ISSN 2536-569X | eISSN 2536-5703

# Journal of Anthropology of Sport and Physical Education

www.jaspe.ac.me

ISSN 2536-569X

JULY 2020

VOL.4
NO.3

JASPE

# Journal of Anthropology of Sport and Physical Education



## Index Coverage

DOAJ; Index Copernicus; Google Scholar; Crossref; ROAD; Open Academic Journals Index

## Proofreading Service

**Kristina Perovic Mijatovic**

## Prepress

**Milicko Ceranic**

## Print

**Art Grafika |** Niksic

## Print run

1500



ISSN 2536-569X eISSN 2536-5703

# JOURNAL OF ANTHROPOLOGY OF SPORT AND PHYSICAL EDUCATION

International Scientific Journal

Vol. 4(2020), No. 3 (1-61)

TABLE OF CONTENTS

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DOI 10.26773/jaspe.200701

Journal of Anthropology of Sport and Physical Education

ORIGINAL SCIENTIFIC PAPER

# Analysis of Trends in Anthropometric Characteristics of Montenegrin Recruits from Bar in Period from 1979 to 1987

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**Abstract**

The aim of this study is to observe the trend of anthropometric characteristics in Montenegrin recruits born from 1957 to 1969 from Bar. The sample of respondents in this study numbered a total of 3,670 future soldiers with an average age of 18.19±0.69, who were tested for military service in the period from 20 February 1979 to 21 April 1987. The average body height of the total sample of future soldiers was 175.82±7.04, the average body weight was 68.33±9.73, and the average value of body mass index was 22.06±2.58. The highest body height (178.06±8.67) was in the group of recruits born in 1960. The highest body weight (75.14±5.87) and body mass index (23.96±1.84) was in the group of recruits born in 1957. The value of the body mass index of all future soldiers shows that everyone was in the zone of normal weight. It should be noted that some of these respondents were measured before the age of 18. This means that their growth was not complete. There is a possibility that they on average had a higher body height with the completion of growth and development than this research shows. The results show that all generations of young men from Bar were at that time of a normal weight. This fact is not surprising because it is known that life was different then than it is now. The results of this study are very important in monitoring the trend of these 3 variables in the Montenegrin population, but they also have some limitations. As mentioned above, the rule for recruiting future soldiers was to be tested before the age of 18, when growth and development were not complete yet, and the results after the completion of the growth and development of the respondents would probably be slightly different from these results. Also, some generations had a small number of recruits.

***Keywords:*** *Anthropometric characteristics, Secular trend, Montenegrin recruits*

## Introduction

The results of many recent studies show a trend of growth in average body height in adults in countries with economic growth (Milasinovic, Gardasevic, & Bjelica, 2017; Arifi et al., 2017; Masanovic, Bavcevic, & Prskalo, 2019a; Gardasevic, 2019a; Gardasevic, 2019b). Better conditions of life and a better lifestyle have a positive impact on increasing the average body height of the population. The same is the case with adults in Montenegro (Popovic, 2017). Many researchers around the world are determining and analysing body height of adults for more than 2 centuries (NCD Risk Factor Collaboration, 2016). The researches, carried out by European anthropologists a century ago, have proved the assumption that the tallest people are living in the Dinarides (Pineau et al., 2005), among whom are the Montenegrins, and

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among first their body height was recognized by Robert Ehrich at the beginning of the 20th century (Coon, 1975). Considering that Montenegro was a part of a great state of Yugoslavia until 2006, there is not much preserved data on the body height of Montenegrins. Only since the independence of Montenegro, the number of studies on the body height of Montenegrins has increased and all of them confirm that Montenegrins are one of the highest nations in the world (Bjelica et al., 2012; Milasinovic, Popovic, Matic, Gardasevic, & Bjelica, 2016). This study should contribute to the small amount of data in recent decades on the average height of men in Montenegro.

Body mass index represents the ratio of body weight to body height. It is a parameter that provides information on 4 levels of nutrition, and 3 of these 4 levels of body mass index can show a health risks throughout life (NCD Risk Factor Collaboration, 2017). Underweight, overweight, or obesity are categories of body mass index which can show a health risk. Deficiency or excess of adipose tissue have detrimental consequences for human metabolism (Masanovic, Bavcevic, & Prskalo, 2019b). In children, underweight gives a higher risk for infectious diseases, in youth underweight can also endanger reproductive ability (Han, Mulla, Beiene, Liao, & McDonald, 2010, Masanovic, Milosevic, & Corluka, 2018; Masanovic, Corluka, & Milosevic, 2018). Overweight and obesity can cause a variety of cardiovascular and chronic diseases (Singh, Mulder, Twisk, Van Mechelen, & Chinapav, 2008).

Searching index databases, the authors of this study did not find enough researches on trends in body mass index of the population in Montenegro. Considering the very specific body height and appearance of Montenegrins, it was very interesting to observe the trend of body height, body weight, and body mass index in this population in previous decades. The data the authors used for this study will help eliminate the problem of deficiency of these kind of data for the entire male population in Bar from 1979 to 1987. Bar is the city on the coast of Montenegro (Figure 1). In these 8 consecutive years, in the second half of the last century, trend of variables of body height, body weight and body mass in the male population will be presented.


FIGURE 1. Bar is the city on the coast of Montenegro

## Methods

All young men ages from 1957 to 1969 from Bar, Montenegrin city on the coast, were included in the sample of this research. Respondents were measured during mandatory medical examinations that served to test their preparedness for military service. Usually, the testing of young men was done before the age of 18, and military service was served after the end of high school, at the age of 19. However, there was a rule that military service could be postponed until the age of 27, if there were some very important reasons, such as further education, etc. Therefore, many of the recruits whose results were included in this study, had medical examinations after the age of 18, which increased the average age of each generation and the complete sample in this study.

The sample of respondents in this study numbered a total of 3,670 future soldiers with an average age of 18.19±0.69, who were tested for military service in the period from 20 February 1979 to 21 April 1987. Testing was conducted with 13 age generations. The complete sample of respondents was divided into 13 groups, in order to check the trend of body height, body weight and body mass index in all young men in this city in the mentioned 13 years. The first group numbered 7 respondents born in 1957 with an average age of 21.87±0.62, the second group numbered 41 respondents born in 1958 (22.02±1.19), the third group numbered 28 respondents born in 1959 (21.13±1.54), the fourth group numbered 31 respondents born in 1960 (19.84±1.17), the fifth group numbered 253 respondents born in 1961 (17.74±0.44), the sixth group numbered 417 respondents born in 1962 (18.27±0.21), the seventh group numbered 439 respondents born in 1963 (18.41±0.45), the eighth group had 270 respondents born in 1964 (17.70±0.27), the ninth group had 260 respondents born in 1965 (18.27±0.29), the tenth group had 447 respondents born in 1966 (18.09±0.34), the eleventh group numbered 513 respondents born in 1967 (18.33±0.22), the twelfth group numbered 439 respondents born in 1968 (18.10±0.37), and the thirteenth group numbered 525 respondents born in 1969 (17.79±0.17).

During the testing in the medical clinic, all subjects were in the underwear. Anthropometric measurements were performed according to the guidelines International Biological Program (IPB). Of all the variables measured by the subjects, body height and body weight were taken for the purposes of this study. An anthropometer was used to estimate body height, and a medical scale with moving weights with a stadiometer was used to estimate body weight. Body mass index is calculated as the ratio of body weight in kg and body height in $m^2$.

The analysis was performed by using the Statistical Pack-

age for Social Sciences (SPSS) version 20.0. Means and standard deviations (SD) were obtained for all anthropometric variables. Analysis of nutrition status was done based on body mass index (World Health Organization, 2010).

## Results

Descriptive data of all respondents, members of 13 age groups, are shown in Table 1.

The Table 1 shows that the average body height of the total sample of 3,670 recruits was 175.82±7.04, the average body weight was 68.33±9.73, and the average value of body mass index was 22.06±2.58. The highest body height was in the group of recruits born in 1960 (178.06±8.67). The lowest body height was in the recruits born in 1958 (174.76±6.61). Recruits born in 1957 had the highest body weight (75.14±5.87), and recruits born in 1961 had the lowest body weight (66.68±9.11). The value of the body mass index of all recruits shows that everyone was in the zone of normal weight. The highest body mass index was found in the respondents of group born in 1957 (23.96±1.84), and the lowest body mass index was found in the respondents of group born in 1961 (21.66±2.19).

