing, we develop strength through general and specific exercises. Strength training through general and specific means does not exclude one another, but complement each other and form a single unit in the rower's pre-season training.

Strength training through general means is usually carried out through general exercises with the additional weight, and they are used to create the basis for the development of specific strength. When choosing exercises it is necessary to pay attention to: the type of strength (maximal, explosive, repetitive), the focus muscle group (2-3 groups of muscles during one training session), the type (whether the same or different groups of muscles are involved) and number of exercises (4-12 exercises per training session), the intensity of the load or the weight of the weights, the number of repetitions, series, rests between them, the frequency of the training session per week (4-7 times a week) and the overall duration of the training cycle to develop strength.

Strength training methods

Methods are ways to use loads to develop strength. The choice of methods in kayak canoe sport depends on the adequacy of the load for each rower. The main criteria are: that the method must stimulate the function of the CNS which corresponds to kayak canoe sports and muscle function in that sport, to regulate the number of involved muscles in the muscle kinetic chain used in rowing techniques, to not disturb the internal and intramuscular coordination of rowers, to align their physical characteristics and motoric skills and that practicing is compatible with the rowing techniques. In practice, the most commonly used are: 1. method of maximum load (load of 1RM and above), 2. method of submaximal load (load of 90-95% of 1RM and above), 3. method of repeating

vježbama. Postoje dvije različite metode razvoja maksimalne snage: a) Metoda visokog ili maksimalnog naprezanja sa intenzitetom od 80-100% uz najbržu izvedbu, 1-4 ponavljanja i 5-8 serija i b) Metoda umerenog naprezanja sa intenzitetom od 60-80% od maksimalne snage, 8-15 ponavljanja i 4-8 serija. Najčešće se koristi metoda serija, piramidalna ili polupiramidalna metoda, a rade se vježbe za 2-3 grupe mišića. Vrijeme odmora između serija može biti 3-5 minuta, a 36-48 sati između dva treninga maksimalne snage.

Metode za razvijanje eksplozivne snage: Koristi se metoda maksimalnih naprezanja sa intenzitetom od 50-70% maksimalne snage, uz izvođenje pokreta maksimalnom brzinom. Radi se 6-12 ponavljanja i 4-6 setova. Odmor između setova je 3-5 minuta, između dva termina treninga 24-48 sati.

Metode za razvijanje repetitivne snage: Koristi se metoda umerenog naprezanja sa intenzitetom od 20-60% maksimalne snage. Izvodi se veliki broj ponavljanja 15-60 ili više u svakoj seriji. Ukupan broj ponavljanja svake vježbe na jednom treningu može biti i 100-300. Odmor između serija je od 30 sekundi do 2 minuta, između termina treninga 6-24 sata. Za organizaciju se najčešće koristi kružni trening.

Najvažnije grupe mišića koje se angažuju u kajak kanu sportu su: a) musculus deltoideus - pars acromialis; b) musculus triceps brachii; c) m.trapezius; d) m.biceps brachi; e) m.rectus abdominis; f) m.latissimus dorsi; g) m.pectoralis major i h) m.obliqus externus abdominis.

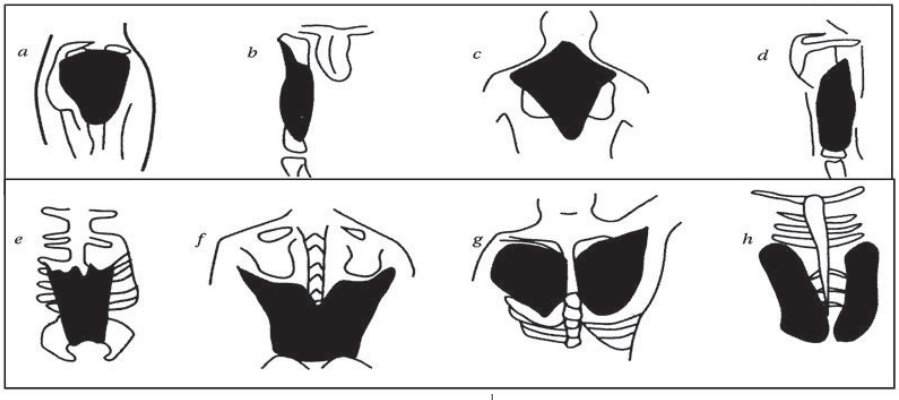
the same load, 4. method of changing load and 5. dynamic methods (dosing with dosed speed of movement).

The methods for development of maximal strength: Maximal strength generally requires greater exercise intensity. There are two different methods of the development of maximal strength: a) The method of high or maximal load with 80-100% intensity with the fastest execution, 1-4 repetitions and 5-8 series and b) The method of moderate load with 60-80% intensity of 1RM, 8-15 repetitions and 4-8 series. The method most frequently used is the method of series, the pyramid or semi-pyramid method, and the exercises include 2-3 groups of muscles. The rest period between the series can be 3-5 minutes, with 36-48 hours between two training sessions of maximal strength.

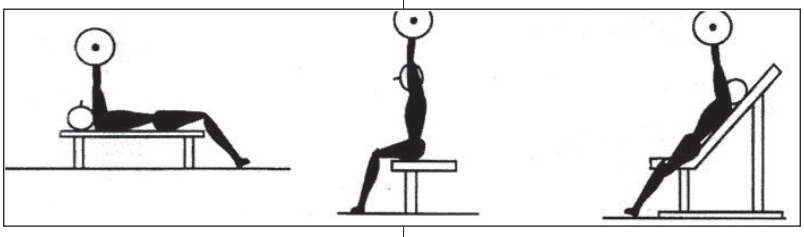
The methods for development of explosive strength: We use the method of maximal load with the intensity from 50-70% of 1RM, with a maximum speed movement. A total of 6-12 repetitions and 4-6 sets are completed. Each exercise is performed at maximal speed. The rest period between the sets is 3-5 minutes, and 24-48 hours between two training sessions.

The methods for development of repetitive strength: We use the method of moderate load with 20-60% intensity of 1RM. It is a case of multiple repetitions 15-60 or more in each series. The overall number of repetitions of each exercise during one training sessions can be between 100 and 300. The break between the series is from 30 seconds to 2 minutes, and between the training sessions 6-24 hours. The most frequently used form of training is circular training.

The most important groups of muscles used in kayaking or canoeing include: a) m.deltoideus - pars acromialis; b) m.triceps brachi; c) m.trapezius; d) m.biceps brachi; e) m.rectus abdominis; f) m.latissimus dorsi; g) m.pectoralis major and h) m.obliqus externus abdominis.

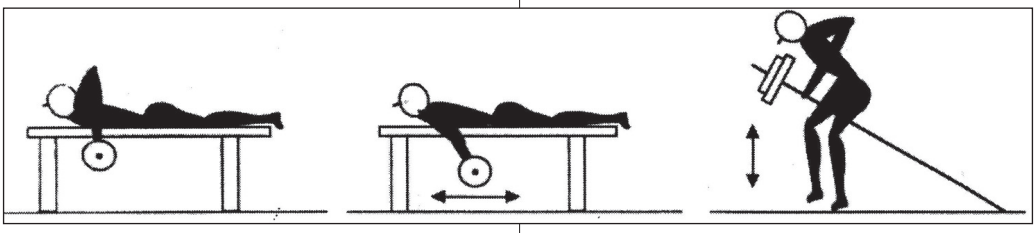


Primjer vježbi sa tegovima | **Examples of weight exercises**



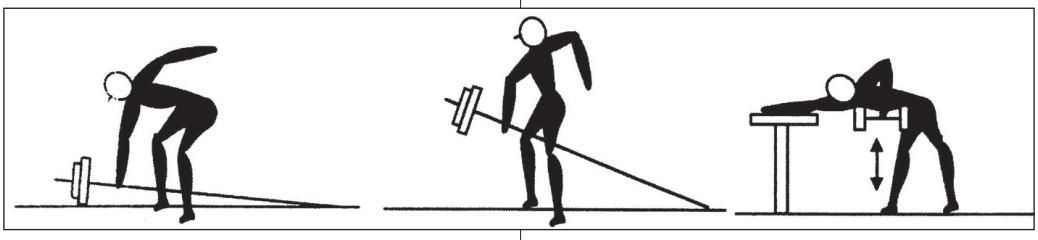
Slika 2. bench press (potisak sa klupe), sit press (potisak u sjadećem položaju, kosi bench press ugao 45º

Figure 2. the bench press, sit press, diagonal bench press at an angle of 45º



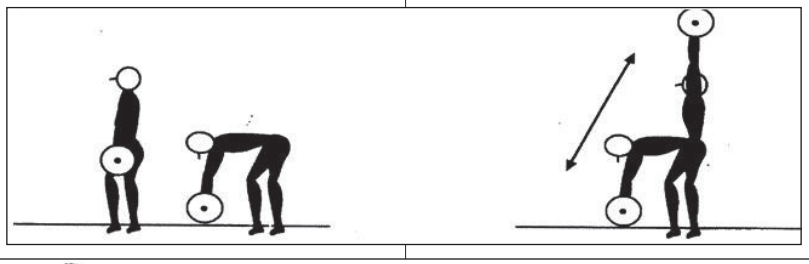
Slika 3. bench row privlačenje sa klupe, ljuljanje, ‘’T’’ šipka

Figure 3. the bench row, rocking, the T-bar



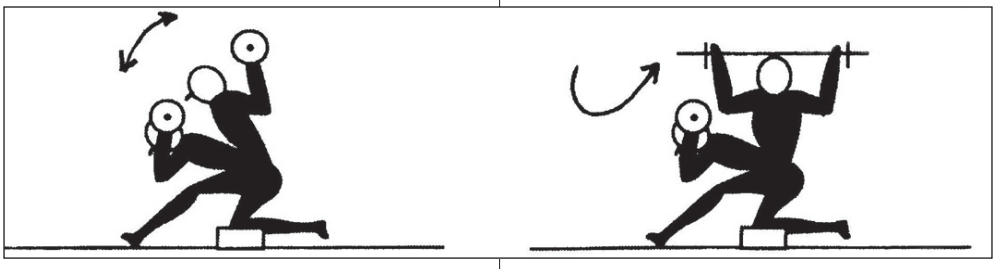
Slika 4. jednoručno dizanje tega sa podizanjem trupa

Figure 4. one-arm weight lifts with torso lifts



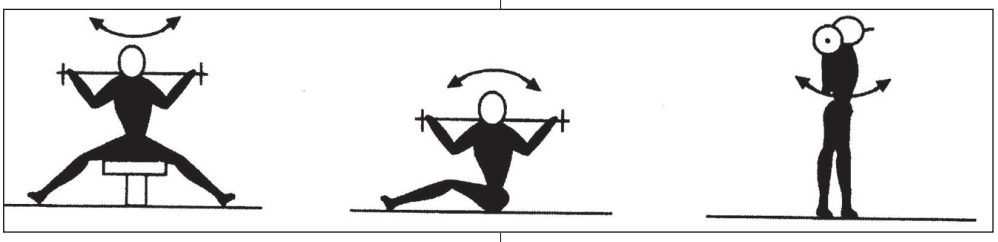
Slika 5. izbačaj tega

Figure 5. weight thrusters



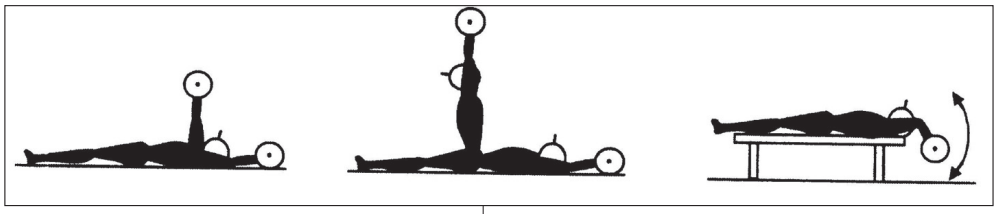
Slika 6. podizanje i rotiranje trupa

Figure 6. torso lifts and rotations



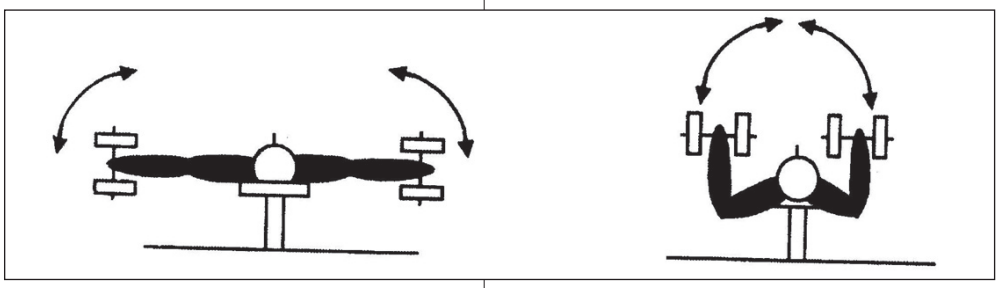
Slika 7. rotiranje trupa sa tegovima u sjedećem ili stojećem položaju

Figure 7. torso rotations with weights in the seated or standing position



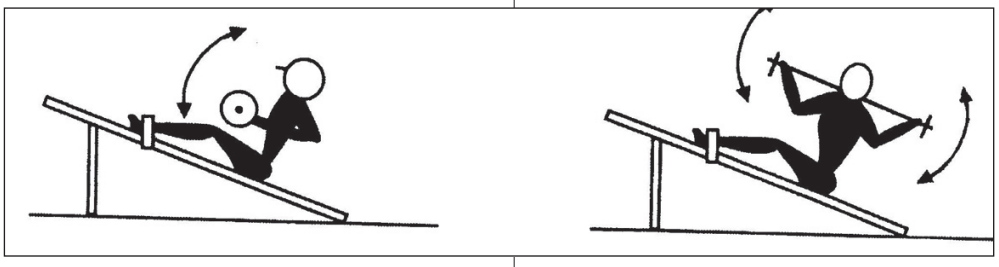
Slika 8. dizanje i spuštanje tegova iza glave ili podizanje u sjedeći položaj