**Table 1.** Descriptive data for a complete sample of recruits from Bar

| Year of Birth | Mean±SD | | | |
|---|---|---|---|---|
| | Age | Body Height (cm) | Body Weight (kg) | Body Mass Index (kg/m²) |
| 1957 (N=7) | 21.87±0.62 | 177.14±5.52 | 75.14±5.87 | 23.96±1.84 |
| 1958 (N=41) | 22.02±1.19 | 174.76±6.61 | 68.80±7.85 | 22.52±2.27 |
| 1959 (N=28) | 21.13±1.54 | 176.93±6.93 | 70.96±10.11 | 22.58±2.16 |
| 1960 (N=31) | 19.84±1.17 | 178.06±8.67 | 71.39±7.41 | 22.56±2.31 |
| 1961 (N=253) | 17.74±0.44 | 175.22±7.22 | 66.68±9.11 | 21.66±2.19 |
| 1962 (N=417) | 18.27±0.21 | 176.27±7.43 | 67.75±9.31 | 21.76±2.37 |
| 1963 (N=439) | 18.41±0.45 | 175.57±6.69 | 68.59±10.25 | 22.20±2.67 |
| 1964 (N=270) | 17.70±0.27 | 175.51±6.76 | 67.80±9.34 | 21.99±2.64 |
| 1965 (N=260) | 18.27±0.29 | 176.01±6.99 | 67.90±8.78 | 21.91±2.48 |
| 1966 (N=447) | 18.09±0.34 | 175.79±7.10 | 67.80±9.79 | 21.90±2.67 |
| 1967 (N=513) | 18.33±0.22 | 175.26±7.01 | 69.11±10.43 | 22.45±2.71 |
| 1968 (N=439) | 18.10±0.37 | 175.50±6.89 | 68.29±9.87 | 22.16±2.90 |
| 1969 (N=525) | 17.79±0.17 | 176.75±7.07 | 69.09±9.80 | 22.06±2.38 |
| Total (N=3,670) | 18.19±0.69 | 175.82±7.04 | 68.33±9.73 | 22.06±2.58 |

The trend of average body height on a total sample of 3,670 recruits, born from 1957 to 1969 is shown graphically in Figure 2.

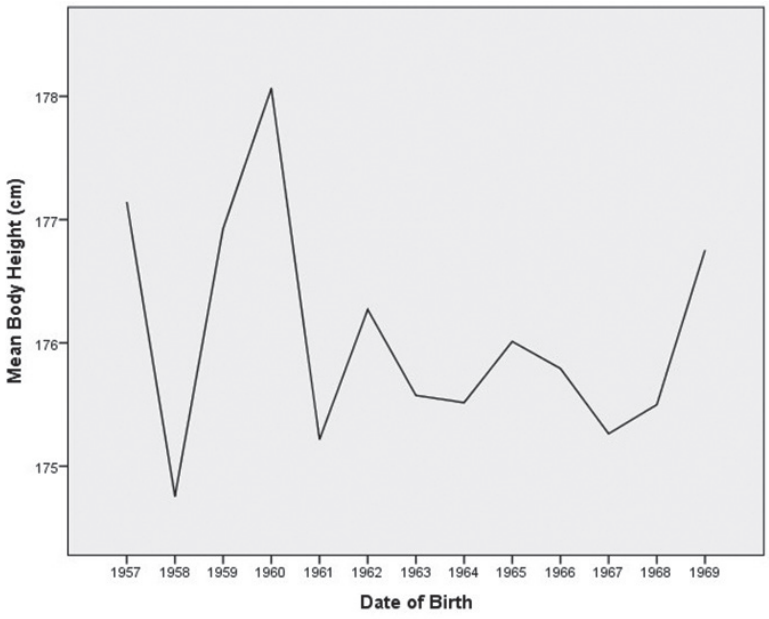


FIGURE 2. The trend of average body height of Bar recruits born from 1957 to 1969

The trend of average body weight on a total sample of 3,670 recruits, born from 1957 to 1969 is shown graphically in Figure 3.

In relation to the limit values of the categories of nutrition (underweight, normal weight, overweight and obesity) prescribed by the World Health Organization, it can be seen from Table 1 that all respondents here belonged to the category of normal weight.

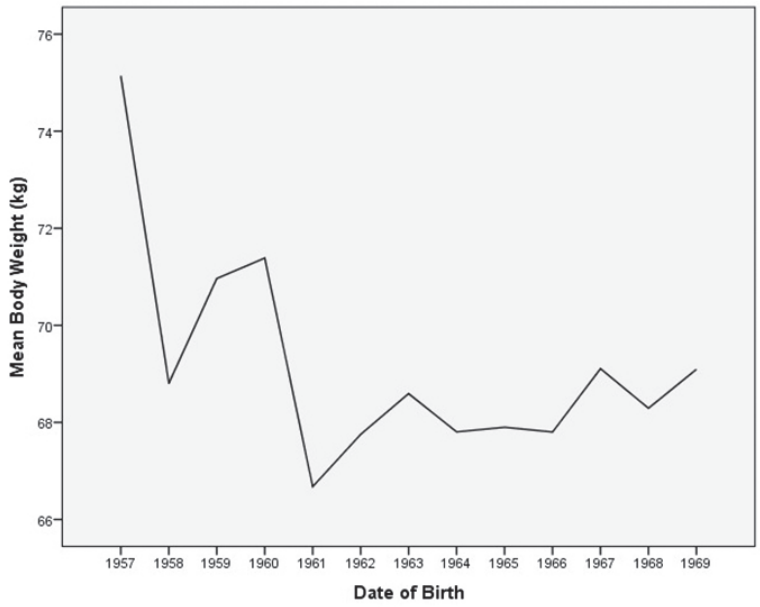


FIGURE 3. The trend of average body weight of Bar recruits born from 1957 to 1969

The limit values for normal weight are values of body mass index from 18.5 to 24.9. The trend of the average body mass index on a total sample of 3,670 recruits, born from 1957 to 1969 is shown graphically in Figure 4.

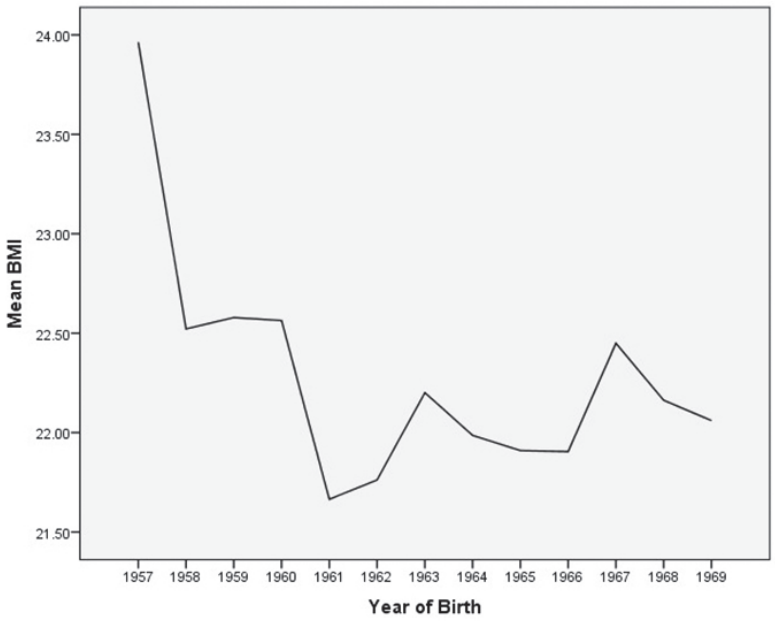


FIGURE 4. The trend of average body mass index (BMI) of Bar recruits born from 1957 to 1969

## Discussion

The aim of this study is to contribute the increase in the number of studies that have followed the change in body height in Montenegrins in the last century. According to research by Robert Ehrich at the beginning of the last century, the average body height of Montenegrins was 177 cm (Coon, 1975). Our research showed that, eighty years later, the inhabitants of Bar, the Montenegrin city on the coast, were tall 175.82 in average from 1979 to 1987. This is lower average body height compared to the average body height found in the research conducted by Masanovic et al. (2020) and Gardasevic et al. (2020). Masanovic et al. (2020) found the body height of recruits of Cetinje were 178.39 cm, and Gardasevic et al. (2020) found the body height of recruits of Niksic were 178.58 cm measured from 1979 to 1987. This is evidence of the secular trend and increase in average body height in the population of Montenegro. It should be noted that some of these respondents were measured before the age of 18. This means that their growth was not complete. There is a possibility that they on average had a higher body height with the completion of growth and development than this research shows.

Montenegrin researcher Popovic (2017) found that Montenegrins are one of the tallest nations in Europe with an average body height of 183.36 cm. He based his results on a survey of the average body height of young men from 13 Montenegrin municipalities, and based on his results, this positive secular trend of average body height can be seen. In our study, it can be seen that Bar recruits born in 1958 had the lowest body height (174.76 cm), and those born only a two years later had the highest body height

(178.06 cm) in the total sample of respondents. The reason for this difference in just two years certainly lies in the fact that the small number of respondents in this study were from these two groups of respondents (41 respondents born in 1958 and 31 respondents born in 1960). If these two groups had a larger number of respondents, their body height ratio would probably be different.