Figure 8. lifting and lowering weights behind the head or lifts in the seated positions



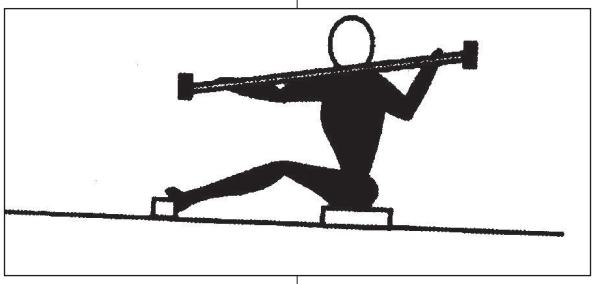
Slika 9. ‘’letenje” sa ispruženim ili savijenim rukama – bućicama

Figure 9. “flying” with arms outstretched or bent – barbells



Slika 10. podizanje i rotiranje trupa sa tegovima - na kosini

Figure 10. torso lifts and rotations with weights - at an angle

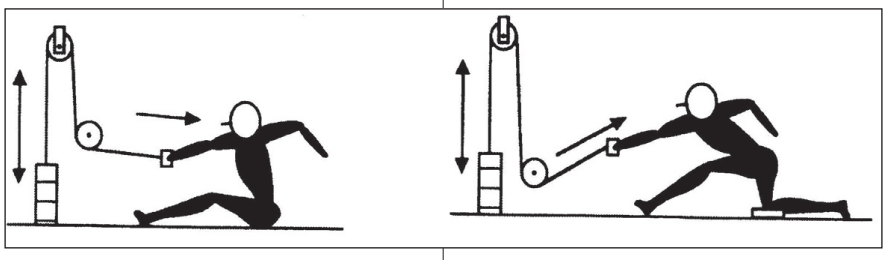


Slika 11. simulacija kajakaških pokreta sa bućicama ili tegovima

Figure 11. the simulation of kayak movements with barbells or weights

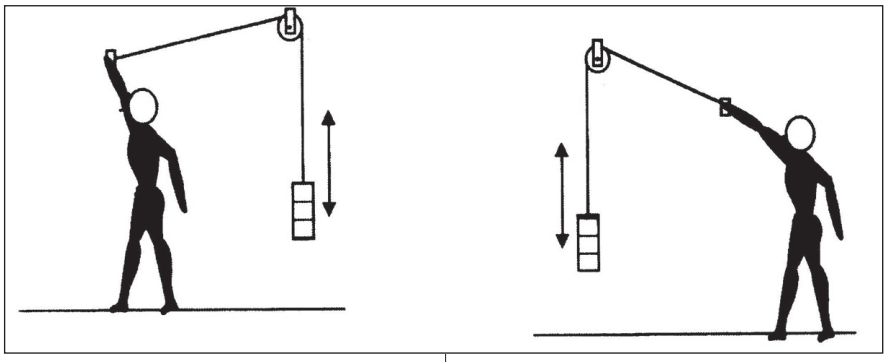
Primjer vježbi sa spravama

Examples of exercises with props



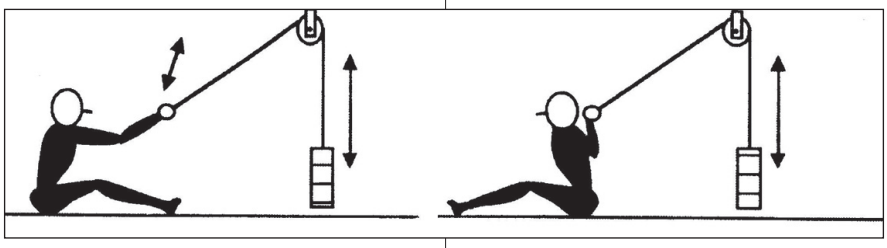
Slika 12. privlačenje ispruženom rukom sa rotacijom trupa ili dvoručno veslanje

Figure 12. drawing in an extended arm with torso rotations or the double-handed row



Slika 13. privlačenje iznad glave jednom rukom (ispred ili iza tijela)

Figure 13. drawing above the head with one arm (in front of or behind the body)



Slika 14. povlačenje prema dole (ispred ili iza glave)

Figure 14. drawing downwards (in front of or behind the head)

Za trening snage bitno je naglasiti da su intenzitet i obim opterećenja u obrnutom odnosu:

Intenzitet (max:%)	Broj ponavljanja
95-100	1-2
90-95	2-3
85-90	4-5
80-85	6-8
75-80	8-12
70-75	12-15
60-70	15-20
50-60	20-30

Često se jednim treningom snage ‘’prepliću’’ razvoj maksimalne, eksplozivne i repetitivne snage.

For strength training it is important to point out that the intensity and extent of the load are inversely proportional:

Intensity (max:%)	Number of repetitions
95-100	1-2
90-95	2-3
85-90	4-5
80-85	6-8
75-80	8-12
70-75	12-15
60-70	15-20
50-60	20-30

It is often the case that during one strength training session, the development of maximal, explosive and repetitive strength “overlap”.

Tabela 2. Sažeta tabela modaliteta treninga (Szanto, 2003)

Table 2. A concise table of the modality of training (Szanto, 2003)

efekat treninga / *Effect of training* /	intenzitet tereta % / *Intensity of burden %*	ponavljanja u seriji / *Repetition in series*	broj serija / *Number of series*	odmor minuta / *Break minute*	brzina pokreta / *Speed of movement*
maksimalna snaga / *maximal strength*	85 – 100	1 – 6	5 – 8	3 – 5	optimalna / *optimal*
/2 metode/ */2 methods/*	60 – 80	8 – 15	4 – 6	3 – 5	tečna / *fluent*
eksplozivna snaga / *explosive strength*					
eksplozivan / *eksplosive*	50 – 70	6 – 12	4 – 6	3 – 5	brzi / *fast*
brzi / *fast*	30 – 40	8 – 15	4 – 6	3 – 5	brzi / *fast*
repetitivna snaga / *repetitive strength*					
anaerobni režim / *anaerobic regime*	40 – 60	15 – 20	4 – 8	1 – 2	optimalna / *optimal*
aerobni režim / *aerobic regime*	20 – 40	30 – 80	5 – 10	30’’ – 1’	mala / *low*

Trening snage specifičnim metodama stvara pretpostavku da se kondicijske osnove stvorene opštim treningom snage mogu pretvoriti u takmičarski pokret. Sredstvima specijalnog treninga pripadaju trening na

Strength training with specific methods creates the assumption that the fitness basics created through general strength training can be transformed into competitive movement. The means of special training include water

vodi i veslanje na povlačnoj spravi. Specijalne vježbe svojom prostorno-vemenskom i dinamičkom strukturom pokreta (vrijeme – snaga), grupama mišića koji su u pokrete uključeni, ne smiju odstupati od takmičarske strukture zaveslaja.

Tabela 3. Promena intenziteta opterećenja u treninzima u odnosu na promjenu otpora

Dodatni otpor	Smanjeni otpor
dodatna težina u čamcu	veslanje nizvodno,
veslanje sa kočnicom	veslanje u valu bržeg čamca,
veslanje u plitkoj vodi	kraće veslo,
veslanje uzvodno	manja lopatica.
duže veslo	
veća lopatica	
teže veslo	

Najpopularnija **metoda za razvijanje specifične snage** je svakako veslanje sa kočnicom. Nije dobro koristiti prejaku kočnicu jer to može smanjiti frekvenciju zaveslaja. Dovoljno je da se na trup čamca pričvrsti predmet koji će ga kočiti (konop, limenka, kožni remen, teniska loptica). Među veslačima su svakako najpopularniji gumeni tregeri za vezivanje čamaca (lako se pričvrste). Druga jednako popularna **metoda za razvijanje specifične snage** je veslanje u opterećenom čamcu (5-15 kg). Nedostatak ove metode je to što mijenja ravnotežu čamca (čamac je stabilniji), pa se gubi osjećaj. Dobra strana je to što se poboljšava osjećaj prijenosa snage.

Specifične metode treninga se mogu primijenjivati u svim periodima sezone, ali se najčešće koristi u predtakmičarskom i takmičarskom periodu. U predtakmičarskom periodu trening je ekstenzivan (interval duži od 1 min, vrijeme veslanja 20-45 min.). U takmičarskom periodu trening je intenzivan (interval 10-60'', vrijeme veslanja 5-15 min.). Najbolji rezultati se postižu intervalima maksimalnog intenziteta. Vrijeme trajanja ove vrste treninga bi trebala biti 10-30% ukupnog vrijemena veslanja. U glavnom takmičarskom periodu (zbog pada brzine) izbjegava se primjena ovog treninga nekoliko dana prije takmičenja. Za specifični trening u zatvorenom se koristi kajak ili kanu ergometar. Trening je isti kao na vodi.

Vrhunski veslači u treningu snage moraju imati više treninga specifične nego opšte snage.

training and machine rowing. Special exercises with their spatio-temporal and dynamic structure of movement (time – strength), the groups of muscles which are included in the movement, cannot deviate from the competitive structure of the stroke.

Table 3. Changes in the intensity of the load during training in relation to the change in resistance

Additional resistance	Reduced resistance
additional weight in the boat	downriver rowing
rowing with a stop mechanism	rowing in a wave of faster boat
rowing in the shallow water	shorter paddle
upriver rowing	smaller blade
longer paddle	
greater blade	
harder paddle	

The most popular **method for specific strength development** is certainly rowing with a stop mechanism. It is not good to use a stop that is too strong since it can decrease the frequency of the strokes. It is sufficient that the hull of the boat is fastened to an object which will hold it (rope, a tin can, a leather belt, a tennis ball). Among the rowers the most popular ones are rubber suspenders for binding the boat (they are easily fastened). The second equally popular **method for specific strength development** is rowing in a loaded boat (5-15 kg). The shortcoming of this method is that it alters the balance of the boat (the boat is more stable), and so any feeling is lost. The good thing is that it improves the feeling of strength transfer.

Specific method of training can be used in all phases of the competitive season, but is most often used in the pre-competitive and competitive period. In the pre-competitive season the training is extensive (an interval longer than 1 min, rowing time 20-45 min.). In the competitive period training sessions are intense (the interval is 10-60'', the rowing time 5-15 min.). The best results are achieved during the intervals of maximal intensity. The duration of this type of training should be between 10-30% of the overall rowing time. In the main competitive period (due to a decrease in speed) the application of this training is avoided for several days before the competition. For specific training indoors we use a kayak or canoe ergometer. The training is the same as in the water. Elite rowers during strength training must have more specific training than general strength training.

Tabela 4. Zastupljenost treninga snage

Klasa	Opšti trening %	Specifični trening %
Početnik	70	30
Napredni	40	60
Vrhunski	30	70

Table 4. The amount of strength training

Class	General training %	Specific training %
Beginner	70	30
Advanced	40	60
Elite	30	70

Zaključak

Suština svakog sporta, time i kajak kanu sporta, je postizanje vrhunskog rezultata. Pomjeranje granica sportskog rezultata moguće je samo postizanjem savršenstva tehničke izvedbe i vrhunske sportske forme na najvažnijim takmičenjima. Savremeni trening u kajak kanu sportu je jedan složen proces koji zahtjeva maksimalno angažovanje kako sportiste i trenera, tako i svih onih koji su uključeni u ovaj sport.

Karakteristično za današnji kajak kanu sport je gustoća kvalitete rezultata. Za najveća odličja ravnopravno se bore veslači visoki jedva 170 cm, kao i oni od 200 cm visine. To je rezultat sagledavanja njihovih psihofizičkih sposobnosti, i na osnovu toga individualni pristup njihovom razvijanju i izgradnji tehnike i stila, te postizanju vrhunske forme. Pri tome metode i dinamika opterećenja (obim i intenzitet) predstavljaju osnovnu jedinicu za izradu valovitog i cikličnog programa od polimakrociklusa do mikrociklusa.

Izbor metoda za razvijanje snage u kajak kanu sportu zavisi od adekvatnosti opterećenja za svakog veslača. Adekvatnost opterećenja u treningu snage zavisi od kvaliteta i funkcije mišića svakog veslača, odnosno od njihovih tjelesnih karakteristika i antropomotoričkih sposobnosti. U praksi se najčešće koriste metode maksimalnih i submaksimalnih naprezanja, metod ponavljanja istog opterećenja, metod mjenjanja opterećenja i dinamičke metode.

Napredak rezultata će dalje zavisiti i od uključivanja trenera i vrsnih veslača u proces poboljšanja sportskih rekvizita (čamac, veslo, odjeća i dr.), kao i stvaranje instrumenata za mjerenje treninga i rezultata (pulsmetri, brzinometri, GPS i sl). Dugoročno planiranje rezultata mora uključiti sistematski trening podmlatka. Izmjena iskustava i nove metode u treningu podmlatka mogu predstavljati impuls i eksperimentalno polje za ukupan razvoj trenažnog sistema.

Izjava autora
Autori pridonijeli jednako.

Konflikt interesa
Mi izjavljujemo da nemamo konflict interesa.

Conclusion

The essence of each sport, and thus kayaking and canoeing is the achievement of top results. Moving the limits of the sport results is possible only by achieving perfect performance technique and top sports form at the most important competitions. Modern training in kayaking and canoeing is a complex process which requires the maximal inclusion both of the athlete and the coach, as well as all those who are included in this sport.

What characterizes current kayaking and canoeing is the density of the quality results. For the greatest titles, rowers who are barely 170 cm compete on equal terms, as do those of 200 cm height. That is the result of the overall view of their psycho-physical abilities, and thus the individual approach to their development and the building of their technique and style, and thus the achievement of top form. At the same time the methods and dynamics of load (the extent and intensity) represent the basic unit for the manufacture of the wavy and cyclical program from the polymacrocycle to the microcycle.