According NCD Risk Factor Collaboration (2017) in the previous 40 years, in 189 countries, an average body height, body weight, body mass index (more than 0.05 kg/m² for every 10 years) are increased for children and adolescents. Obesity increased for 6.9% The percentage of underweight decreased. The results of this study do not show a trend of increase or decrease in the variables body weight and body mass index of all young men born from 1957 to 1969. The reason for this is the fact that 13 years is not a long period to discuss it. The results show that all generations of young men from Bar were at that time of normal weight. This fact is not surprising because it is known that life was different then than it is now. Sedentary lifestyle was less represented, virtual life was not led through social networks, much greater physical activity was represented among young people and a much healthier diet than today. These are some of the reasons for today's increase in body mass index among young people. If we analyse the body weight and body mass index in this study, it is noticeable that these are the highest values in the first age group, born in 1957 (23.96 kg/m$^2$). But again, the reason, as with the average body height, should be found in the fact that these age group had the lowest number of respondents. Montenegrin researchers Gardasevic et al. (2015) found that in Montenegrins of age of 17 the average body mass index was 24.9 kg/m$^2$, and in Montenegrins of age of 18 the average body mass index was 22.8 kg/m$^2$. If these values are compared with the values from this study, it is clear that the secular trend among Montenegrin youth is noticeable in this variable as well.

The results of this study are very important in monitoring the trend of these 3 variables in the Montenegrin population, but they also have some limitations. As mentioned above, the rule for recruiting future soldiers was to be tested before age of 18, when growth and development were not complete yet. It can be stated with certainty that they did not reach their final growth then. Table 1 shows that the average age of the complete sample was 18.19±0.69. The reason for this average age of the total sample of respondents, which was slightly higher than 18 years, are those respondents who were tested after the age of 18. It has already been mentioned that military service could be postponed until the age of 27 of respondent, and thus the recruitment was moved a few years later. Probably forty years ago, when this measurement was made, the average values of body height in the subjects would be even higher if the measurement was realized when the growth and development of all subjects were completed. Based on this, it can be concluded that the data from this study are not completely reliable. However, these results make a major contribution to the small amount of trend data in these three variables over the past century, from the research of Robert Ehrich, to the last years when research on this topic has intensified.

**Acknowledgements**
There are no acknowledgements.

**Conflict of Interest**
The authors declare that there are no conflicts of interest.

**Received:** 22 May 2020 **| Accepted:** 10 Jun 2020 | **Published:** 17 July 2020

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DOI 10.26773/jaspe.200702

Journal of Anthropology of Sport and Physical Education

ORIGINAL SCIENTIFIC PAPER

# Anthropometric Characteristics and Body Composition Differences between Rugby Players According to their Specific Playing Position

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**Abstract**

This study aimed to determine the differences in anthropometric characteristics and body composition among rugby players of the national team of Montenegro and Bulgaria, according to positions they play. A sample of 30 examinees is divided into four sub-samples and according to positions they are classified as forwards and backs. Anthropometric characteristics and body composition were evaluated by a battery of 11 variables: body height, body weight, six skinfolds, body mass index, body fat, and muscle mass. It was found that forwards were statistically significant taller and heavier than backs in the national team of Montenegro. Also, that forwards of the national team of Bulgaria statistically significant differed than backs in all skinfold variables and body fat percentage, but backs statistically significant differed than forwards in muscle mass. Comparing players of two national teams regarding to positions they play was found that backs of the national team of Montenegro statistically differed than backs of the national team of Bulgaria in biceps, subscapular, and lower leg skinfolds and body fat, but Bulgarians statistically differed than Montenegrins in muscle mass. Comparing forwards, it was found that Bulgarians statistically differed in abdominal, lower leg, and thigh skinfolds. The nominative data of this study may help coaches to detect weak links in rugby specific athletic performance and set a plan and program to improve them.

***Keywords:*** *Rugby, Anthropometric Characteristics, Body Composition*

## Uvod

U današnjim uslovima života i rada, sport predstavlja veoma važno područje u kojem čovjek na specifičan način može ispoljiti svoje, prije svega, stvaralačke kretne strukture (Bjelica & Fratric, 2011). Svaki pojedinac se tokom svog života nalazi u mnoštvu situacija u kojima mora uspješno djelovati sa svojom okolinom, kako fizičkom tako i socijalnom. Potreba pojedinca da upozna svoje sopstvene mogućnosti, za upravo pomenuto djelovanje, ispoljava se na svim uzrastima i kroz svakodnevne životne situacije (Bjelica, 2006). Aktivnost u sportu se odlikuje stalnom težnjom da se prevaziđe već postignuto i upravo je takav odnos neraskidivo vezao sport za takmičenje kao posebnu formu realizacije ljudske ličnosti (Bjelica & Krivokapic, 2010).

Sportske igre karakterišu raznovrsne i mnogobrojne složene dinamičke kineziološke aktivnosti u kojima dominiraju ciklična kretanja (Gardasevic, Vasiljevic, & Bojanic, 2015; Bjelica, Popovic, & Gardasevic, 2016a; Bjelica, Popovic, & Gardasevic, 2016b; Sermaxhaj, Popovic, Bjelica, Gardasevic, & Arifi, 2017; Gardasevic, Bjelica, & Vasiljevic, 2017a; Gardasevic, Bjelica, & Vasiljevic, 2017b) i aciklična kretanja (Gardasevic, 2015; Gardasevic et al. 2015; Gardasevic, Bjelica, & Vasiljevic, 2016a; Gardasevic, Bjelica, & Vasiljevic, 2016b; Gardasevic, Bjelica, Milasinovic, & Vasiljevic, 2016; Gardasevic & Vasiljevic, 2016; Gardasevic, Popovic, & Bjelica, 2016).

Kao i svi drugi timski sportovi i ragbi ima fundamentalne komponente koje utiču i regulišu način igranja u ovoj sportskoj igri. Pomenute komponente su tehničke, taktičke, fizičke i psiho-

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loške vještine i znanja (Bompa & Claro, 2009). Zahvaljući istraživanjima u sportskoj nauci, ragbi je klasifikovan kao multi-sprint i sport u kojem vlada multi-aktivnost, a razlog tome je što su tokom igre, ragbi igrači izloženi raznim naporima, kao što su sprintevi, razna obaranja, rakovi, molovi, periodi džogiranja, hodanja i stajanja dok se čeka da se izgradi sljedeća akcija (Bompa & Claro, 2009). Ragbi je sport u kojem se u velikoj mjeri razlikuje tjelesna konstitucija igrača u zavisnosti od pozicije koju pokrivaju u timu. Ragbi tim broji 15 igrača prve postave i podijeljen je u dvije jedinice. Dakle, to su igrači koji pokrivaju pozicije skrama, od broja 1 do broja 8 i igrači koji pokrivaju pozicije linije, od broja 9 do broja 15 (Delahunt et al., 2013). Igrači koji pokrivaju pozicije skrama tokom meča pretežno budu uključeni u veliki broj akcija u kojima se od njih zahtijeva jak fizički kontakt sa protivničkim igračima kroz molove, rakove i razna obaranja i samim tim su zaduženi da jakim fizičkim kontaktom rade na osvajanju prostora, dok igrači pozicija linije imaju za cilj da prenesu loptu kroz odbranu protivničke ekipe brzom i agilnom igrom (Delahunt et al., 2013; Jarvis, Sullivan, Davies, Wiltshire, & Baker, 2009).

Utvrđivanje antropometrijskih karakteristika predstavlja jednu od tri najčešće testiranih dimenzija sportista (Milanovic, Jukic, Vuleta, Simek, & Sentija, 2005). U sportskim aktivnostima, tokom treninga i takmičenja, veliku važnost imaju opšte i osnovne antropološke karakteristike (Bjelica, Georgijev, & Muratovic, 2012). U potpunosti je ustanovljeno da je antropometrija važan faktor u selekciji sportista (G. Moreno, L. Moreno, & Jaramillo, 2011), odnosno otkrivanju budućih talenata u određenim sportskim disciplinama (Norton, Olds, Olive, & Craig, 2004; García, Cañadas, & Parejo, 2007; S. Singh, K. Singh, & M. Singh, 2010; Popovic, Akpinar, Jaksic, Matic, & Bjelica, 2013). Brojna istraživanja su sproveli istraživači sa Fakulteta za sport i fizičko vaspitanje iz Nikšića u kojima su vršili procjenu morfoloških karakteristika i sastava tijela sportista različitih disciplina (Gusic, Popovic, Molnar, Masanovic, & Radakovic, 2017; Corluka et al. 2018; Corluka & Vasiljevic, 2018; Gardasevic, Bjelica, Popovic, Vasiljevic, & Milosevic, 2018; Bjelica, Gardasevic, & Vasiljevic, 2018; Arifi, Bjelica, & Masanovic, 2019), međutim ragbi je sport kojem na prostoru Crne Gore nije posvećeno dovoljno pažnje.

Cilj ovog istraživanja je bio da se evidentiraju eventualne razlike u pojedinim izmjerenim varijablama koje procjenjuju antropometrijske karakteristike i tjelesnu kompoziciju reprezentativaca nacionalnih timova Crne Gore i Bugarske uzimajući u obzir pozicije koje pokrivaju u timu.

## Metod

U pogledu vremenske određenosti istraživanje je transverzalnog karaktera, a sastoji se u jednokratnom mjerenju odgovarajućih antropometrijskih karakteristika i tjelesne kompozicije igrača startne postave ragbi reprezentacije Crne Gore i reprezentacije Bugarske. U ovom istraživanju ukupan broj ispitanika je 30 i svi ispitanici su podijeljeni na četiri subuzora. Prva dva subuzorka su činili po 7 igača seniorske ragbi reprezentacije Crne Gore i Bugarske koji igraju na pozicijama linije, dok su preostala dva subuzorka činili po 8 igača seniorske ragbi reprezentacije Crne Gore i Bugarske koji igraju na pozicijama skrama.