The choice of methods for strength developing in kayak canoe sport depends on the adequacy of the load for each rower. The adequacy of the load in strength training depends on the quality and function of muscle of each rowers, in other words by their physical characteristics and motoric skills. In practice, the most commonly used are methods of maximal and submaximal load, method of repeating the same load, method of load changing and dynamic methods.

The improvement in the results will still depend on the inclusion of both the coach and the top rowers in the process of sport prop improvement (the boat, the oar, clothes and so on), as well as the design of instruments for the measuring of training and the results (pulsometers, speedometers, GPS and so on). The long-term planning of results must include the systematic training of younger competitors. Altered experience and new training methods can represent an impulse and experimental field for the overall development of the training system.

Authorship statement
The authors have contributed equally.

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Stručni rad **Professional Paper**

Specijalizacija u odbojkaškoj igri – primarni i sekundarni zahtjevi pozicije dizača

Aleksandra Vujmilović
Srednja Medicinska škola, Banja Luka, Bosna i Hercegovina
Tamara Karalić
Fakultet fizičkog vaspitanja i sporta, Banja Luka, Bosna i Hercegovina

Korenspondencija:
Aleksandra Vujmilović
Medicinska škola, Banja Luka
Bosna i Hercegovina
Email: vsaska@teol.net

Sažetak: U ekipnim sportovima mora postojati igrač specijalizovan za organizaciju igre. U odbojci ta uloga je povjerena dizaču. Nerijetko se može čuti konstatacija da su dizači ''mozak u ekipi''. Time se želi naglasiti da su dizači igrači od kojih zavisi ukupna organizacija igre. Međutim, dizač sa prefiksom ''vrhunski'' mora ispunjavati određene uslove: funkcionalne, motoričke sposobnosti i antropometrijske ili morfološke karakteristike, ali i zadovoljavati neke zahtjeve. Karakteristika vrhunskih dizača je biti raznovrstan i nepredvidiv naročito prilikom dizanja lopte za napad, tako da svaka njegova akcija ima taktičku opravdanost i bude neočekivana za protivnika.
Primarni zahtjevi koji dizač kao specijalista mora ispunjavati jesu pravilna tehnika dizanja lopte, vladanje svim vrstama tehnike dizanja lopte, sposobnost taktičkog mišljenja i sposobnost perifernog vida. Sekundarni zahtjevi koji bi jednog takvog specijalistu činili kompletnim su vladanje tehnikom smečiranja u napadu, a u odbrani preuzimanje uloge pomoćnog tj. krajnjeg blokera. Koliko je moguće ''proizvesti'' takvog igrača, teško je reći, međutim, činjenica je da u savremenoj odbojci postoji pozitivan trend izuzetnih dizača i pored toga što je danas znatno teže uspjeti izboriti se za ovu specifičnu igračku poziciju u ekipi.

Ključne riječi: dizač, igračka pozicija, specijalizacija, odbojka.

Specialization in Volleyball Game – Primary and Secondary Demands From the Setter Position

Aleksandra Vujmilović
Medical High School, Banja Luka, Bosnia & Herzegovina
Tamara Karalić
Faculty of Physical Education and Sport, Banja Luka, Bosnia & Herzegovina

Correspondence:
Aleksandra Vujmilović
Medical High School, Banja Luka,
Bosnia & Herzegovina
Email: vsaska@teol.net

Abstract: In team sports there must be a player specialized in the organization of the games. In volleyball game this role is assigned to the setter. It is not uncommon to hear the claim that the setter is ''the brain in the team''. With that we want to emphasize that the setters are players from which depends overall organization of the game. However, the setter with the prefix ''top'' must meet certain condition: functional, motor abilities and anthropometric or morphological characteristics but also meet certain requirements. The Characteristics of top setter is to be various and unpredictable especially when he set up the ball to attack, so that his every action has a tactical justification and be unexpected for opponents. Primary demands for the setter that he as a specialist must meet are the proper technique for setting a ball, mastering of all kinds of setting techniques, tactical ability of reviews and ability of peripheral vision.
Secondary demands that one specialist make complete in this area are mastering of spike techniques in attack and in defense, assuming the role of assistant of end-blocker. How is possible to ''produce'' of such a player, it is hard to say, however, the fact is that in modern volleyball exists positive trend outstanding setters despite the fact that today it is much more difficult to succeed in the struggle for this specific player's position in the team.

Keywords: setter position, specialization, volleyball.

Uvod

Odbojka pripada grupi tzv. *visoko-intenzivnih intermitentnih sportskih igara* (engl. *HIIE – High-Intensity Intermittent Exercise*). Osnovna karakteristika ove grupe igara su višestruki kratki periodi visoko-intenzivnih eksplozivnih kretnji, razdvojenih periodima kratkog odmora. Kao i kod ostalih timskih sportova, uspjeh u odbojci zavi-

Introduction

The Volleyball belongs to the so-called higher-intensive intermittent sports games. The basic characteristics of this group of games are multiple short periods of intense high-explosive movements separated by short periods of rest. As with other team sports, success in volleyball depends on large number of complex and interrelated factors. These

si od velikog broja kompleksnih i međusobno povezanih faktora. Ti faktori su: (1) tehnička pripremljenost, (2) fizička pripremljenost, (3) taktička pripremljenost, (4) sposobnost donošenja odluka u igri, (5) psihološke stabilnost, (6) voljni momenat, (7) karakter i vještina komunikacije i (8) vještina vođenja i planiranja igre. Pored navedenih faktora, uspješan tim zahtjeva i dobru organizaciju u smislu da svaki igrač ima svoju ulogu i da na specifičan način doprinosi postizanju tog uspjeha. Dakle, specijalizacija je jedan od preduslova za formiranje vrhunskih odbojkaša. Kada se govori o specijalizaciji, ističe se još i da se radi kompleksnom procesu učenja u kojem se naglašava specifična priprema, sa ciljem izbora i formiranja igrača u ulozi u kojoj se njegove predispozicije mogu maksimalno iskoristiti (Janković, Đurković i Rešetar, 2009.4). Stoga, u procesu specijalizacije prioritet ima diferencirani rad sa svakom igračkom ulogom posebno, te rad na integraciji s grupnom dinamikom odbojkaške ekipe.

U dosadašnjim stručnim i naučnim radovima iz oblasti sportskih igara, mali je broj onih koji su se konkretno bavili pitanjima igračkih uloga u odbojci. Ovoj problematici nešto veću pažnju posvetili su Tomić (1967; 1976; 1980; 1983), Janković, (1995), Janković, Đurković i Rešetar (2009), te Trajković, Milanović, Sporiš i Radisavljević (2011).

Predmet opsevacije ovog istraživanja je specijalizacija odbojkaša za jednu od ključnih igračkih pozicija – poziciju dizača. S tim u vezi, akcenat je stavljen na primarne, odnosno, sekundarne zahtjeve ove igračke pozicije.

Cilj ovog istraživanja je da širu stručnu i naučnu javnosti, a naročito odbojkašku, podsjeti zašto je potrebno i korisno istraživati i baviti se igračkim pozicijama u odbojci i koliki je značaj specijalizacije u ovom sportu. Ovdje će biti riječi o zahtjevima samo jedne igračke pozicije, međutim ovaj rad, sa aspekta stručne relevantnosti i naučne aktuelnosti, ima zapravo još jedan cilj: da sve one koji se ozbiljno bave planiranjem, programiranjem i specijalizacijom mlađih kategorija u odbojci usmjeri ka otkrivanju djece sa izraženim smislom i sposobnostima, da djecu provedu kroz organizovan i stručan rad, da cijeli taj proces bude vremenski optimalan, te da se u tim okvirima vodi računa o njihovom biološkom razvoju, razvoju motoričkih i funkcionalnih sposobnosti, te moralnim i voljnim osobinama i psihološkoj stabilnosti.

Dizač u odbojkaškoj igri

Tvrdnja da se dizači rađaju zvuči kao maksima nastala iz odbojkaške prakse. Istina je da se oni nameću

factors are: (1) technical preparation, (2) physical preparation, (3) tactical preparation, (4) ability to make decisions in the game, (5) psychological stability, (6) the moment of willing, (7) character and the communication skills and (8) management and planning skills of the game. In addition to these factors, a successful team also requires a good organization in the sense that each player has a role and contribute in a specific way to achieving this success. So, specialization is one of the preconditions for the formation of elite volleyball players. When we talk about specialization, it is pointed that this is a complex process of learning in which special preparation is a priority, with the aim of choice and the formation of players in the role in which his predispositions can make maximum use. (Janković, Đurković & Rešetar, 2009.4). Therefore, in the process of specialization the priority has differentiated training with each player role in particular, as well as a engagement with the integration of the group dynamics of the volleyball team.

In previous professional and scientific papers in the area of sports games, there are a small number of those who specifically deal with issues in playing roles in volleyball. Some more attention to this problem have devoted Tomić (1967, 1976, 1980, 1983), Janković (1995), Janković, Đurković & Rešetar (2009), and Trajković, Milanović, Sporiš & Radisavljević (2011).

The subject of this research observation is specialization of volleyball players for one of the key playing positions - setter position.

The aim of this empirical study is to remind the expert and scientific, especially volleyball public, why it is necessary and useful to research and deal with playing positions in volleyball game and what is the importance of specialization in this sport. Here will be tolk about requirements of only one playing positions, but this research, in terms of professional relevance and scientific actuality, has actually another aims: to all those who are seriously deal with the planning, programming and specialization of younger categories in volleyball directed towards the discovery of children with strong sense and abilities, that children spend in an organized and professional training, that whole of the process is time-optimal, but also that in this framework takes care of their biological development, the development of motor and functional abilities, moral and volitional qualities and psychological stability.

A Setter in Volleyball Game

The claim that setters are born, sounds like maxim originated from volleyball practice. The truth is that they impose on their specific capabilities, skill, talent and intel-

svojom specifičnim sposobnostima, umješnošću, talentom i inteligencijom. Razvijenje igrača kao takvog je u suštini često usmjereno ka tome da u budućnosti bude izabran za igračko mjesto dizača. To su sve predispozicije za postojanje više tipova dizača. Uzimajući u obzir specifične karakteristike svakog pojedinaca pokušaćemo, prema onim najjače izraženim, dati pregled određenih tipova dizača.

Vođu tima praktično žele svi treneri i zbog toga je dizač tog tipa vrlo cijenjen. Pojam vođe tima je izuzetno širok, ali suštinski tog igrača definiše uloga kojom preuzima odgovornost, daje ton i ritam igri, pokreće, stimuliše i motiviše saigrače, održava atmosferu u ekipi i na još mnogo načina doprinosi uspješnom nadigravanju.

Dizač izvršilac zadataka se također može sresti u odbojkaškoj praksi. Ovaj tip dizača nešto rjeđe komunicira sa okolinom, ali teže pada pod uticaj emocija. Ono što je ključno je to da ipak ne pokazuje tendenciju nametanja kao vođa tima. *Igrač u sjenci* je tip dizača koji se mnogo ne eksponira, te pomalo djeluje neupadljivo.

Postoji jedan opšte prihvaćen izraz za tipa igrača koji postaje ili već čini pokretačku snagu, kako u akcijama napada, tako i u akcijama odbrane. Stoga su takvi dizači dobili naziv ‘’motor u ekipi’’, čija je osnovna karakteristika da u igri ostavlja utisak, dok mu je efekat znatno manji od utiska.

Odbojkaška teorija i praksa su danas dostigli takav nivo da uvijek postoji mogućnost kreiranja novog tipa dizača. Kriterijumi za tako nešto su da bude podjednako uspješan u svim elementima igre, da posjeduje širok dijapazon tehnika dizanja lopte, da je usvojena tehnika dovedena do savršenstva u smislu da su greške svedene na minimum, da vrlo brzo i lako uočava situacije i pronalazi odgovarajuća rješenja, da ima moć predviđanja reakcije protivničkih, ali i svojih igrača, jednom rječju, da je kompjuter ili ‘’mozak u ekipi’’. Koliko je moguće ‘’proizvesti’’ takvog igrača, teško je reći, međutim, činjenica je da u savremenoj odbojci postoji pozitivan trend izuzetnih dizača i pored okolnosti u kojima je danas znatno teže uspjeti izboriti se za ovu specifičnu ulogu u ekipi.

Značaj funkcionalnih sposobnosti dizača

Ako bismo upoređivali odbojku prije 30 godina i odbojku koja se igra danas, jasno je da su nastale brojne promjene u svim dimenzijama ovog sporta. Navedene činjenice nameću korištenje napredne tehnologije

ligence. The developing of such players, in essence, is often directed to idea that in future he be selected for setter player position. These are all prerequisites for the existence of several types of setter.

Taking into account the specific characteristics of each individual player, we will try, to those that are most strongly expressed, give an overview of certain types of setters.

One player as the *team leader* want practiclly all coaches and because of that, a setter of that type is very much appreciated. The term ‘’a team leader’’ is extremely wide but essentially, that player defines a role with which it assumes responsibility, give the tone and rhythm of the game, stimulate and motivate team mates, keeps the atmosphere in the team and in many ways contribute to a successful outplaying.

The *setter as performer* of tasks can also be encountered in volleyball practice. This type of setter somewhat rarely communicates with the environment and more difficult fall under the influence of emotions. What is crucial is that however, he shows no tendency to impose as a team leader. A *player in the shadow* is a type of setter who does not expose himself a lot, and seems a little bit inconspicuous. There is a generally accepted term for the type of player who is becoming or is already doing the driving force in the attack, but also in defense actions. Such players are named ‘’engine in the team’’, whose main characteristic is that it gives the impression of the game, while his effects are considerably smaller than the impression.

Volleyball theory and practice are now reached such a level, that there is always the possibility of creating a new type setter. The criteria for such a thing are to be equally successful in all elements of the game, to possess a wide diapason of setting techniques, that the adopted techniques honed to perfection in that sense that errors are kept to a minimum, that he very fast and easy is able to see the situation and find appropriate solutions, to have predictive power, opposing reactions, as well as their players, in one word, it’s a computer or ‘’ brain in the team’’. How is it possible ‘’produce’’ of such a player, it is hard to say, however, the fact is that in modern volleyball exists positive trend outstanding setters despite the fact that today it is much more difficult to succeed to fight for this specific position in the team.