Antropometrijsko mjerenje je sprovedeno uz poštovanje osnovnih pravila i principa vezanih za izbor mjernih instrumenata i tehnike mjerenja koji su standardizovani, prema upustvima Internacionalnog Biološkog Programa (IBP). Za mjerenje antropometrijskih karakteristika korišćeni su antropometar i kaliper. Za potrebe ovog istraživanja izmjereno je osam antropometrijskih mjera: visina tijela, težina tijela, kožni nabor tricepsa, kožni nabor bicepsa, kožni nabor leđa, kožni nabor trbuha, kožni nabor potkoljenice, kožni nabor natkoljenice. Za procjenu tjelesne kompozicije korišćena je tanita vaga, model BC-418MA, pomoću koje dobijeni egzaktni podaci o indeksu tjelesne mase, procentu potkožnog masnog i mišićnog tkiva za svakog igrača posebno.

Podaci dobijeni istraživanjem obrađeni su postupcima deskriptivne i komparativne statističke procedure u program za statističku obradu podataka IBM SPSS 20.0 (Chicago, IL, USA). Za sve primijenjene varijable izračunati su centralni i disperzioni parametri, a razlike u antropometrijskim karateristikama i tjelesnoj kompoziciji ragbista ove dvije reprezentacije u odnosu na pozicije koje igraju u timu, utvrđene su primjenom t-testa za male nezavisne uzorke, sa statističkom značajnošću od $p<0.05$.

## Rezultati

Analizirajući rezultate iz Tabele 1, koja nam daje precizne podatke o srednjim vrijednostima antropometrijskih karakteristika i tjelesne kompozicije, kao i razlikama između igrača reprezentacije Crne Gore primjećuje se da postoji statistička značajnost između igrača koji pokrivaju pozicije skrama i igrača koji pokrivaju pozicije linije. Dakle, igrači koji pokrivaju pozicije skrama imaju statistički značajno višu tjelesnu visinu i tjelesnu masu od igrača koji pokrivaju pozicije linije. Takođe se kontatuje da nije bilo statistiki značajnih razlika između igrača reprezentacije Crne

**Tabela 1.** Razlike u antopometrijskim karakteristikama i tjelesnoj kompoziciji ragbi igrača reprezentacije Crne Gore (N=15)

| Varijabla | Mean ± SD | | |
|---|---|---|---|
| | Skram (N=8) | Linija (N=7) | Sig. |
| Starost | 25.62±3.7 | 26.14±2.26 | .754 |
| Tjelesna visina (cm) | 189.22±7.82 | 179.07±9.18 | .038* |
| Tjelesna masa (kg) | 104.16±7.37 | 92.02±7.37 | .007* |
| Kožni nabor tricepsa (mm) | 9.52±4.12 | 10.2±3.02 | .727 |
| Kožni nabor bicepsa (mm) | 5.37±1.32 | 5.85±1.64 | .541 |
| Kožni nabor leđa (mm) | 17.1±4.93 | 18.88±4.88 | .495 |
| Kožni nabor stomaka (mm) | 14.9±3.97 | 18.4±8.42 | .312 |
| Kožni nabor potkoljenice (mm) | 16.21±3.19 | 14.17±5.08 | .362 |
| Kožni nabor natkoljenice (mm) | 15.4±2.94 | 17.34±6.88 | .479 |
| Indeks tjelesne mase (kg/m$^2$) | 29.06±1.63 | 28.51±2.90 | .654 |
| Potkožno masno tkivo (%) | 16.45±2.34 | 17.45±2.73 | .456 |
| Mišićna masa (%) | 47.37±1.18 | 47±1.73 | .629 |

Legenda: Mean - Aritmetička sredina; SD - Standardna devijacija; N - Broj ispitanika; * - Statistički značajna razlika između aritmetičkih sredina; Sig. – Statistička značajnost; Skram – Igrači koji pokrivaju pozicije skrama; Linija – Igrači koji pokrivaju pozicje linije

Gore kada su u pitanju starost, kožni nabori, indeks tjelesne mase, potkožno masno tkivo, kao ni mišićna masa.

Tabela 2 nam daje precizne podatke o srednjim vrijednostima antropometrijskih karakteristika i tjelesne kompozicije, kao i razlikama između igrača koji pokrivaju pozicije skrama i linije reprezentacije Bugarske. Naime, u ovom slučaju se primjećuju statistički značajne razlike u skoro svim testiranim varijablama. Dakle, igrači skrama imaju statistički značajno više vrijednosti svih varijabli koje indirektno i direktno procjenjuju procenat tjelesne masti, dok su igrači linije značajno stariji i imaju statistički više vrijednosti u odnosu na igrače skrama u vrijednostima mišićne mase. U vrijednostima tjelesne visine, tjelesne mase, kao i indeksu tjelesne mase prikazani rezultati ne pokazuju postojanje statistički značajnih razlika između igrača skrama i linije reprezentacije Bugarske.

**Tabela 2.** Razlike u antopometrijskim karakteristikama i tjelesnoj kompoziciji ragbi igrača reprezentacije Bugarske (N=15)

| Varijabla | Mean ± SD | | |
|---|---|---|---|
| | Skram (N=8) | Linija (N=7) | Sig. |
| Starost | 22.12±2.69 | 27±2 | .002* |
| Tjelesna visina (cm) | 180.37±9.19 | 177.85±4.22 | .519 |
| Tjelesna masa (kg) | 102.46±12.41 | 90.57±9.03 | .057 |
| Kožni nabor tricepsa (mm) | 12.8±3.58 | 7.74±2.11 | .006* |
| Kožni nabor bicepsa (mm) | 7.05±2.3 | 4.22±.84 | .009* |
| Kožni nabor leđa (mm) | 24.9±9.84 | 13.34±2.97 | .011* |
| Kožni nabor stomaka (mm) | 24.82±7.58 | 13.17±4.27 | .003* |
| Kožni nabor potkoljenice (mm) | 20.72±4.45 | 9.37±2.86 | .000* |
| Kožni nabor natkoljenice (mm) | 24.3±5.37 | 13.08±7.55 | .005* |
| Indeks tjelesne mase (kg/m$^2$) | 31.58±4.19 | 28.61±2.41 | .124 |
| Potkožno masno tkivo (%) | 19.22±4.53 | 11.3±2.8 | .002* |
| Mišićna masa (%) | 45.62±2.61 | 50.28±1.49 | .001* |

U Tabeli 3 su prikazane razlike u antropometrijskim karakteristikama i tjelesnoj kompoziciji između igrača linije reprezentacije Crne Gore i Bugaske dobijene putem t-testa. U prikazanoj tabeli evidentno je da igrači linije reprezentacije Crne Gore imaju statistički značajno više vrijednosti u varijablama: kožni nabor bicepsa, kožni nabor leđa, kožni nabor potkoljenice i procenat potkožnog masnog tkiva u odnosu na igrače reprezentacije Bugarske. Ipak igrači linije reprezentacije Bugarske imaju statistički značajno više vrijednosti mišićne mase od reprezenativaca Crne Gore. U okviru ostalih upoređenih varijabli evidentno je da ispitanici reprezentacije Crne Gore imaju više vrijednosti u varijablama za procjenu potkožnog masnog tkiva, kao i tjelesne visine i mase, dok je takođe evidentno da su igrači reprezentacije Bugarske neznatno stariji u odnosu na ispitanike reprezentacije Crne Gore i da imaju blago više rezultate indeksa tjelesne mase, ali svakako ne statistički značajno.

**Tabela 3.** Razlike u antopometrijskim karakteristikama i tjelesnoj kompoziciji igrača linije ragbi reprezentacije Crne Gore (N=7) i reprezentacije Bugarske (N=7)

| Varijabla | Igrači linije | Mean | SD | t-test | sig. |
|---|---|---|---|---|---|
| Starost | Crna Gora | 26.14 | 2.26 | -.750 | .468 |
| | Bugarska | 27 | 2 | | |
| Tjelesna visina (cm) | Crna Gora | 179.07 | 9.18 | .318 | .756 |
| | Bugarska | 177.85 | 4.22 | | |
| Tjelesna masa (kg) | Crna Gora | 92.02 | 7.37 | .330 | .747 |
| | Bugarska | 90.57 | 9.03 | | |
| Kožni nabor triceps (mm) | Crna Gora | 10.2 | 3.02 | 1.761 | .104 |
| | Bugarska | 7.74 | 2.11 | | |
| Kožni nabor bicepsa (mm) | Crna Gora | 5.85 | 1.64 | 2.332 | .038* |
| | Bugarska | 4.22 | 0.84 | | |
| Kožni nabor leđa (mm) | Crna Gora | 18.88 | 4.88 | 2.565 | .025* |
| | Bugarska | 13.34 | 2.97 | | |
| Kožni nabor stomak (mm) | Crna Gora | 18.4 | 8.42 | 1.464 | .169 |
| | Bugarska | 13.17 | 4.27 | | |
| Kožni nabor potkoljenice (mm) | Crna Gora | 14.17 | 5.08 | 2.177 | .050* |
| | Bugarska | 9.37 | 2.86 | | |

*(Nastavak na sledećoj strani)*

*(Nastavak sa prethodne strane)*

| Varijabla | Igrači linije | Mean | SD | t-test | sig. |
|---|---|---|---|---|---|
| Kožni nabor natkoljenice (mm) | Crna Gora | 17.34 | 6.88 | 1.102 | .292 |
| | Bugarska | 13.08 | 7.55 | | |
| Indeks tjelesne mase (kg/m$^2$) | Crna Gora | 28.51 | 2.9 | -.070 | .945 |
| | Bugarska | 28.61 | 2.41 | | |
| Potkožno masno tkivo (%) | Crna Gora | 17.45 | 2.73 | 4.162 | .001* |
| | Bugarska | 11.3 | 2.80 | | |
| Mišićna masa (%) | Crna Gora | 47 | 1.73 | -3.798 | .003* |
| | Bugarska | 50.28 | 1.49 | | |

Legenda: t-test - Vrijednost t-testa; sig. - Značajnost razlike aritmetičkih sredina; * - Značajna razlika između grupa

Tabela 4 nam daje jasne informacije o razlici u ispitivanim varijablama, između ispitanika ove dvije reprezentacije koji pokrivaju pozicije skrama. Analizirajući rezultate zapaža se da su ispitanici ragbi reprezentacije Crne Gore koji pokrivaju pozicije skrama značajno stariji od igrača skrama reprezentacije Bugarske, dok reprezentativci Bugarkse imaju značajno više vrijednosti kožnih nabora stomaka, potkoljenice i natkoljenice. U ostalim varijablama vezanim za procjenu potkožnog masnog tkiva više numeričke vrijednositi imaju ispitanici reprezentacije Bugarske, kao i u okviru varijable indeks tjelesne mase, dok su ispitanici reprezentacije Crne Gore viši, imaju veću tjelesnu masu i veći procenat mišićne mase od ispitanika Bugarske, ali ne i statistički značajno.

**Tabela 4.** Razlike u antopometrijskim karakteristikama i tjelesnoj kompoziciji igrača skrama ragbi reprezentacije Crne Gore (N=8) i reprezentacije Bugarske (N=8)

| Varijabla | Igrači skrama | Mean | SD | t-test | sig. |
|---|---|---|---|---|---|
| Starost | Crna Gora | 25.62 | 3.7 | 2.162 | .048* |
| | Bugarska | 22.12 | 2.69 | | |
| Tjelesna visina (cm) | Crna Gora | 189.22 | 7.82 | 2.073 | .057 |
| | Bugarska | 180.37 | 9.19 | | |
| Tjelesna masa (kg) | Crna Gora | 104.16 | 7.37 | .333 | .744 |
| | Bugarska | 102.46 | 12.41 | | |
| Kožni nabor tricepsa (mm) | Crna Gora | 9.52 | 4.12 | -1.695 | .112 |
| | Bugarska | 12.8 | 3.58 | | |
| Kožni nabor bicepsa (mm) | Crna Gora | 5.37 | 1.32 | -1.781 | .097 |
| | Bugarska | 7.05 | 2.3 | | |
| Kožni nabor leđa (mm) | Crna Gora | 17.1 | 4.93 | -2.004 | .065 |
| | Bugarska | 24.9 | 9.84 | | |
| Kožni nabor stomaka (mm) | Crna Gora | 14.9 | 3.97 | -3.277 | .006* |
| | Bugarska | 24.82 | 7.58 | | |
| Kožni nabor potkoljenice (mm) | Crna Gora | 16.21 | 3.19 | -2.330 | .035* |
| | Bugarska | 20.72 | 4.45 | | |
| Kožni nabor natkoljenice (mm) | Crna Gora | 15.4 | 2.94 | -4.105 | .001* |
| | Bugarska | 24.3 | 5.37 | | |
| Indeks tjelesne mase (kg/m$^2$) | Crna Gora | 29.06 | 1.63 | -1.585 | .135 |
| | Bugarska | 31.58 | 4.19 | | |
| Potkožno masno tkivo (%) | Crna Gora | 16.45 | 2.34 | -1.537 | .147 |
| | Bugarska | 19.22 | 4.53 | | |
| Mišićna masa (%) | Crna Gora | 47.37 | 1.18 | 1.723 | .107 |
| | Bugarska | 45.62 | 2.61 | | |

## Diskusija

Osnovni cilj ovog istraživanja je bio da se evidentiraju eventualne razlike u antropometrijskim karakteristikama i tjelesnoj kompoziciji igrača nacionalnih ragbi timova Crne Gore i Bugarske, uzimajući u obzir pozicije koje pokrivaju u timu. S obzirom na zadatke koje obavljaju u igri, igrači koji pokrivaju pozicije skrama i linije, očekivano je da postoje razlike u okviru tjelesne mase, tjelesne visine, procentu potkožnog masnog tkiva i procentu mišićnog tkiva (Jarvis et al. 2009; Hohenauer et al. 2017; Vaz et al. 2014; Mitchell et al. 2016; Delahunt et al. 2013; Maud & Shultz,

1984). Sagledavši uporednu analizu rezultata reprezentativaca Bugarske, može se zaključiti da postoje statistički značajne razlike između igrača koji pokrivaju pozicije skrama i igrača koji pokrivaju pozicije linije. Naime, igrači koji pokrivaju pozicije skrama imaju više vrijednosti varijabli za indirektnu i direktnu procjenu potkožnog masnog tkiva od igrača koji pokrivaju pozicije linije, što se poklapa sa nalazima studije koju su sproveli Hohenauer i saradnici (2017) nad ispitanicima ragbi reprezentacije Njemačke. Što se tiče mišične mase igrači skrama reprezentacije Bugarske imaju statistički značajno niže vrijednosti od saigrača koji pokrivaju pozicije linije, što nije uobičajeno (Maud & Shultz, 1984). Igrači koji pokrivaju pozicije skrama, reprezentacije Crne Gore imaju niže numeričke vrijednosti u većini varijabli za procjenu kožnih nabora, kao i potkožnog masnog tkiva u odnosu na igrače koji pokrivaju pozicije linije, što nije u saglasnosti sa većinom sprovedenih studija (Hohenauer et al. 2017; Maud & Shultz, 1984). Što se tiče mišićne mase kod reprezentativaca Crne Gore, procentualne vrijednosti su skoro identične između igrača skrama i igrača linije.

Dakle, igrači nacionalnog tima Bugarske koji pokrivaju pozicije linije su sa najmanjim numeričkim vrijednostima varijabli za procjenu potkožnog masnog tkiva i sa najvećim numeričkim vrijednostima varijable za procjenu mišićne mase, u odnosu na sve igrače obuhvaćene ovom studijom iz oba nacionalna tima, što ide u prilog konstataciji da su igrači linije reprezentacije Bugarske u velikoj prednosti u odnosu na ispitanike reprezentacije Crne Gore u gore pomenutim varijablama. Takođe, igrači reprezentacije Crne Gore koji pokrivaju pozicije skrama imaju povoljnije procentualne vrijednosti mišićne mase, kao i varijabli za procjenu potkožnog masnog tkiva od igrača reprezentacije Bugarske koji takođe pokrivaju pozicije skrama.

Ukoliko se uporede rezultati dobijeni u studiji koja je vršena na istom uzorku ispitanika, samo sa drugačijom raspodjelom subuzoraka (Malović, 2018), jasno se primjećuje da se u ovoj studiji pojavilo mnogo statistički značajnih razlika u testiranim varijablama, u odnosu na pomenutu. Takođe, treba još jednom napomenuti da je u ovoj studiji uzorak ispitanika obuhvatio samo igrače startne postave obje reprezentacije, dok je u studiji koju je sproveo Malović (2018) uzorak bio veći, odnosno sačinjavao je i rezervne igrače oba nacionalna tima. Ova konstatacija jasno ukazuje na potrebu da se u sprotovima kao što je ragbi, odnosno u sportovima u kojima različite pozicije u timu zahtijevaju određenu tjelesnu konstituciju igrača, mora voditi računa o upoređivanju igrača upravo prema pozicijama koje pokrivaju u timu, a sve kako bi se dobili rezultati koji preciznije ukazuju na odnos kvaliteta testiranih ispitanika. Naravno, za sprovođenje pomenute studije u ragbiju su bile dovoljne samo dvije ekipe, iz razloga što se tim podijelio na dvije logičke cjeline sličnih tjelesnih konstitucija, a u okvru tih cjelina naravno da ima i više pozicija.