The importance of functional abilities of setter

If we were compared the volleyball back 30 years ago and volleyball that is played today, it is clear that

koja, između ostalog, omogućuje ranu i preciznu sportsko-specifičnu selekciju kako za odbojku tako i za svaki drugi sport. Funkcionalno, odbojka pripada sportovima koji su nekada smatrani aerobnim, no pored funkcionalnih, neophodno je spomenuti i metaboličke procese koji omogućuju organizmu da raste, da se razvija, da održava svoju strukturu u motoričkom i funkcionalnom smislu i reaguje na okolinu (Mladenović-Ćirić i Đurašković, 2008). Dakle, dominiraju igrači vrhunskih motoričkih i funkcionalnih sposobnosti sa smislom za improvizaciju i kolektivnu igru. Govoreći o dizaču, potrebno je i važno naglasiti da uspjeh u odbojci zavisi i od toga kako se njegove individualne karakteristike uklapaju u cjelinu.

Za dobijanje takvih informacija služi nam dijagnostika kojom se dobija detaljan uvid u stanje treniranosti dizača. U savremenom trenažnom procesu, dijagnostika predstavlja skup postupaka kojima se putem testiranja ili mjerenja određenih osobina i sposobnosti utvrđuju, vrednuju i objašnjavaju individualne karakteristike ovog igrača. Pri tome kompletan dijagnostički postupak treba obuhvatati mjerenje i vrednovanje morfoloških, funkcionalnih, biohemijskih, biomehaničkih, motoričkih, psihičkih i socijalnih karakteristika dizača kao i njegovih specifičnih sposobnosti i znanja koje bi mu omogućila uspješno izvođenje tehničko-taktičkih elemenata (Sudarov i Fratrić, 2010. 43). Uopšteno, ciljevi dijagnostike su utvrđivanje zdravstvenog statusa, stanja treniranosti, vrednovanje postignutih efekata u pojedinim ciklusima sportske pripreme, edukacija dizača i trenera i razmjena informacija pri interpretaciji rezultata testiranja.

Uzimajući sve te činjenice u obzir, procjenjuje se da je interpretacija funkcionalnih sposobnosti u ekipnim sportskim igrama teža nego u individualnim sportovima. Uprkos tome određivanjem funkcionalnih sposobnosti dizača dobijaju se brojne korisne informacije, kako za njega kao pojedinca tako i za ekipu. Naime, može se pratiti i kontrolisati trenažni proces, te je moguće poređenje sa drugim ekipama. To može biti, i često jeste, presudan faktor uspješnosti u susretima vrhunskih timova.

Značaj motoričkih sposobnosti dizača

Motoričke sposobnosti učestvuju u realizaciji svih vrsta kretanja. U njihovoj osnovi leži efikasnost organskih sistema, a posebno nervno-mišićnog, koji je odgovoran za intezitet, trajanje i regulaciju kretanja. Te sposobnosti omogućavaju snažno, brzo, dugotrajno, precizno i koordinisano izvođenje različitih motoričkih zadataka. Istraživanja motoričkih sposobnosti potvrdila su kako je taj segment nemoguće opisati s jednom ili nekoliko la-

many changes have incurred in all the dimensions of this sport. The mentioned facts impose the use of advanced technology that, among other things, allows early and precise sport-specific selection in volleyball as well as for every other sport. Functionally, volleyball is one of those sports that were once considered aerobic, however, the metabolic demands of volleyball for the demands of endurance sports (Mladenović & Đurašković-Ćirić, 2008). That means that the players are strong and durable top quality motor and functional abilities with a sense of collective improvisation and play. Speaking about setter, it is important to emphasize that success in volleyball depends on how his individual characteristics fit in the whole. To obtain such information serves us diagnosis, which gives a detailed insight into the status of fitness of setter. In the modern training, diagnostics is a set of procedures like testing or measurement of certain traits and abilities identify, evaluate and explain the individual characteristics of the players. In doing so a complete diagnostic procedure should include the measurement and evaluation of morphological, functional, biochemical, biomechanical, motor, mental and social qualities of setters and their specific skills and knowledge that would enable him to successfully perform the technical and tactical elements (Sudarov & Fratrić, 2010. 43). Generally, the purpose of diagnosing is the determination of health status, condition of their fitness, evaluation of the effects of achieved in the individual cycles of sports training, education of setter and coach, and the exchange of information in the interpretation of test results. Taking into account all these facts, it is estimated that the interpretation of the functional abilities is harder in team, than in individual sports games. This can be, and often it is, a critical success factor in encounters of top teams.

The importance of the motor skills of setter

The motor skills are involved in the realization of any kind of movement. Their basis is efficiency of organ systems, particularly the nervous-muscular, which is responsible for the intensity, duration, and control of movement. These capabilities provide a powerful, fast, durable, precise and coordinated performance of different motor tasks. The Researches of motor skills confirmed that this segment is impossible to describe with one or more latent dimensions, but (according to Meinel, 1977) is about complex structure of quantitative (strength, speed, endurance) and qualitative (coordination, agility, balance, and precision) of motor skills. In motoric sense, the seters

tentnih dimenzija, već se (prema Meinelu, 1977) radi o složenoj strukturi kvantitativnih (snaga, brzina, izdržljivost) i kvalitativnih (koordinacija, agilnost, ravnoteža, preciznost) motoričkih sposobnosti.

U motoričkom smislu, dizači su igrači sa veoma izraženom sposobnošću za visoke skokove (blokiranje, dizanje lopte iz skoka i ponekad napad). Za to im je neophodna eksplozivna snaga poružača nogu. Dizač mora posjedovati veliku brzinu pojedinačnog pokreta rukom i snagu ramenog pojasa. Elastičnost ramenog pojasa, naročito kičmenog stuba i nogu je vrlo važna kod određenih specifičnih situacija u igri, npr. kod hvatanja kratkih lopti koje padaju uz mrežu. Od sposobnosti koje su karakteristične za dizače u odbojci moramo spomenuti brzinu reagovanja, ali i koordinaciju prevenstveno ruku i kinesteziju (Nićin i Kalajdžić, 1996.109). Odbojkaška igra obiluje čestim promjenama pravca i smjera kretanja, pa za obavljanje takvih aktivnosti dizač mora da ima sposobnosti kao što je agilnost, aerobnu izdržljivost (zbog česte promjene napada i odbrane), te preciznost dodavanja lopte u toku igre.

Značaj longitudinalne dimenziolanosti koštanog sistema dizača

Morfološka antropometrija je metoda koja obuhvata mjerenje ljudskog tijela, te obradu i proučavanje dobijenih mjera. U tom smislu ona omogućava: selekciju odbojkaša za određenu ulogu ili poziciju, praćenje i evaluaciju trenažnog procesa, objektivno ocjenjivanje opšteg razvoja tijela, kontrolu stanja uhranjenosti odbojkaša, pa i praćenje oporavka odbojkaša u procesu rehabilitacije. Iako svaki funkcionalno-dijagnostički postupak započinje morfološkom antropometrijom, odnosno utvrđivanjem i procjenom tjelesnih dimenzija, podaci dobijeni takvim mjerenjem čine podlogu i za definisanje funkcionalno-dijagnostičkih sposobnosti. Često se postavlja pitanje: koliki je značaj građe tijela u kombinaciji faktora koji definišu sportsku sposobnost? Na to pitanje teško je precizno odgovoriti. Jedno je sigurno, odsustvo odgovarajuće građe tijela gotovo onemogućuje odbojkaša da postigne vrhunski sportski uspjeh.

Tabela 1. Kategorizacija tjelesne visine za muškarce i žene (po Mikšiću 1997.)

VISINA	Muškarci	Žene
Vrlo visoka	180.0 – 200.0 cm	168.1 – 187.0 cm
Divovska	iznad 200.0 cm	iznad 187.0 cm

U odbojci je tjelesna visina izuzetno važna. Važnost ovog parametra diktiraju pravila odbojkaške igre, are players with a very strong capacity for high jumps (blocking, the jump setting, and sometimes attack). For this they needed explosive power of leg extensors. A setter must have a high speed of individual hand movements and strength of the shoulder area.

Elasticity of shoulder area, particularly the spine and legs is very important in certain specific situations in the game, for example, in catching short balls that fall along the net. From the skills that are characteristic of the setter in volleyball we have to mention the speed of response, and coordination of hand and primarily kinesthesy (Nićin & Kalajdžić, 1996.109). Volleyball game abounds with frequent changes of direction and the direction of movement, and to perform such activities setter must have skills like agility, aerobic endurance (because of frequent changes in attack and defense), and the precision of passing a ball during a game.

The importance of longitudinal dimension of skeleton by the setter

Morphological anthropometry is a method that involves measuring of the human body, and the treatment and research of obtained measures. In this sense, it provides: of male players selection for a particular role or position, monitoring and evaluation of the training process, the objective evaluation of the general development of the body, control of nutritional status of volleyball players and monitoring of recovery in the rehabilitation process.

Though each functional diagnostic procedure begins with a morphological anthropometry and identification and assessment of body dimensions, usually the data obtained with these measurements make the basis for defining the functional-diagnostic capabilities, and often raises the question: what is the importance of body build in a combination of factors which determine athletic ability? To this question is difficult to answer precisely. One thing is for sure, the absence of proper body build it is almost impossible for the top volleyball player to achieve sports success.

Table. 1. Categorization of body height for men and women (according to Mikšić, 1997).

BODY HEIGHT	*Men*	*Women*
Very high	180.0 – 200.0 cm	168.1 – 187.0 cm
Giant	above 200.0 cm	above 187.0 cm

In volleyball, body height is extremely important. The importance of this parameter dictates the rules of vol-

prije svih visina odbojkaške mreže, koja za odbojkaše iznosi 243 cm, a za odbojkašice 224 cm. Uzmemo li u obzir to da je suština igre prebaciti ili uputiti loptu u protivničko polje sa ciljem da se osvoji poen, onda je tjelesna visina odbojkaša jedan od presudnih faktora za osvajanje poena.

Dizači su u prosjeku nešto niži rastom u odnosu na ostale igrače. Međutim, to nije pravilo, jer savremena odbojka ipak zahtjeva da i dizač bude visok igrač, kako bi bio korisniji u bloku i realizaciji dizanja lopte za napad ili kontranapad. Pregledom parametara visine reprezentativne selekcije Srbije, dizači spadaju u kategoriju (Mikšić, 1997) vrlo visokih igrača specijalista sa tendencijom ka divovskim visinama.

Tabela 2. Parametri tjelesne visine muške odbojkaške reprezentacije Srbije (χ=199.3)

Muška odbojkaška reprezentacija Srbije, Seniori 2012.				
Dizači	Vlado	Petković	1983.	198 cm
	Veljko	Petković	1977.	199 cm
	Mihajlo	Mitić	1990.	201 cm

Međutim, pogledajmo i uporedimo parametre tjelesne visine dizača specijalista u vodećim svjetskim odbojkaškim reprezentacijama.

Tabela 3. Parametri tjelesne visine muške odbojkaške reprezentacije Brazila (χ=189.0)

Muška odbojkaška reprezentacija Brazila, Seniori 2012.				
Dizači	Mario	da Silva Pedreira Junior	1982.	192 cm
	Raphael	Vieira de Oliveira	1979.	190 cm
	William	Arjona	1979.	185 cm

Tabela 4. Parametri tjelesne visine muške odbojkaške reprezentacije Rusije (χ=195.6)

Muška odbojkaška reprezentacija Rusije, Seniori 2012.				
Dizači	Sergey	Grankin	1985.	195 cm
	Nikolay	Pavlov	1982.	196 cm
	Sergey	Makarov	1980.	196 cm

Tabela 5. Parametri tjelesne visine muške odbojkaške reprezentacije Kube (χ=194.6)

Muška odbojkaška reprezentacija Kube, Seniori 2012.				
Dizači	Yoandri	Díaz Carmenate	1985.	196 cm
	Raydel	Hierrezuelo Aguirre	1985.	196 cm
	Leandro	Macias Infante	1990.	192 cm

leyball game, first of all height of volleyball nets, which for male volleyball players is 243 cm and 224 cm for female volleyball players.

If we take into account that the essence of the game is to move or send the ball in the opponent's court in order to win a point, then the body height of one volleyball player is one of the decisive factors for winning points. Setters are on average slightly lower growth compared with the other players. However, that is not a rule, because a modern volleyball game Nevertheless demands it from setter also to be tall and that would be more useful in the block and realization setting balls to attack or counterattack.

With an overview of the heights parameters by national teams of Serbia, the setters fall into category (Mikšić, 1997), of a very tall players of specialists, with a tendency toward a gargantuan heights.

Table 2. Parameters of body height of male volleyball players of Serbia (χ = 199.3)

Serbian men's volleyball team, Seniors 2012.				
Setters	Vlado	Petković	1983.	198 cm
	Veljko	Petković	1977.	199 cm
	Mihajlo	Mitić	1990.	201 cm

But, let's look and compare the parameters of body height setter specialists in the world's leading volleyball team.