Na osnovu sprovedenog istraživanja sada se može nešto preciznije pretpostaviti zašto su reprezentativci Crne Gore izgubili utakmicu, koju su igrali u okviru Evropskog kupa nacija protiv reprezentacije Bugarske, rezultatom 57-0 (Game-sheet, 2018). Naime, može se pretpostaviti da je upravo jedan od uzroka neadekvatna selekcija igrača reprezentacije Crne Gore koji pokrivaju pozicije linije, kao i dominantnost igrača pozicija linije reprezentacije Bugarske. Ukoliko se pažnja obrati na morfološko stanje igrača koji pokrivaju pozicije linije nacionalnog tima Crne Gore, mora se dovesti u pitanje i njihova fizička pripremljenost. Limitiranost ove studije se ogleda u procjeni samo jednog segmenta antropološkog statusa na osnovu kojeg se ne može imati kompletan uvid u performanse igrača nacionalnog tima Crne Gore. Shodno tome, preporuka za buduća istraživanja bi svakako bila da se procijene fizičke performanse ispitanika reprezentacije Crne Gore, a sve kako bi se djelovalo na poboljšanju igre nacionalnog tima, a samim tim i na bolji plasman na predstojećim takmičenjima.

**Acknowledgements**
There are no acknowledgements.

**Conflict of Interest**
The authors declare that there are no conflicts of interest.

**Received:** 7 April 2020 **| Accepted:** 28 April 2020 | **Published:** 17 July 2020

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DOI 10.26773/jaspe.200703

Journal of Anthropology of Sport and Physical Education

ORIGINAL SCIENTIFIC PAPER

# Changes in the Morphological Characteristics and Body Composition of Elite Montenegrin Football Players during the Competition Period

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**Abstract**

The goal of this research was to assess the quantitative and qualitative changes imposed by training and competition with help of selected variables of morphological characteristics and body composition which were measured in elite football players of First Montenegrin Telecom League at two different time points during the competition period. In this study 28 male football players (22.5±5.87 yrs.) of OFK Titograd from Podgorica who compete in the First Montenegrin Telecom League were enrolled. The measurements were carried out in January and then again, after 30 days, in February. Morphological characteristics in the body composition were evaluated by a battery of 11 variables: body height, body weight, waist circumference, triceps skinfold, biceps skinfold, back skinfold, abdominal skinfold, body mass index, fat percentage and muscle mass. The differences in morphological characteristics and the composition of the body in two periods during the competition period were determined by using a discriminatory parametric procedure with t-test for small independent samples. It was found that in football players of OFK Titograd in 30 days significant changes are observed for 3 variables, for upper arm skinfolf - triceps, back skinfold and abdomen skinfold.

***Keywords:*** *Soccer Players, Anthropometrics Characteristics, Body Composition*

## Introduction

It a known fact that various athletic events require differing body types to achieve maximum performance (Gusic, Popovic, Molnar, Masanovic, & Radakovic, 2017; Sermaxhaj, Popovic, Bjelica, Gardasevic, & Arifi, 2017; Masanovic, Milosevic, & Bjelica, 2019). In other words, every athlete should have specific morphological characteristics and body composition convenient for his own sports discipline (Bjelica, Gardasevic, & Vasiljevic, 2018; Arifi, Bjelica, & Masanovic, 2019; Bjelica, Gardasevic, Vasiljevic, Arifi, & Sermaxhaj, 2019). When it comes to body height, it is extremely important for some playing positions (goalkeeper, central defender), while for other playing positions it is less important (Bjelica, Gardasevic, Vasiljevic, Jeleskovic, & Covic, 2019). Therefore, in the talent identification process for some playing positions it is necessary to choose athletes who have a pronounced body height, while for others it is necessary to pay attention to certain morphological, motor and functional characteristics that the athlete must have in order to fulfill all the tasks assigned to him (Krespi, Sporis, & Popovic, 2019; Gardasevic, Bjelica, & Popovic, 2015). On the other hand, there are also several reasons why understanding body composition is extremely important. Excessive fat mass encumbers athletes with useless weight, thus decreases performance in terms of power and acceleration and compromises the physical performance (Masanovic, 2019). Energy expenditure during a match are also higher (Cossio-Bolanos, Portella, Hespanhol, Fraser, & De Arruda, 2012). On the contrary, muscle mass contributes to the energy production during high-intensity activities and provides absolute strength to athletes (Aslan, Sal-

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ci, Guvenc, 2019), and therefore is an indicator of sports performance (Trajkovic et al, 2018; Bjelica, Gardasevic, Masanovic, & Vasiljevic, 2020; Bjelica, Masanovic, & Krivokapic, 2020).

It is known, on body height cannot be much affected, because it is highly genetically conditioned dimension (Popovic, Akpinar, Jaksic, Matic, & Bjelica, 2013; Popovic, Bjelica, Jaksic, & Hadzic, 2014; Gardasevic, Akpinar, Popovic, & Bjelica, 2019). On the other hand, body weight, the percentage of fat and muscle It can be changed a lot, and this fact should be used. If striving towards the high-level attainment a professional player should keep his body composition close to an "ideal" value all season (Bunc, Hrasky, & Skalska, 2015).

However, since the correct periodization of training implies its wavines, i.e. the variability of its intensity and duration, and the variability of its objectives and focus, it is expected that the body composition also oscillates, and its changes are expected at certain periods. Body fat is a direct reflection of the intensity of training, so it is expected its decline in the period when the activities are most intense. Players with the lowest percentage of body fat often have a better performance, and that is what they need most during the most important competitions. The fact is that professional soccer players undergo changes in their body composition across the season with some regional variations, irrespective of the playing position (Bunc, Hrasky, & Marie Skalska, 2015). Changes are mostly positive at mid-season, possibly due to difference in training between the first and second phase of the season (Sutton, Scott, Wallace, & Reilly, 2009; Silvestre et al., 2006)

The most of the descriptive data concerning changes in the body composition of footballers in different parts of the season come from Western Europe. Because there is a lack of data from Eastern Europe it is necessaryi insight into the changes during the season in order to understand the complexity of competitive requirements of footbal in elite Montenegrin league compared to Wester European. Hence, the purpose of this research was to assess the quantitative and qualitative changes imposed by training and competition with help of selected variables of morphological characteristics and body composition which were measured in elite football players of First Montenegrin Telecom League at two different time points during the competition period.

## Method

In this study 28 male's football players (22.5±5.87 yrs.) of OFK Titograd from Podgorica who compete in the First Montenegrin Telecom League were enrolled. The measurements were carried out in January and then again, after 30 days, in February.

Anthropometric research has been carried in accordance with the International Biological Program. For the purpose of this study, 7 morphological measures have been taken: body height, body weight, waist circumference, triceps skinfold, biceps skinfold, back skinfold, abdominal skinfold, and 3 variables for assessment body composition: body mass index, fat mass, muscle mass. Anthropometer, caliper, and measuring tape were used for morphological measurements. To evaluate the body composition, Tanita body fat scale - model BC-418MA, was used.

Statistical analysis: The data obtained in the research were processed using the SPSS 20.0 software (Chicago, IL, USA). The descriptive statistics were expressed as a mean (SD) for each variable. Differences in morphological characteristics and the composition of the body in two periods during the competition period were determined by using a discriminatory parametric procedure with t-test for small independent samples, with statistical significance of $p<0.05$.

## Results

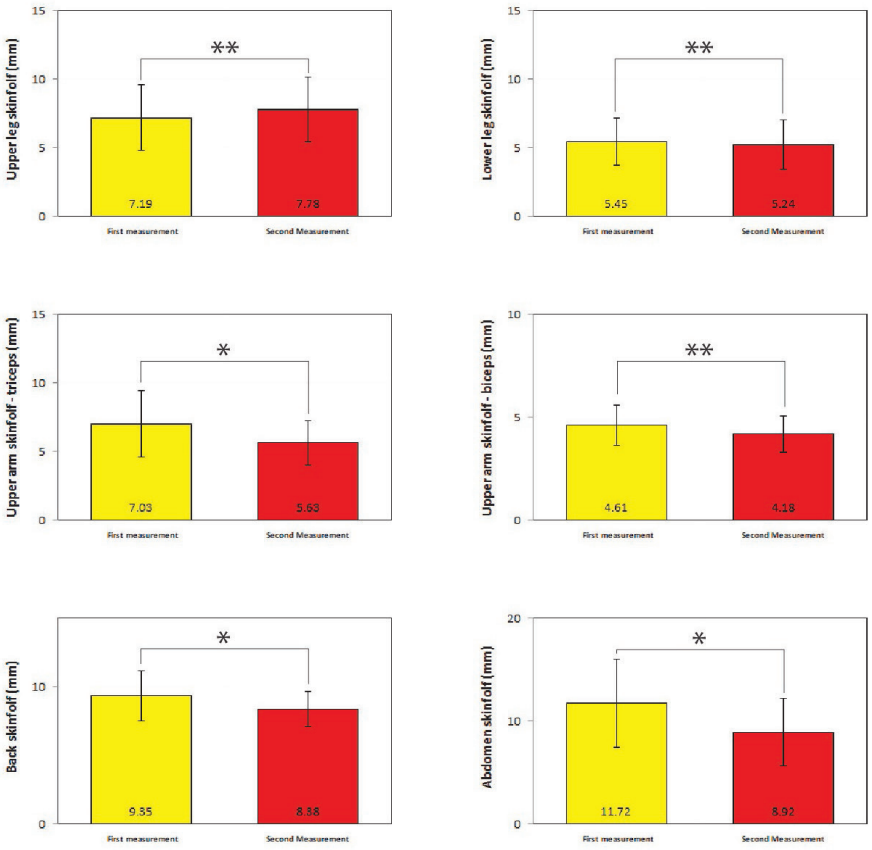
The anthropometric characteristics of footbollers at two different time points during the competition period are shown in Table 1. There was no significant difference in body height, body mass, upper leg skinfolf, lower leg skinfold, upper arm skibfold - biceps, fat mass, muscle mass and body mass index between two time points, while a significant difference was found for upper arm skinfolf - triceps (F=2.55), back skinfold (F=2.31) and abdomen skinfold (F=2.76) between two time points.

**Table 1.** Descriptive data and t-test of 28 male footboll players enrolled in the study

| Variables | OFK Titograd | Maen±SD | t | Sig. |
|---|---|---|---|---|
| Body height (cm) | First measurement | 181.6±6.26 | .00 | 1 |
| | Second Measurement | 181.6±6.26 | | |
| Body mass (kg) | First measurement | 76.18±7.63 | .08 | .939 |
| | Second Measurement | 76.02±7.65 | | |
| Upper leg skinfolf (mm) | First measurement | 7.19±2.4 | -.93 | .356 |
| | Second Measurement | 7.78±2.34 | | |
| Lower leg skinfold (mm) | First measurement | 5.45±1.71 | .44 | .662 |
| | Second Measurement | 5.24±1.81 | | |
| Upper arm skinfolf - triceps (mm) | First measurement | 7.03±2.43 | 2.55 | .014 |
| | Second Measurement | 5.63±1.6 | | |
| Upper arm skinfolf - biceps (mm) | First measurement | 4.61±0.99 | 1.74 | .087 |
| | Second Measurement | 4.18±0.89 | | |
| Back skinfold (mm) | First measurement | 9.35±1.81 | 2.31 | .025 |
| | Second Measurement | 8.38±1.3 | | |
| Abdomen skinfold (mm) | First measurement | 11.72±4.25 | 2.76 | .008 |
| | Second Measurement | 8.92±3.27 | | |
| Fat mass (%) | First measurement | 11.41±3.13 | -.47 | .643 |
| | Second Measurement | 11.79±2.95 | | |
| Muscle mass (%) | First measurement | 38.23±3.99 | .26 | .800 |
| | Second Measurement | 37.95±3.97 | | |
| Body mass index (kg/m$^2$) | First measurement | 23.05±1.34 | .11 | .914 |
| | Second Measurement | 23.01±1.47 | | |

Note: Mean - Arithmetic mean; SD - Standard deviation; ^ - non-significant; * - significant difference between groups.

The differences in skinfolds thickness of the football players between two different time points during the competition period are shown in Figure 1.




Note: * - significant difference; ** - non-significant difference between groups

FIGURE 1. The differences in skinfolds thicknes of the football players of OFK Titograd between two different time points during the competition period

## Discussion

The goal of this study was to assess the quantitative and qualitative changes imposed by training and competition with help of selected variables of morphological characteristics and body composition which were measured in elite football players of First Montenegrin Telecom League at two different time points during the competition period. The results were obtained by using a battery of 11 tests in the area of morphological characteristics and body composition. The results highlight changes in body composition in elite football players associated with one month of intense training and playing during the competition period. The mean value for 3 from 6 skinfolds (upper arm skinfolf - triceps, back skinfold and abdomen skinfold) showed significant changes during the 30 days of the competition season. Also, a slight decrease in mean values is observed for two more skin folds. The direction ofchanges was generally consistent with expectations and they is in line with the results of numerous previous studies (Harley, Hind, & O'Hara, 2011; Siders, Bolonchuk, & Lukaski, 1991; Morris & Payne, 1996) which emphasize that the decline in adipose tissue during the competition phase and during the preparatory phases a direct reflection of activity intensity (Ostojic, 2002). Which again indicates highly competitive requirements in the elite Montenegrin league. Finally, when we look at parameters of body composition and body mass index, they also show a slight decrease. This is also consistent with expectations and in line with the results of previous studies (Bosch, Raymond-Pope, & Dengel, 2018 Cichy et al., 2020).

Studies of changes in body composition associated with systematic training and compeating have a relativelylong history, but there are very few who examine the variations in relation to the positions of the players in the team, so it is certainly a limitation of this study as well. Requirements to implement the game plan of specific playing positions in football contribute to variation in body composition andregional variation in body composition among players by position (Garcia et al., 2014). Therefore, it is expected that players in some playing positions will experience more changes due to higher demands. Therefore, the following studies should focus on determining variations in body composition during the competition season in relation to playing positions. The next limitation is the short period studied by this study, so the next should cover a longer period of time with multiple repeated measurements. But this does not diminish the contribution of this preliminary study, because it also contains data that can help football experts to gain insight into the demands of the elite Montenegrin competition, and changes observed during the one mesocycle in the competition period.

**Acknowledgements**
There are no acknowledgements.

**Conflict of Interest**
The authors declare that there are no conflicts of interest.

**Received:** 12 April 2020 | **Accepted:** 12 May 2020 | **Published:** 17 July 2020

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DOI 10.26773/jaspe.200704

Journal of Anthropology of Sport and Physical Education

SHORT REPORT

# Sport During and After the Coronavirus

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**Abstract**

The purpose of this essay is to point out positive and negative sides of sports and society in the period of corona virus as well as in general. I wanted to introduce this specific situation that happened in the world through my personal example as well as through the example of other athletes. I have accentuated the importance of physical and mental health. Also, I have described the most interesting examples of human efforts. I have also analyzed the influence of economic crisis on sports in Montenegro as well as in the whole world. My goal was to motivate other readers to understand the importance of healthy lifestyles and send a strong and optimistic message. Through methods of analysis, synthesis, concretization and generalization I have come to various conclusions which I have presented in my essay. I hope that this text will encourage other people to write and explore, so we can give our contribution to the development of sports together.

***Keywords:*** *Physical Activity, Sport, Isolation*

## Sport i fizička aktivnost u izolaciji izazvanoj korona virusom

Skoro mjesec, a subjektivno vječnost, od kada su nadležni zabranili sportske aktinovnosti na svim javnim površinama u Crnoj Gori. Nešto duže sport je paralizovan u većem dijelu planete. Prije 120 godina crnogorski vojvoda i književnik Marko Miljanov kazao je "Čojstvo je braniti druge od sebe, a junaštvo sebe od drugoga" (Miljanov, 1967). Vodeći se porukom pretka, a preporukom sadašnjih nadležnih, odlučili smo zaštititi sebe i druge, ostali doma, ali i te kako aktivni.

## Pišem u ime svih sportista

Prve pokrete, korake, skokove i padove napravili smo kod kuće. Kasnije ih usavršavali po brojnim livadama, poligonima, terenima, dvoranama, bazenima i teretanama. Izenanada vratismo se mjestu gdje je sve i počelo. Nerado, ali tu smo. Svijet sporta za trenutak je stao, ali nije se završio. Uvidjevši da će nastavak sporta, ali i života zavisiti od naše discipline ali i brze prilagodljivosti novonastaloj situaciji, kao iz najružnijeg sna trgosmo se iz udobnih kreveta. Glas u našoj glavni viknu: "Hej! Nema goreg treninga od preskočenog, a protraćenom vremenu nema povratka." Floskula ali vrijedna.

Odjednom tijesan stan postade nepregledno prostranstvo budućeg uspjeha, a nekome dvorište najljepši olimpijski stadion. Motiv je ponovo prisutan. Cilj mnogima različit. Šampioni žele da sačuvaju titulu, drugi da je osvoje, treći samo da učestvuju, a neki pak da zadrže ili steknu nove rekreativne navike.

U početku nezhvalni prema kolijevci našeg sportskog početka - domu, sad opet poželjesmo da joj zahvalimo i odužimo se tako što ćemo provoditi više vremena zajedno. Sobe jedva dočekaše da pored odmarališta postanu i vježbaonice. Stvari više nisu ukrasi, beskorisni predmeti, sad su rekviziti. Zajednički krenusmo ka individualnom napretku, a sjutra još jednom klupskom, reprezentativnom i sopstvenom uspjehu, zadovoljstvu. Neumorno osmišljavanje vježbi, treninga, željno čekanje odmora, pa umora... Magični krug. Borba sa novim izazovima i psihološkim barijerama postade svakodnevica. Odustajanje nikada nije rješenje, pogotvu ne sada. Moramo priznati da se ta misao ipak često vrzma po glavi. Upitani čemu sve ovo vodi, da li sav trud ima smisla kad sve može pasti u vodu i za tren poput kamena potuniti na dno. Zavidimo li to onima što uživaju u hrani, piću i odmaranju? Ne, biće vremena i za hedonizam. Poznati bejbol igrač, kasnije trener i menadžer Tomi Lasorda rekao je "Razlika između mogućeg i nemogućeg leži u ljudskoj odlučnosti" (Canfield, 2001).