Table 3. Parameters of body height of male volleyball team of Brazil (χ = 189.0)

Brazilian men's volleyball team, Seniors 2012.				
Setters	Mario	da Silva Pedreira Junior	1982.	192 cm
	Raphael	Vieira de Oliveira	1979.	190 cm
	William	Arjona	1979.	185 cm

Table 4. Parameters of body height of male volleyball team Russia (χ = 195.6)

Russian Men's volleyball team , Seniors 2012.				
Setters	Sergey	Grankin	1985.	195 cm
	Nikolay	Pavlov	1982.	196 cm
	Sergey	Makarov	1980.	196 cm

Table 5. Parameters of body height of male volleyball team of Cuba (χ = 194.6)

Cuba's men's volleyball team, Seniors 2012.				
Setters	Yoandri	Díaz Carmenate	1985.	196 cm
	Raydel	Hierrezuelo Aguirre	1985.	196 cm
	Leandro	Macias Infante	1990.	192 cm

Tabela 6. Parametri tjelesne visine muške odbojkaške reprezentacije USA (χ=194.0)

Muška odbojkaška reprezentacija USA, Seniori 2012.				
Dizači	Donald	Suxho	1976.	196 cm
	Brian	Thornton	1985.	190 cm
	Kevin	Hansen	1982.	196 cm

Kao što se vidi od pet reprezentacija najbolje rangiranih na FIVB rang listi, svjetska sila Brazil u svom sastavu ima rastom najniže dizače. Dakle, nedostatak visine na tim pozicijama ne mora nužno biti i hendikep u taktičkom smislu. Sudeći po rezultatima ovog sastava, taj ''nedostatak'' brazilski reprezentativci kompenzuju na drugi način: dugogodišnjim iskustvom, odličnom motoričkom i psihičkom pripremljenošću, te izuzetnim taktičkim rješenjima.

Tabela 7. Uticaj dimenzija antropološkog statusa kod odbojkaša (Grgantov, 2003.463)

POZICIJE	Longitudinalna dimenzionalnost skeleta	Eksplozivna snaga	Agilnost	Aerobno-alaktatna izdržljivost	Aerobna izdržljivost
Dizači	3	2	1	4	5
Srednji bloker	2	3	1	4	5
Dijagonala	2	1	3	4	5
Primač-pucač	3	2	1	4	5
Libero	*	2	1	*	*

Generalno, u vrhunskoj odbojci, na pozicijama dizača se nastoje ''proizvesti'' visoki igrači, jer jednostavno inovacije savremene odbojkaške igre, pravila igre, te njena dinamika i taktički zahtjevi ni na jednoj poziciji više ne dozvoljavaju rastom niske igrače. Te nove trendove prate mnoge reprezentacije, npr. Srbija (Mitić, M. 1990. – 201 cm), Bugarska (Bratoev, G. 1987. – 202 cm), Njemačka (Galandi, R. 1989. – 200 cm), Italija (Travica, D. 1986. – 200 cm), Poljska (Zygadlo, L. 1979. – 200 cm).

Karakteristike dizača vrhunskog kvaliteta

Formiranje vrhunskog dizača dug je i kompleksan proces pod kojim se podrazumijeva izuzetno kvantitativno i kvalitativno učenje. U dugogodišnjem razvoju specijalizacija igračkih uloga ono predstavlja zahtjevan proces učenja s naglaskom na specifičnu pripremu, tj. izbor i formiranje igrača u onoj ulozi u igri gdje može maksimalno iskoristititi svoje predispozicije. Na taj način specijalizacija u odbojci generalno podrazumijeva formiranje dizača ili organizatora igre, primača-napadača, centralnog igrača, korektora (dijagonalnog igrača) i

Table 6. Parameters of body height of male volleyball team USA (χ = 194.0)

USA men's volleyball team, Seniors 2012.				
Setters	Donald	Suxho	1976.	196 cm
	Brian	Thornton	1985.	190 cm
	Kevin	Hansen	1982.	196 cm

As can be seen, of the five highest-ranked teams in the FIVB ranking list, a world force Brazil in its composition has with the growth the lowest setters as players. So deficiency of height in these positions do not necessarily has to be a handicap in the tactical sense. According to the results, Brazilian team members are that ''deficiency'' compensated in another way: with many years of experience, with excellent motor and mental preparedness, and with exceptional tactical solutions.

Table 7. Significant influence of anthropological status in volleyball (Grgantov, 2003.463)

POSITIONS	Longitudinal dimensionality of skeleton	Explosive power	Agility	Anaerobic -alactate endurance	Aerobic endurance
Setter	3	2	1	4	5
Middle blocker	2	3	1	4	5
Diagonal	2	1	3	4	5
Digger-striker	3	2	1	4	5
Libero	*	2	1	*	*

Generally, in the top volleyball, on setter positions is trying to ''produce'' tall players simply because, the innovations in modern volleyball games, game rules, and its dynamics and tactical requirements in any one position does not allow with growth low players. These new trends are followed by many representations, for example, Serbia (Mitić, M. 1990. - 201 cm), Bulgaria (Bratoev, G. 1987. - 202 cm), Germany (Galand, R. 1989. - 200 cm), Italy (Travica, D. 1986. - 200 cm), Poland (Zygadlo, L. 1979. - 200 cm).

Characteristics of the Setter of top Quality

The formation of top setter is long and complex process that implies extremely quantitative and qualitative study. In many years of development of specialization of playing roles, it represents a very demanding learning process with emphasis on the specific preparation, ei. selection and formation of players in that role in the game where he can maximally exploited their predispositions. In this way, setter specialization in volleyball generally involves the formation of game organizer, receiver-striker, central player, equalizers (of diagonal players), and

libera, obučenog za prijem servisa i obranu polja (Janković i sar. 2009.4).

Pravilna tehnika dizanja lopte

Na jednoj utakmici od dizača se očekuje visok stepen preciznosti. Preduslov za precizno dizanje lopte je pravilno usvojena tehnika. Treba imati na umu da dizač izvodi dizanje lopte u najvišoj tački u odnosu na ostale igrače, u situacijama korektivnog dizanja lopte za napad ili kontranapad. Taj viši kontakt s loptom ubrzava dizanje lopte i lopta ima kraću putanju. Ako ovome dodamo i to da je dizač po svojoj ulozi organizator napada ili kontranapada, onda od njega mnogo toga zavisi i zato je neophodna pravilna tehnika dizanja lopte čime bi se i greške svele na minimum. Međutim, moraju se ponekad prihvatiti i izuzeci. Želimo istaći sljedeće: u odbojkaškoj igračkoj populaciji se izdvajaju igrači koji imaju poseban stil izvođenja tehničkog elementa. Ako taj stil ne remeti efikasnost realizacije napada ili kontranapada, ne treba insistirati na pravilnosti i korekciji usvojene tehnike. Kod dizača se taj poseban, drugačiji stil može vrlo rijetko vidjeti, ali pri izvođenju nekih drugih tehničkih elemenata, moguće je primijetiti drugačije izvođenje od onog što zovemo pravilno, školsko izvođenje odbojkaških elemenata.

Intelektualne sposobnosti - taktičko mišljenje dizača

Na efikasnost u odbojci, bilo da se radi o treniranju ili takmičenju, utiče nekoliko važnih faktora. To su specifične motoričke sposobnosti (Strahonja, 1983), situaciono-motoričko znanje (Bzduh, Buhtel i Ejem, 1976; Gabrielić, 1977; Janković, 1988; Bartlett, Smith, Davis i Peel, 1991) intelektualne sposobnosti (Bosnar i Gabrijelić, 1983; Bosnar i Matković, 1983; Bosnar i Šnajder, 1983) i konativne karakteristike (Horga, Momirović i Janković, 1983). Za uspješno učešće na utakmici i savladavanje situacionih zadataka u igri, potrebno je na određen način povezati navedene sposobnosti (Keramičiev, 1991). Odbojkaška igra u tom smislu pred odbojkaše/ice postavlja određene zahtjeve i ti zahtjevi se odnose na pamćenje prostijih činjenica vezanih za pravila igre, na brzu i tačnu percepciju situacije na terenu, te izbor najracionalnijih poteza u igri kako bi se osvojilo nadigravanje u setu ili na utakmici. Takođe je pri izboru taktike

libero, trained for the receive services and defense (Janković, et al. 2009.4).

A proper technique of setting a ball

At one match, from the setter it is expected a high degree of precision. A prerequisite for precision in setting the ball is properly adopted technique. Should have in mind that setter performs setting at the highest point in comparison to other players, in situations of corrective setting for attack or counterattack. That higher contact with the ball speeds up a setting and the ball has a shorter trajectory. If we add to this fact also that setter, through his role, is organizer of the attack or counterattack, then from him depends much and therefore it is indispensable proper setting technique that would be minimize some mistakes. However, sometimes you have some exceptions to accept. We wish to point out the following: in the volleyball playing population stands out the players who have a particular style of performing of technical element. If that style does not interfere with the efficiency of realization in attack or counterattack, we should not insist on the proper technique or eventually, on correction of technique that is accepted. By the setter is that special, different style can be very rarely seen, but during the performance of some other technical elements, it is possible to notice a different performance from what we call proper, school volleyball performance of elements.

Intellectual ability - tactical thinking by the setter

On efficiency in volleyball whether it's coaching or competition, affects several important factors. These are specific motor skills (Strahonja, 1983), situational-motor knowledge (Bzduh, Buhtel & Ejem 1976, Gabrielić, 1977, Janković, 1988; Bartlett, Smith, Davis & Peel, 1991), intellectual ability (Bosnar & Gabrijelić, 1983 ; Bosnar & Matković, 1983; Bosnar & Schneider, 1983) and conative characteristics (Horga, Momirović & Janković, 1983). For successful participation in the game and mastering of situation tasks in the game, it is necessary in some way, to connect these capabilities (Keramičiev, 1991). In this sense, these volleyball game sets in front of volleyball players certain demands and these demands are refers to the ability to memorize simple facts about the rules of the game, the rapid and accurate perception of the situation, and selec-

neophodno (naročito se to odnosi na dizača) poznavati individualne karakteristike svojih saigrača (napadača).

Jasno je da uloga intelektualnih sposobnosti u realizaciji zadataka odbojkaške igre ne može biti zanemarena, ali se postavlja problem težine i strukture tih zadataka u kognitivnom prostoru, odnosno sklop potrebnih intelektualnih sposobnosti za realizaciju igre u odbojci. Taktičke sposobnosti predstavljaju prije svega, sposobnosti taktičkog mišljenja, sposobnosti ocjenjivanja situacije i pronalaženja najboljeg rješenja u određenoj situaciji u toku igre. Pri specijalizaciji, dizači su uvijek samo oni igrači koji po svojim karakteristikama najbolje mogu realizovati posebno ‘’oblikovan’’ taktički program, što znači da imaju sposobnost brze percepcije i analize igre, sposobnost predviđanja, donošenja odluka i efikasnog izvođenja tipičnih struktura u situacijama koje čine taktiku odbojkaške igre. Pomenuvši tipične strukture i taktičke situacije, dizač je specijalista koji mora u različitim fazama igre brzo i pravovremeno utrčati u zonu za dizanje. Ako bi smo pokušali definisati to karakteristično utrčavanje dizača i povezati ga sa intelektualnim sposobnostima, agilnost bi bila sposobnost koja najvjernije dočarava važnost ove sposobnosti za organizatora igre u utakmici. Usuđujemo se to nazvati nekom vrstom prostorno-kinestetičke inteligencije uzimajući u obzir česta ubrzanja i usporavanja, te promjene pravca kretanja na malom prostoru za određeno vrijeme, uz naglašenu preciznost izvođenja pokreta. Ovome treba dodati i to da su voljni napor, razvijanje inicijative, dosjetljivost, stvaralaštvo i mašta osnovni preduslovi za kvalitetno taktičko mišljenje.

U vrhunskoj odbojci optimalni rezultati efikasnosti dizanja lopte na jednoj utakmici kreću se između 40-50%, sa tendencijom da se te vrijednosti svakim danom povećavaju. Iz nekih ranijih analiza igre (Janković, 1995), postoje podaci da dizač, na utakmici koja se igra u pet setova, izvede u prosjeku između 240 i 320 skokova. Od tog ukupnog broja skokova čak 30% dizanja izvodi se tehnikom preko glave. Kada je u pitanju struktura tih skokova, utvrđeno je da u 30-50 akcija dizač diže loptu nakon brzih kretanja, a u 20-30 akcija dizač primjenjuje tehniku dizanja lopte u padovima (prizemljenja).

Rješavanje taktičkih zadataka u odbojkaškoj igri nije toliko vizualno uočljivo prosječnom promatraču, kao što je to slučaj s tehnikom. Zato vrlo često, (ne)stručnjaci ne vide i osporavaju važnost ispravnog taktičkog djelovanja u igri. Taktičke zadatke koje treba rješavati

tion of most rational moves in the game with intention to win a rally in the set or match.

In the selection of tactics is also necessary (in particular, this applies to setter) to know the individual characteristics of of their teammates (the attacker). It is clear that the role of intellectual abilities in the realization of the tasks of volleyball game can not be ignored, but it puts the issue of difficulty and structure of these tasks in the cognitive area and set of the necessary intellectual abilities for the realization in the volleyball game. Tactical capabilities represent primarily capabilities of tactical thinking, then ability to assess the situation and find the best solution in certain situations during the game. During the specialization, the setter is one of those players who through its own characteristics best can realize especially ‘’designed’’ tactical program, which means they have the ability to quickly perceive and analyse a game, predictability, ability to make a decision and ability of efficient performance of typical structures in situations that make tactical game of volleyball. Mentioning the basic structure and the tactical situation, the setter is a specialist who in different phases of the game has quickly and promptly run into the zone to set up. If we try to define this characteristic running of setter and associate it with the intellectual ability, Agility would be an ability that the most faithful describes the importance of this ability for organizer of the game in one match. We dare to call it a kind of spatial-kinesthetic intelligence, taking into account with the frequent acceleration and deceleration and change of direction of movement in a small space for a specific time, and with emphasis on the accuracy of the movement. To this we should add that the effort of the will, developing of initiative, ingenuity, creativity and imagination are the basic prerequisites for good tactical thinking.

In the top volleyball the results of optimal setting efficiency in a game is between 40-50%, with a tendency for these values increase with each passing day. From some previous analysis of game (Janković, 1995), there is information that setter, in the match that is played in five sets, performs between 240 and 320 rebounds in average. From the total number of these jumps even 30% of setting is performed over the head. When it comes to question of the structure of these jumps, it was found that in 30-50 action setter set a ball after quick movement, and in 20-30 action setter uses the technique of setting the ball in decline (grounding).

Solving of tactical tasks in volleyball game is not so much visually noticeable for the average observer, such as,

u toku igre, bilo da se oni odnose na odbranu ili napad, prelaz iz odbrane u napad i obratno, karakterišu svojstva taktičkog mišljenja. Ocjena date situacije, koja se bazira na prethodnoj akciji, zapravo, uslovljava izbor najboljeg rješenja za daljnju akciju, traži proces mišljenja i mašte vrlo često i u djelićima sekunde. Tehnički elementi služe tek kao sredstvo za ostvarivanje taktičkih zamisli. Taktičko mišljenje je vrlo složeno i zahtjevno. Za takvu vrstu mišljenja neophodna je sposobnost kombiniranja vremenskih i prostornih odnosa na većem prostoru s više igrača. Odbojka još zahtijeva i sinkronizovanu kontrolu kretanja lopte, vlastitih i protivničkih igrača.

Nepredviđenost, složenost i bogatstvo situacija koje proizlaze iz same igre, znalačka i brza ocjena situacija, te primjena odgovarajućih taktičkih zamisli kao i tehničkih zahvata, pružaju veoma bogat sadržaj odbojkaškoj igri. Iz tog razloga od dizača se neminovno traži intenzivan i raznolik sadržaj psihičkih funkcija (Barišić, 2007).

Zaključak

Potpuno je jasno da u ekipnim sportovima mora postojati igrač specijalizovan za organizaciju igre. Ta uloga u odbojci povjerena je dizaču. Pri izboru igračke uloge, a naročito pri izboru odgovarajućeg dizača, neophodno je prepoznati i razvijati sljedeće kvalitete: usvajanje pravilne tehnike dizanja lopte, sposobnost izvođenja svih tipova dizanja u igri, razvijanje preciznosti izvođenja tehnike, usvajanje tehnike ostalih elemenata igre, kako u napadu, tako i u odbrani.

Od samog početka specijalizacije dizača, bitno je i usvajanje određenih taktičkih instrukcija: poznavati vlastite napadače u smislu maksimalnog korištenja njihovih dobrih strana, svakom napadaču dizati ‘’njegovu’’ loptu, znati na kvalitetan način forsirati efikasnog igrača, koristiti rotacije u kojima su kombinacije napada uspješne, znati kako koristiti ‘’povratnu’’ loptu nakon prethodne neuspješne kombinaciju u napadu, raznovrsno dizati loptu svim napadačima, znati prepoznati uspješne i neuspješne serije akcija, znati koristiti ‘’taktičku racionalnost’’ u situacijama kada je pozicija za dizanje lopte otežana, znati mijenjati ritam dizanja lopte, te znati iskoristiti sve nedostatke protivnika (tehničke, taktičke ili morfološke).

Svaka igračka pozicija u odbojci je na svoj način zahtjevna, ali pozicija dizača je pozicija na kojoj mogu igrati samo oni odbojkaši koji imaju dobre predispozicije ali i talenat. Nažalost, mali procenat dizača uspije iskoristiti svoj potencijal i postati vrhunski u onome što radi. Zato su dizači u odbojkaškom svijetu posebno tre-

it is the case with technique. So very often, (non)-experts do not see and deny the importance of proper tactical action game. Tactical tasks that need to be addressed during the game, whether they relate to defense or attack, to the transition from defense to attack and back, is characterized by the properties of tactical thinking. The evaluation of the situation, which is based on the previous action, in fact, determines a selection of the best solution for further action and requires process of thought and imagination, often in split seconds. Technical elements serve only as a means of achieving tactical ideas. Tactical thinking is very complex and demanding. For this kind of thought is necessary the ability to combine the temporal and spatial relations in a larger space and ith more players. Volleyball also requires synchronized control of the movement their own and opposing players. Unprevisibility, the complexity and wealth of situations that have arsing from the game, knowing and quick assessment of the situation, and the application of appropriate tactical ideas and the technical interventions, provide a very rich content in volleyball game. For this reason, the setter inevitably requires intense and varied content of mental functions (Barišić, 2007).

Conclusion

It is quite clear that in team sports, there must be a player specialized in the organization of the game. This role is entrusted to the setter. In selection of a role player, especially in selection of the appropriate setter, it is necessary to identify and develop the following qualities: adoption of proper setting techniques, ability to perform all types of setting in the game, developing of precision in performing the techniques, adoption of the techniques of other game elements, as in attack, also in defence.

From the very beginning of specialization of setter, important thing is the adoption of certain tactical instructions: to know their own attackers in terms of maximum use of their good sides, set up to every own attacker so colled ‘’his’’ ball, know in a quality manner force the efficient players, use the rotation in which the combination of attack are successful, to know how to use ‘’return’’ ball after previous unsuccessful combination in attack, various set up the ball to all attackers, know how to recognize successful and unsuccessful series of actions, know how to use ‘’tactical rationality’’ in situations where the position is difficult for setting, know to modify the rhythm of setting and know how to use all the flaws of the opponent (technical, tactical or morphological). In volleyball each player position is demanding in its own way, but the setter position is such position on which can play only those volleyball players with good

tirani i nema ih puno. Ovi igrači su po svom igračkom stažu najdugotrajniji, jer je teško ‘’proizvesti’’ vrhunskog dizača za kratko vrijeme.

Izjava autora
Autori pridonijeli jednako.

Konflikt interesa

Mi izjavljujemo da nemamo konflict interesa.

predispositions and talents. Unfortunately, a small percent of setters succeed to use its own potential and become a top in that what they do. That is why they are specially treated in volleyball world and there’s not a lot of them. These players are longest-lasting in their plaything internship, because it is difficult to ‘’produce” a top setter for a short time.

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The authors have contributed equally.

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Stručni rad

Professional Paper

Cinioci uticaja na modelovanje procesa promena u sportu

Milan Nešić
Franja Fratrić
Univerzitet Educons, Sremska Kamenica, Srbija
Velibor Srdić
Panevropski univerzitet Apeiron, Banja Luka, BiH

Korenspondencija:
Prof. dr Milan Nešić
mnesic08@yahoo.com

Apstrakt: Osnovni cilj rada je da se detektuju eksterni i interni činioci procesa promena u sportu, imajuću i vidu da je sportska organizacija dinamičan i otvoren sistem.
Promene polaze iz internog okruženja, ali događaji koji dolaze iz spoljašnjeg okruženja su impuls za same procese promena u sportskoj organizaciji. Prilikom modelovanja procesa promena potrebno je imati u vidu sledeće faktore: okolina, znanje, učenje, upravljanje. Uslovi za realizaciju modela promena u sportu su: postojanje preduzetničkog duha, spremnost na promene, otpori promenama i održavanje i afirmacija novog stanja.
Upravljanje promenama od strane sportskog menadžmenta se odnosi na proces donošenja odluka i proces sporovođenja odluka. Pri tome treba imati u vidu da sa povećanjem obima i brzine promjena, povećava se broj i kompleksnost problema.

Ključne reči: promene su sportu, modelovanje, faktori, upravljanje.

Factors That Influence Modeling of Change Process in Sport

Milan Nešić
Franja Fratrić
University Educons, Sremska Kamenica, Srbija
Velibor Srdić
Pan-European University Apeiron Banja Luka

Correspondence:
Prof. dr Milan Nešić
mnesic08@yahoo.com

Abstract: The main aim of this work was to detect external and internal factors in the process of change in sport, taking into consideration the fact that a sports organization is a dynamic and open system.
Changes first start in the internal environment; however, events that appear from the external environment stimulate change processes in a sports organization. During the modeling of change process, it is necessary to take into account the following factors: environment, knowledge, learning, and management. Conditions for realization of change model in sport are: the existence of enterprising spirit, readiness for changes, resistance to changes and maintenance and affirmation of the new state.
Change management done by sports management is related to the process of making and implementing decisions. It should be also taken into account that the increase of quantity and speed of changes results in the increase of number and complexity of problems.

Key words: changes in sport, modeling, factors, management

Uvod

Sport je jedna od ljudskih delatnosti koja se poslednjih decenija razvijala ‘’vratolomnom’’ brzinom. Porast sportskih rezultata, nivo ulaganja svih vrsta (materijalnih i nematerijalnih), pojava novih sportskih aktivnosti i formi, medijska popularnost, itd., doveo je sport u zonu visoko intenzivnog rada. Sport u najširem pojmovnom obuhvatu danas predstavlja planetarni fenomen najširih razmera, kako po kvantitetu, tako i kvalitetu. Bez obzira o kojem se području sporta radi (takmičarski, školski, rekreacija) nivo angažovanja i obuhvatnosti, kako pojedinaca, tako i organizacionih subjekata, prevazilazi nekadašnja shvatanja o sportu kao ‘’razbibrigi’’ ili ‘’zabavi u slobodno vreme’’. Današnji sport, posebno njegov deo koji se ogleda kroz profesionali sport, za sebe

Introduction

Sport, as one of human activities, has been developing swiftly during the past few decades. The increase of sports results, investment rate of all kinds (financial and non-financial), appearance of new sports disciplines and forms, media popularity, etc., have brought sport into a high intensity work zone. Generally speaking, sport represents a planetary phenomenon of the widest range when its quality as well as quantity is taken into consideration. Regardless of the sports domain in question (competitive, school, recreational) a level of engagement and diversity of individuals, as well as of organizational entities, surpasses old conceptions about sport as a mere ‘distraction’ or a ‘leisure activity’ done in one’s free time. Today’s sport, especially professional sport, is closely linked to

vezuje brojne segmente iz područja biznisa, ekonomije, politike, industrije i drugih područja ljudskog rada, što ga čini izuzetno značajnom svetskom poslovnom kategorijom. Može se reći da je jedan od fenomena unutar sporta, koji će obeležiti XXI vek, pojava ozbiljnog sportskog biznisa. Specifičnost ove pojave ogleda se i u tome, što su njegovi protagonosti isti oni koje nazivamo temeljnim stubovima sportske delatnosti: sportisti, treneri, menadžeri, sportske organizacije, itd. Kao ekskluzivni promoteri savremenog korporativnog biznisa oni putem sportskog auditorijuma (kojim suvereno vladaju) zauzimaju centralno mesto u okruženju tzv. ''industrije sporta''. Istovremeno, sportski protagonisti razvijaju i sopstveni biznis, gde identifikuju svoje proizvode i ciljno tržište. (Radoš, Nešić, 2008).

Ovakve tendencije razvoja sporta u prvi plan postavljaju pitanje upravljanja organizacionim promenama. U aktuelnim shvatanjima organizacione komponente u sportu još uvek su prisutni stavovi da se eventualni nedostatak kvaliteta organizacije (unutar sportskih subjekata – klubova, saveza, federacija,...) može nadomestiti kvantitetom ljudskog potencijala, kao i odgovarajuće savremene opreme, materijala, i sl. Tačnije, prisutno je gledište da moderna sportska tehnologija i kadrovi mogu ''da reše sve''. Naravno da se problemi sportskih organizacija ne mogu rešavati samo promenama u organizacijskoj strukturi, već se mora voditi računa i o organizacionoj kulturi, ''sportsko-tržišnim'' zahtevima, tehnologiji i pravcima njenog razvoja, ''proizvodnom programu'' sportske organizacije, okruženju, dostupnim ''kapacitetima'' (sportskom potencijalu u okruženju), itd.

Tendencije promena u sportu

Nasuprot relativno stabilnim uslovima egzistencije sporta i sportskih organizacija u prošlosti (relativno stabilan ekonomski sistem, ''čvrsti'' izvori državnog finansiranja, definisan sistem sporta, itd.), što je imalo za posledicu ''standardnu'' sportsku organizaciju (''okamenjenu'' i teško promenljivu unutrašnju organizacionu strukturu), budućnost sporta se usmerava ka dinamičnoj organizaciji. To znači da će organizacione promene biti stalna, a ne kampanjska aktivnost. Drugim rečima, u prvi plan se postavlja napuštanje apstraktnog normativističkog pristupa u oblikovanju organizacione strukture sportskih subjekata, koga treba da zameni pragmatični pristup utemeljen na empirijski proverljivim principima ''da je dobra ona organizacija koja se pokaže kao uspešna''.

Najčešći uzroci organizacionih promena u sportu uslovljeni su promenama u okruženju. Od *eksternih*

numerous segments from business, economy, politics, industry and other areas of human enterprise, making it a significant world business factor. It can be said that one phenomenon within sport which will mark the 21st century is the emergence of serious sports business. Peculiarity of this phenomenon is reflected in the fact that its protagonists are the same as those we call foundational pillars of sports activities: athletes, coaches, managers, sports organizations, etc. As exclusive promoters of the contemporary corporative business, and through sports audience (which they sovereignly rule) they take a central position in the so called 'sports industry'. At the same time, sports protagonists are additionally developing their own businesses, where they determine their products and target market. (Radoš, Nešić, 2008).

These tendencies of sports development are making management of organizational change highly important. Current ideas about organizational elements in sport still contain attitudes that a possible lack of quality organization (inside sports entities – clubs, associations, federations…) can be replaced by the quantity of human potential and by suitable modern equipment, materials and such. To be precise, there is a viewpoint that sports technology and personnel can solve everything. Of course, problems of sports organizations cannot be solved just by changes in organizational structure; organizational culture, demands of the 'sports market', technology and its development, 'production program' of sports organization, the environment and available talent (sports potential in the environment) etc., all have to be taken into consideration.

Tendencies of Change in Sport

As opposed to the relatively stable conditions of sport and sports organizations' existence in the past (relatively stable economic system, 'solid' sources of state funding, well-defined sports system, etc.), which resulted in a 'standard' sports organization ('stiff' and hard on changing internal organizational structure), the future of sport is shifting toward a more dynamic organization. This means that organizational changes will be a constant rather than a random occurrence. In other words, the abandonment of abstract, standardized approach is coming to the forefront when it comes to the shaping of sports entities' organizational structure and it should be replaced by pragmatic approach based on empirically tested principles such as 'a good organization is the one that proves to be successful'.

The most common causes of organizational changes are linked to the changes in the environment. Regarding

promena mogu se izdvojiti kao aktuelne: razvoj trenažne tehnologije (koja je u direktnoj vezi sa razvojem informacionih tehnologija), globalizacija sportskog tržišta (koja je, takođe, u direktnoj vezi sa globalizacijom svetske privrede), promene uloge države u privrednim aktivnostima (jačanje privatnog sektora), demografske promene, konkurencija (kako sportska, tako i poslovna), tendencije pojave i razvoja novih sportskih sadržaja i disciplina (interesovanja sportskih konzumenata), i sl. Među najbitnijim *internim* uzrocima organizacionih promena mogu se, između ostalog, istaći: razvoj sporta (sportske organizacije) u smislu povećanja njegove rezultatske konkurentnosti (time i njegove veličine); složenosti i zrelosti organizacije; promene u domenu ljudskih potencijala (posebno sportske supstance-sportista, kojima je sport stalno izložen i što predstavlja njegovu specifičnost); promene u liderskim pozicijama i komponentama; promene u vlasničkoj strukturi; promene konceptualne, poslovne i razvojne strategije sporta (sportske grane, discipline ili kluba); itd. Osnovni cilj organizacionih promena u sportu treba da predstavlja preoblikovanje sportske organizacije na način koji omogućava istovremeno postizanje ‘’spoljašnjeg i unutrašnjeg sklada’’, odnosno poboljšanje ukupnih performansi svake sportske organizacije (kluba, saveza, federacije, i sl.). Organizacione promene se preduzimaju i radi omogućavanja racionalizacije, poboljšanja kreativnosti, smanjenja troškova poslovanja, povećanja kvaliteta usluga i proizvoda, veće fleksibilnosti, boljeg korišćenja i upravljanja raspoloživim kapacitetima, efikasnija podela rada, povećanje produktivnosti rada, itd. Ovo se odnosi na bilo koji oblik organizacione promene (restrukturiranje, decentralizacija i drugi oblici organizacionog preoblikovanja). Za razliku od ranijih perioda, buduće organizacione promene u sportu će se zasnivati na povremenim radikalnim promenama, u kojima će organizacije u potpunosti menjati svoje organizacione modele. (Nešić, 2008).

Organizaciona fizionomija savremenog sporta može se posmatrati kroz tri dimenzije koje uslovljavaju njegovu budućnost: 1) strategija sportske organizacije, koja je obuhvaćena i *ekonomskom dimenzijom*; 2) ljudski potencijal sportske organizacije (*sociološka dimenzija*) i 3) postojeća ili dostupna sportska i druga korelativna tehnologija (*tehnološka dimenzija*). Prema tome, organizacione promene u sportu u prvom redu uključuju promene u tehnologiji (trenažnoj, i u vezi sa njom, svim ostalim tehnološkim parametrima), ljudima, organizacionoj strukturi i zadacima sportskih zaposlenka. U uspostavljanju novih organizacionih oblika polazi se, ne samo od formalne organizacije (njenog ‘’čvrstog’’ jezgra), već i

the *external* changes, these can be singled out as current: development of training technology (which is directly related to development of information technology), globalization of sports market (which is also directly related to globalization of the world economy), change of state role in the economy (private sector becoming stronger), demographical changes, competition (in sports, as well as in business), tendency of new sports activities and disciplines to emerge and develop (sports consumers' interest) and the like. Among the most important *internal* causes of organizational changes, the following can be highlighted: development of sport (sports organization), which means the increase of the competitive strength related to performance (and thereby the increase of its size); complexity and maturity of an organization; changes of human potential (especially sports assets – athletes, to whom sport is constantly exposed to, which is its peculiarity); changes in leadership positions and components; changes in ownership structure; changes of conceptual, business and developmental strategy of sport (sports branches, disciplines or club); etc. The main goal of organizational changes in sport should be remodeling of sports organization in a manner that enables synchronous achievement of 'external and internal harmony', that is, the improvement of total performance of all sports organizations (club, association, federation, etc.). Furthermore, organizational changes are undertaken to accomplish rationalization, improvement of creativity, business cost reduction, increase in the quality of service and products, higher flexibility, better usage and management of available assets, more effective division of work, increase in the work productivity, etc. This applies to any form of organizational changes (restructuring, decentralization and other forms of organizational remodeling) (Nešić, 2008).

Organizational physiognomy of contemporary sport can be seen through 3 dimensions which impose conditions on its future: 1) strategy of sports organization which is included in the *economic dimension*; 2) human potential of sports organization (*sociological dimension*) and 3) the existing or available sports or related technology (*technological dimension*). Accordingly, organizational changes in sport primarily include changes in technology (related to training and all other technological parameters), people, organizational structure and tasks of sports employee. When it comes to the establishment of new organizational models, not only a formal organization (its 'hard' core) is to be considered, but also intangible (so called 'soft') elements of an organization, which can be crucial in sport, and which pertain to harmonious

od neopipljivih (tzv. ''soft'') elemenata organizacije koji mogu biti od presudnog značaja u sportu, a odnose se na harmonične međuljudske odnose, kreativnost i motivaciju, pozitivnu atmosferu timskog rada, shvatanje i usmeravanja jedinstvenosti ciljeva, itd.

Imajući u vidu nove tendencije i kretanja u savremenom ekonomskom, socijalnom, političkom i, uopšte, društvenom okruženju nedvosmisleno se nameće pitanje shvatanja i prihvatanja novih trendova i u sportskoj oblasti. Drugim rečima, sport je u XXI veku već zahvaćen brzim i radikalnim promenama, u skladu sa razvojnim procesima celokupnog društva. S toga se u okviru ''sportske struke'', posebno sportskog menadžmenta, mora razvijati filozofija ''proaktivnog delovanja'', odnosno ići u susret sve intenzivnijim promenama. Posebno su ove nove tendencije uočljive u sportu na prostoru bivših jugoslovenskih republika i to, prvenstveno, u shvatanjima sporta kao oblasti društvene nadgradnje i čovekovog rada, gde centralno mesto zauzimaju pitanja uspostavljanja novog tipa sportskih organizacija. Preoblikovanje sadašnje forme sportskog organizovanja je kompleksno pitanje koje zahteva multidisciplinarni tretman i ne može se bazirati samo na resursima ''sportske struke'' (Nešić, 2008a). Zbog toga je neophodna šira društvena i stručno-naučna opservacija, koja bi se temeljila na nekoliko bitnih elemenata:

- pitanjima vlasničke transformacije,
- utvrđivanju društveno-ekonomskog položaja sportskih organizacija,
- razvoju sportskog menadžmenta,
- razvoju stručnih kadrova i njihovo visoko pozicioniranje u sistemu sporta,
- definisanju statusa sportista u odnosu na sportsku organizaciju, kao i društvo u celini,
- utvrđivanju novog modela unutrašnje strukture sportske organizacije.

Faktori koji utiču na modelovanje procesa promena u sportu

Razmatranje problema upravljanja promenama predstavlja kompleksan zadatak. Mada su napori teoretičara i analitičara iz ove oblasti uvek usmerene ka što transparentnijem i sveobuhvatnom tumačenju različitih aspekata, kompleksnost promena gotovo uvek ostavlja ''otvorena vrata'' za nove dileme, nejasnoće i polemike. Za modeliranje procesa promena jedna od najznačajnijih informacija je – odakle promena dolazi (odakle se očekuje). S obzirom da sport egzistira u određenom socijalnom sistemu, odnosno tzv. ''gornjem sloju društva'' (društvenoj nadgradnji), promene koje u vezi sa

interpersonal relationships, creativity and motivation, positive atmosphere of team work, common understanding and focus on goals, etc.

Having in mind these new tendencies and shifts in the contemporary economic, social, political and general human environment, the question of comprehension and acceptance of new trends in sport unquestionably arises. In other words, the sport of the 21st century has already been undergoing fast and radical changes which are consistent with the developing processes of the society as a whole. Therefore, within the 'sports profession' and especially in sports management, a philosophy of 'proactivity' has to be developed, which implies a movement toward all the more intense changes. These new tendencies are especially visible in the sport of the ex-Yugoslavian countries where sport is considered to be a mechanism for the social self-development and expression of human work with the key issues being establishment of the new type of sports organizations. Remodeling of the present form of sports organization is a complex matter which demands a multi-disciplinarian approach and cannot be solely based on the resources of the 'sports profession' (Nešić, 2008a). Thus, it is necessary to have a wider social and scientific observation which would be based on these several crucial elements:

- questions of transformation of ownership
- determination of socio-economic status of sport organizations
- development of sports management
- development of professional personnel and their high positioning in the sports system
- athletes' definition of status as related to a sports organization and to society as a whole
- determination of a new model of sports organization's internal structure

Factors Influencing Modeling of Change Process in Sports

Analysis of problems concerning change management is a complex task. Even though sports theoreticians and analysts' efforts are directed toward a more transparent and comprehensive interpretation of different aspects, complexity of changes leaves almost no 'open door' to new dilemmas, ambiguities and debates. Some of the most important information for modeling of change process is – the source of change (where to expect it). Considering the fact that sport exists in a certain social system, in so called 'higher spheres of society' (social self-development), changes that it brings about are usually not accidental or spontaneous.

njime nastaju ne dolaze, po pravilu, slučajno ili spontano. Ukoliko se problemu priđe globalno može se doći do zaključka da su se najčešće i najkrupnije promene u socijalnim sistemima odvijale pod uticajem promena u tehnici i tehnologiji, ali i pod uticajem upravljanja (Ristić, 2005: 235). Kvalitet ''sportskog proizvoda'' ili usluge u sportskoj organizaciji predstavlja svojevrsnu meru kvaliteta upravljanja. Ono zavisi od velikog broja faktora, među kojima su najdominantniji i opredeljujući oni koji dolaze iz eksternog okruženja (politički, društveni i privredni sistem, iskustvo, tradicija, i sl.), a u novije vreme kao faktor broj jedan smatra se – znanje (Nešić, Nešić, 2012).

Da bi se sačinio adekvatan *model* procesa upravljanja promenama u sportskoj organizaciji moraju se imati u vidu sledeći faktori:

Okolina – potreba za novim stanjem (za promenom stanja) dolazi iz okruženja (internog i eksternog). Iz okruženja se crpe informacije (o rezultatima konkurencije, trendovima i tendencijama razvoja sporta u celini, kao i određene sportske grane ili discipline, sopstevnoj poziciji i konkurentnosti u odnosu na okruženje, i sl.) koje stvaraju osnovu za stvaranje stava o potrebi i želji za promenom, a sama okolina je područje uočavanja novina;

Znanje – nastupajuće doba u celini, a posebno u sportu, može se smatrati dobom znanja. Protok informacija i naučnih saznanja danas je intenzivniji nego u celokupnom razvoju ljudskog društva. U sportu više nije problem (kao nekada) dostupnost informacija, već upravo njihovo mnoštvo i raznolikost. Danas je ''veći problem'' znati gde potražiti neku informaciju (o trenažnoj tehnologiji, sportskim rezultatima, saznanjima komplementarnih naučnih oblasti bitnih za razvoj sporta, i sl.), nego da li je ''uopšte negde ima''. Informacije iz okruženja predstavljaju fond znanja.

Učenje – predstavlja senzor koji u okviru sistema ''znanja'' prati i registruje promene. Učenjem se ne stiče samo novo znanje, već se njime ovladava samom veštinom sticanja novih znanja koja su od bitnog značaja za prelazak u novo stanje (realizacija promene). Zbog toga se u sportu mora praviti razlika između onih koji imaju stvarnu potrebu za učenjem, od onih koji se samo površno informišu da se ''tu oko nas nešto događa'';

Upravljanje – kada je reč o promenama može se tretirati kao vođenje sportske organizacije. Upravljanje pomoću učenja o promenama u funkciji je uobličavanja odluka o vođenju (i rukovođenju) u pravcu realizovanja neophodnih promena, odnosno da artikuliše ''volju'' organizacije da se promenama utiče na postojeće stanje.

If the problem is approached from a global perspective, the conclusion can be derived that most frequent and biggest changes in social systems have happened under the influence of technical and technological changes, but also under the influence of management (Ristić, 2005: 235). Quality of 'sports product' or service in a sports organization represents a certain measure of management quality. It depends on numerous factors, among which the most domineering and determining come from the external environment (political, social and economic system, experience, tradition, etc.), and as of recently, the most important factor is considered to be - knowledge (Nešić, Nešić, 2012).

In order for an adequate *model* of change management process to be created in sports organization, one has to have the following factors in mind:

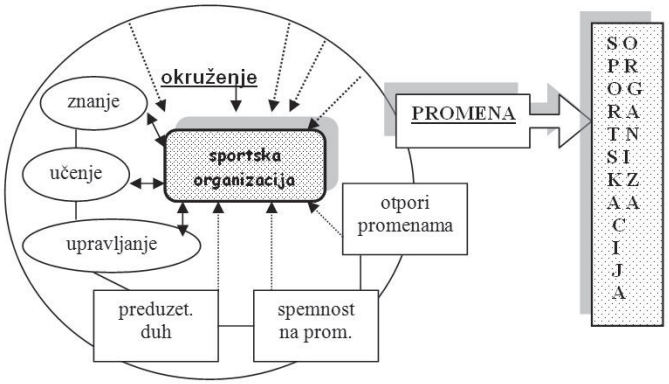
Environment – the need for a new state (for the change of state) to come from the environment (internal and external). The new information is derived from the environment (about competitors' results, trends and tendencies of the development of sport as a whole, as well as of certain sports branches or disciplines, one's own position and competitiveness in comparison to one's environment and such.); this information creates basis for attitude formation about the need and desire for change, and the environment itself is a field where novelties are noticed.

Knowledge – the upcoming age as a whole, and especially as it pertains to sport, can be considered the age of knowledge. The flow of information and scientific discoveries have been more intense nowadays than in the entire development of human society. The availability of information is not a problem anymore (as it used to be), on the contrary, its multitude and diversity is. Today it is 'more problematic' to know where to look for a piece of information (about training technology, sports results, findings from correlated scientific domains that are important for development of sport, and the like), than the lack of it. Information from the environment represents a fund of knowledge.

Learning – is a sensor which monitors and registers changes in the system of knowledge. Not only is the new knowledge acquired by learning, but the skill of acquiring new knowledge is mastered, which is very significant for transition to a new state (realization of change). Therefore, the difference must be made in sport between those who have the real need for learning and those who just superficially inform themselves about the events from the environment.

Management – when it comes to changes, it can be viewed as managing of sports organization. Management helped by the learning about changes serves to shape decisions on leadership (and management) toward realization of necessary changes, that is, toward the articulation of or-

Upravljanje u sportu mora biti korespodentno sa osnovnom filozofijom sporta – brže, dalje, jače.



***Shema 1**.-Model promena u sportu*

Uslovi za realizaciju modela promena u sportu, u odnosu na aktivnosti menadžmenta sportske organizacije, odnose se na ispunjenje sledećih uslova:

- *postojanje preduzetničkog duha*, koji ima odlučujuću ulogu u razvojnim koncepcijama sporta;
- *spremnost na promene*, predstavlja fundamentalni element modela promena u sportu (promena postojećeg stanja i transformacija u novo stanje predstavlja proces za koji je potrebno određeno vreme);
- imati u vidu moguće *otpore prema promenama*, koji je kao socijalni fenomen uvek prisutan (u čijoj je osnovi strah od promena);
- *održavanje i afirmacija novog stanja*, koje mora biti intenzivno radi uspostavljanja funkcionalnosti novog rešenja (da bi funkcionisao u određenom vremenskom periodu svaki sistem mora biti održavan).

Promene najčešće označavaju menjanje postojećeg stanja, neizvesnost i rizik gubitka do tada stečenih pozicija. Zbog toga strah od onoga što će zameniti postojeće stanje, često okreće organizaciju više samoj sebi, nego što je ‘’otvara’’ i omogućava da pristupi promenama. Promene pokreću lideri i njihova aktivnost je usmerena ka stimulisanju menadžmenta na podrušku odgovarajućim promenama, jer bez aktivne uloge menadžmenta organizacije nije moguće menjati uloge pojedinaca, grupa ili sportske organizacije u celini. Da bi došlo do realnih i trajnih organizacionih promena, članovi sportske organizacije (i zaposleni) moraju verovati u njihovu neophodnost. Zbog toga je, između ostalog, osnovna svrha definisane i jasno predočene Vizije organizacije (kroz strateško planiranje) da članovima i zaposlenima daje pravac akcije i osećaj da se promenama tačno zna kuda

ganizational ‘will’ so that changes affect the existing state. Management in sport has to be aligned with the fundamental philosophy of sport – faster, further, stronger.

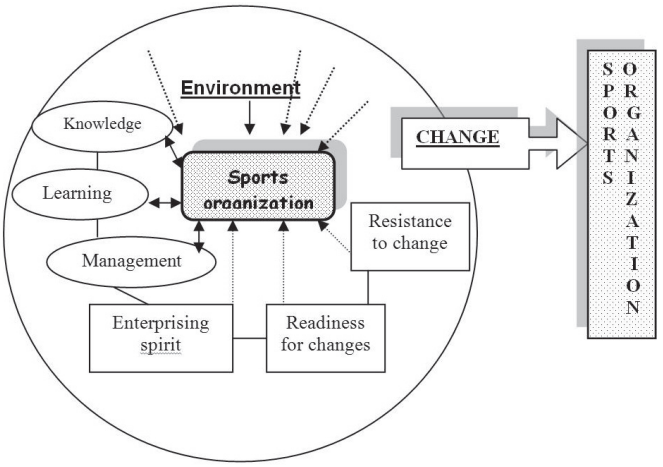


***Diagram 1**.-Model of change in sport*

Conditions that have to be met for realization of change model in sport in relation to management activities of a sports organization are the following:

- *The existence of enterprising spirit*, which has a decisive role in developing of sports notions;
- *Readiness for change*; it is a fundamental element of change model in sport (change of the existing state and transformation to a new one represents a process that takes some time);
- Possible *resistance to changes* should be taken into consideration as it is a social phenomenon that has always been present (due to our fears of change);
- *Maintenance and affirmation of the new state*, which have to be intense so that the new solution is established and fully functional (for a system to function within a time period, it has to be maintained).

Changes often imply disruption of the status quo, uncertainty and risk of losing previously attained positions. Thus, the fear of the new that will replace the existing status often turns an organization to itself more than it ‘opens’ it up for changes. Changes are initiated by leaders and their activity is focused on stimulation of management so as to gain their support for changes, because without the active management’s role in an organization, it is impossible to change roles of individuals, groups or sports organizations as a whole. In order for the real and lasting changes to be created, members of a sport organization (and employees) must believe in their necessity. Therefore, the main purpose of a clearly defined and presented Vision of organi-

se ide. Radi efikasnog *savladavanja otpora promenama* (koji su uvek prisutni) menadžment sportske organizacije treba da ima u vidu i određene principe koji se odnose na sledeće (Glamočanin, 2007:30):

- s obzirom na činjenicu da su razlike u ciljevima, vrednostima i interesima između ljudi u organizaciji sastavni deo života, otpori su prirodni i neizbežni, te ih treba očekivati i imati na umu uvek kada promene nastaju ili se izazivaju;
- otpori se ne pokazuju uvek eksplicitno i otvoreno, već ih treba pronaći;
- postoje mnogobrojni izvori otpora (mogu ga pokazivati i oni koji gube i oni koji dobijaju promenama);
- reakcija ljudi na promene je najčešće emocionalna, a na emocije ne treba reagovati logikom;
- otpori se savladavaju na različite načine, odnosno njima se može upravljati različitim mehanizmima.

U prevazilaženju otpora promenama sportska organizacija može koristiti različite strategije:

- strategija *informisnja i komunikacije*, koristi se kada izvori otpora leže u nepoznavanju ili nedostatku informacija;
- strategija *edukacije*, koristi se kada članovima organizacije i zaposlenima nedostaju kompetencije u novoj organizacionoj strukturi;
- strategija *kooptacije*, sastoji se u uključivanju u proces promena onih aktera za koje se veruje da su moćni i da, ako budu protiv, mogu da ugroze proces;
- strategija *pregovaranja*, obuhvata činjenje ustupaka moćnim akterima da bi se za uzvrat dobila saglasnost za promene;
- strategija *manipulisanja*, primenjuje se kada menadžment nema direktan uticaj na ljude, i, kada promene proizvode različite radikalne i nepovoljne posledice;
- strategija *moći* ili *prinude*, sastoji se u pretnji određenim sankcijama ukoliko se ne prihvate promene.

Zaključak

U najopštijem kontekstu, promene predstavljaju prelazak iz postojećeg stanja u neko novo stanje. Promene u sportskoj delatnosti, koje se neminovno nameću kao sastavni deo globalnih svetskih društveno-tehnoloških promena, trebale bi da predstavljaju značajan događaj u sportskom sistemu. Uspešnost bilo koje promene,

zation (through strategic planning) is to provide members and employees with direction of action and a feeling that it is well known where the changes are leading. For the effective *overcoming of resistance to changes* (that is always present) sports organization's management should have in mind certain principles in relation to the following (Glamočanin, 2007:30):

- Considering the fact that differences of goals, values and interests among people in an organization are a natural part of life, resistance will be normal and unavoidable, and thus it should be anticipated and borne in mind when changes are happening.
- Resistance doesn't always show up explicitly and openly, but it should rather be discovered;
- There are many causes of resistance (it can be visible in those who are losing and in those who are gaining as a result of changes);
- Reaction of people to changes is usually emotional, and emotions shouldn't be responded with logic;
- Resistance can be overcome in different ways, that is, it can be managed via different mechanisms;

A sports organization can deal with resistance to changes with different strategies:

- Strategy of *information and communication*, it is used when sources of resistance lie in the lack of knowledge or information;
- Strategy of *education*, it is used when members of an organization and employees lack competence in the new organizational structure;
- Strategy of *cooptation*, it consists of involving parties that are believed to be powerful into the process of change; however, they can also endanger the process if they happen to be against it;
- Strategy of *negotiations,* it involves making concessions to powerful parties so as to gain their agreement for changes;
- Strategy of *manipulation*, it is used when management doesn't have a direct influence on people and when changes produce various radical and unfavorable consequences;
- Strategy of *power* or *coercion,* it consists of threatening with certain sanctions if the changes are not accepted.

Conclusion

In the widest context, changes represent a transition from the existing state into a new one. Changes in sport, which are unavoidable part of global socio-technological

pa tako i u sportu, valorizuje se novim stanjem. Da li će do promene, odnosno novog željenog stanja i doći, zavisi od više faktora: okruženja, upravljanja, znanja, želje za promenom, nivoa i intenziteta otpora promenama, motivacije, prihvatanja rizika koje nose promene, itd.

Proces koji se odnosi na promene predstavlja kompleksan ``događaj`` u svakom, pa tako i u sportskom sistemu. On nije ni malo lak, brz i jednostavan. Da bi se proces promene realizovao potrebno je zadovoljiti nekoliko elemenata: a) doneti odluku o nastupajućoj promeni, b) pokrenuti inicijativu za sprovođenje promene, c) ``obezbediti`` vreme da novo rešenje počne da funkcioniše (da se održi i dovede do novog kvaliteta) i d) spoznati činjenicu da je funkcionisanje novog-aktuelnog rešenja samo prelazna faza ka daljim promenama.

Svaka sportska organizacija promenama pristupa na sebi svojstven način, tako da nema opštevažećeg ili univerzalnog ``recepta`` za promene. Jedinstvenost odvijanja promena mora se posmatrati kroz kontekste u kojima se one dešavaju. Promena je ono što se događa ``unutar`` sistema (organizacije, sportskog kluba, pojedinca, i sl.), dakle polazi iz internog okruženja. Međutim, ono je povezano sa izazovima koji dolaze iz ``spoljnog sveta``, odnosno eksternog okruženja kome organizacija, svakako, pripada. Drugim rečima, promena je svojevrstan ``odgovor`` na impulse okoline, ali u kontekstu kretanja (pokretanja) organizacije pravcem koji sama odabere.

Bez obzira da li je reč o fizičkim, društevnim ili ekonomskim promenama (za sportsku delatnost su bitna sva tri aspekta promena) može se reći da su one kao pojava konstantne (Adižes, 1996). Karakter stalne prisutnosti za promenu vezuje tri osnovna pojma: 1) svaka promena stvara problem, 2) problemi traže rešavanje, a 3) rešavanje dovodi do promene koja stvara novi problem.

Drugim rečima, što je obim i brzina promena veća, to se složenost i broj problema, takođe, uvećavaju. Upravljati promenama znači rešavati nastale (uočene) probleme, odnosno, rešavanjem problema održavati sportsku organizaciju u životu. Uloga sportskog menadžmenta je upravo u razrešavanju problemskih situacija i spremnosti da se odgovori izazovima promena. Upravljanje promenama u osnovi se oslanja na dva procesa: 1) donošenje odluka (*šta da se uradi?*) i 2) sprovođenje odluka (*uraditi-izvršiti*). Kvalitet odluka koje menadžment treba da donese u vezi sa nastupajućim aktivnostima realizacije promena uslovljen je njihovim jasnim definisanjem. Kod donošenja odluke o promenama mora se decidno i jasno odrediti usmerenje aktivnosti:

changes, should be a significant event in the sports system. Successfulness of any changes, and so of those in sport, is measured by the new state. Whether changes or a desired state will be achieved depends on several factors: environment, management, knowledge, desire for change, level and intensity of resistance to changes, motivation, acceptance of risk that comes with changes, etc.

The process related to changes is a complex 'event' in every system, and so it is in the sports system. It is not easy, fast or simple. In order for the change process to be realized, it is necessary to undertake several steps: a) make a decision about the forthcoming change, b) initiate action to accomplish the change, c) ensure that there is enough time for the new solution to start functioning (to be maintained and to bring new quality) and d) realize that functioning of this new – current solution is only a temporary phase toward further changes.

Each sports organization approaches changes in its own way, so there is no general or universal 'recipe' for changes. The uniqueness of the change process has to be observed through contexts where it occurs. Change is what happens 'inside' the system (of an organization, sports club, individual and so on), so it starts internally. However, it is connected to challenges that come from the 'outside world', that is, the external environment to which organization certainly belongs. In other words, change is a kind of response to the stimuli from the environment happening within a context where an organization moves in direction it chooses itself.

Regardless of whether changes are physical, social or economic (all three of these aspects are important in sport), it can be said that change is a constant phenomenon (Adizes, 1996). This constant presence links three major ideas to change: 1) each change creates a problem, 2) problems need to be solved, and 3) problem solution brings change that creates a new problem.

Furthermore, the bigger and faster the changes, the more numerous and complex are the problems. Change management implies solving present (perceived) problems and maintaining sports organization alive via problem solution. The role of a sports manager is to solve problematic situations and respond to challenges that come with changes. Change management consists of two basic processes: 1) decision making *(what needs to be done?)* and 2) realization of decisions (*make it happen*). The quality of decisions which management needs to make in relation to the forthcoming realization of change is bound by their clear definition. When it comes to decision making about changes, it is necessary to have clear directions of action: 1) **what** needs to be done; 2) **how** it

1) **šta** treba da se učini; 2) **kako** da se učini; 3) **kada** da se učini, i 4) **ko** da učini.

Izjava autora
Autori pridonijeli jednako.

Konflikt interesa
Mi izjavljujemo da nemamo konflict interesa.

should be done; 3) **when** it should be done; and 4) **who** needs to do it.

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The authors have contributed equally.

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