Jasno nam je da je fizička priprema lakši dio posla. Iz ove situacije moramo izaći mentalno jači. Koliko je važno da se naši

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tjelesni mišići ne ulijene, jednako je bitno da ni mozak ne atrofira. Neophodno je da se neprestano razvija. Čitanje kao duševni trening, injekcija neophodne doze novih znanja. Sport je dostigao najviši nivo zbog neumornih istraživanja, ispitivanja, neprekidnoj težnji ka savršenstvu. Zato je ovaj neplanirani odmor dobrodošao kao mogućnost da se lakše uvidi gdje se griješilo, šta treba popraviti, drukčije isplanirati, unaprijediti. Razmjena mišljenja, ideja i predloga nikad nije bila šira, otvorenija, uvažavši svakoga. Riječ se ponovo bolje vidi, glasnije čuje.

Čučanj, skok, sklek, zgib, list po list, trening za treningom, knjiga za knjigom, dan za danom. Klackalica nešto drukčija od one u parku koju smo kao djeca obožavali. Svidja nam se i ova nova, za razliku od one dostpunija starijima. Suština je ista, naći balans. Sport i fizička aktivnost u izolacij izazvanoj korona virusom imaju svoju draž. Ipak, nije nešto što želimo da potraje. Test izdržljivosti koji ćemo, vjerujemo, uspješno proći i koji će uskoro postati prošlost. Bol se već osjeća, tijelo blago iscrpljeno, oči umorne, ali ne žalimo, kako poslije korone ne bi morali i željeli mnogo više. Citirajući čuvenog biciklistu Lensa Amstronga "Bol je privremen. Odustajanje traje večno" (Armstrong, 2005). Znamo da ćemo biti ponosi na učinjeno u ovoj situaciji. Izvlačimo maksimum.

Moderne tehnologije, drustvene mreže i mnogobrojni sportski radnici dobre volje pružiše nam brz, lak i besplatan vid edukacije. Razni video zapisi sa detaljnim opisima treninga poguraše nas kad je zafalilo ideje, mašte, volje. Dobismo i značajne savjete i toplu podršku od proslavljenih velikana, nekadašnjih šampiona, vječnih uzora. Posebnu pažnju skrenuli su snimci na kojim je Francuz Eliša Nohomovic, na terasi, istrčao marathon, a Njemac Jan Frodeno u stanu uradio "Iroman triathlon". Za neupućene, u specijalnom bazenu isplivao 3,8 kilometara, vozio kućni bicikl 180 km, a na kraju na traci za trčanje prešao 42,195 km. Dokaz da granice ne postoje, ili su, kako mnogi tvrde samo iluzija.

Ova utakmica je najmasovnija, ekipa nikad brojnija, protivnik nikad jači, a cilj jedinstven - pobijediti COVID 19. U mislima su željno očekivani trijumf protiv virusa, zatim diplome, medalje, pehari, lični rekordi. Vrijeme je za novi trening.

22. aprila već ima pomaka. Ponovo možemo trenirati na javnim površinama. Mjere popuštaju i u Evropi. Nazire se potpuni povratak sportu. Ritam će biti nalik ubrzanom šahu. Moramo povući pravoremene i ispravne poteze. Matiraćemo koronu.

## Pišem u svoje ime

Kao bivši karatista, reprezentativac, a sada sportski novinar i sportski radnik naučio sam nešto o sportu. Mogao bih ovim putem dati par savjeta, opisati nekoliko vježbi, preporučiti određeni trenažni proces. Međutim, prepuštam to učenijim, kompetentnijim ljudima koji su svoju karijeru, pa i život posvetili nauci o sportu.

Tek kada vam nešto oduzmu shvatite koliko vam nedostaje. Korona nam je otela sport, način života. Privremeno ali dovoljno dugo da kriziramo bez njega. Meni je time donijela veći broj slobodnih dana, a tu slobodu rado ću zamijenti za one radne dane prepune utakmica, mečeva, izvještaja i rubrika. Za svu onu magiju koju samo sport može da donese. U novinarstvu nema malih tema i događaja. Takav je i sport. Zato svima i nedostaje i željno ga isčekujemo. Ovog ljeta nećemo saznati ko će biti junaci Olimpijskih igara, Evropskog prvenstva u fudbalu i brojnih međunarodnih takmičenja. Ipak, bićemo bogatiji za vanredne termine duela Lige šampiona, Evrolige i ostalih nadmetanja. I tu nalazimo neku čar. Odstupanje od plana i šablona umije da bude interesantno i osvježavajuće. Za nas najznačajnija su domaća prvenstva. Donijeće nam najviše istinske radosti. Od njih u velikoj mjeri i zavisimo. Guramo naš sport da se popne na viši stepenik. Sa njim i mi.

Posljedice koje će korona ostvatiti na sport su posebna tema, na koju bi mogao da se napiše novi esej. Najbolniji biće ekonomski ožiljci, koji će ostati kao znak sjećanje na sve ovo. Različita istraživanja pokazuju da će se gubici mjeriti desetinama, moguće i stotinama milijardi eura. Tu spadaju gubici prouzrokovani odgađanjima raznih manifestacija, TV prava, novac od sponzora, marketinga i drugo. Je li sport postao samo sredstvo do materijalnog cilja? Moderni sport godinama unazad pokazuje negativnu stranu. Jaz između velikih i malih sve je veći, iako su ti mali nekima ne najveći, već sve! Trka za novcem jedina u kojoj nema ni kraja ni pobjednika. Enormne plate postale su prioritet. Snovi i tradicija sve manje značajni, teško i da su sekundarni na toj listi. Tako ne čudi revoltiranost, predskazanje ili rano uviđanje engleskog pisca i novinara Erika Artura Blera, poznatog pod pseudonimom Džordž Orvel, koji je svojevremeno rekao: "Ozbiljan sport nema ništa sa fer igrom. U njemu ima toliko mržnje, zavisti, nepoštivanja bilo kakvih pravila pomiješano sa sadističim zadovoljstvom u gledanju nasilja. Drugim riječima, ozbiljan sport je rat u kome jedino nema pucanja" (Orwel, 1993). Suviše grubo rečeno. Nažalost, blizu istine, jer sport je često i te kako okrutan.

Sportisti su tokom karijere navikli na brojna odricanja, ali ne i na novčana. Sad će se suočiti i sa tim. Upravo u tome leži spas svjetskog sporta. Da ljubav i strast ponovu dobiju glavne uloge u tom filmu. Da događajima ne prisustvuju samo oni koji to s lakoćom mogu da priušte, već da tribine pronađu mjesto za svakog. Žrtvu moraju podnijeti svi, pokazati solidarnost, što su mnogi i uradili. Brojni su domaći sportisti koji su među prvima pomogli dražavu i narod u kriznoj situaciji. Davno su dokazali, a još jednom potvrdili da su s razlogom uzori omladini. Slično je bilo u regionu i svijetu. Glavna uloga sporta je da ujedinjuje i povezuje, što je opet učinio. Često jači i od politike, jer kao gumicom obriše sve granice i različitosti. Cijeli svijet se međusobno pomaže u ovim trenucima. Vjerujem da će to iskorijeniti mržnju i netrepeljivost, posebno u sportu, gdje im svakako nikad nije ni bilo mjesto. Samo zdrav rivalitet je uvijek poželjan. Stoga, mislim da će se politički uticaj u sportu smanjiti. Tako bi trebalo da bude. Kao što je sada naše zdravlje s apsolutnim povjerenjem prepušteno medicinskim radnicima, ubuduće sport prepustiti struci. Rezultat neće izostatiti. Izvorno, riječ sport potiče od latinskog deportare, odatle starofrancuski desporter, dalje staroengleski disport, otud današnji sport i znači razonođenje, uživanje. Može biti i postao je više od toga, ali nikada ne smije izbugiti korijen, suštinu.

Istina, u Crnoj Gori takvih problema manje ima. Korona je nanijela neke druge poteškoće našem sportu, koje ćemo mi mali, imuniji na takve stvari, lakše prevazići od velikih. Tako se nameće prilika, na nama je da je zgrabimo i iskoristimo, da svojih pet minuta dobije sportski turizam koji bi, kako i sami naziv kaže, donio velike benefite i sportu i turizmu. Pokazali smo smo godinama unazad da se turistički ravnopravno možemo takmičiti sa većima. U sportu isto dokazali mnogo puta. Ujedinjenjem ta dva važna segmenta društva, dobili bi nešto novo. Umijemo. Igre malih zemalja Evrope potvrda su kapaciteta koje imamo. Sjeme sportskog turizma je posijano. Plodovi mogu biti brojni i slatki. Sport je mnogo dao ovoj državi, a ona mu uzvraća identično. Ili obrnuto. Zar je važno?

Ne treba biti ekonomista, ili bogzna kakav stručnjak da zaključiš da će se finansijske posljedice osjetiti i u crnogorskom sportu. Dilemu nemam, preživjećemo. Nekad je i prednost kad si mali. Ali, ima još nešto. Ovdje nikada nismo prestali da živimo i dišemo sport punim plućima. Nadam se da našem sportu neće trebati respirator da preživi koronu. Svjetski će se snaći.

Iako mlad, ali nostalgičan prema često pominjanim "starim dobrim vremenima", osjećam da ćemo se vratiti prirodi i zdravim stilovima života. Ponovo će tapkati lopte po poligonima širom gradova, kotrljati se po livadama, kamen biti stativa. Video igrice, ili kako popularno nazivaju gejming, biti samo povremena razo-

noda, a ne stil života. Nije kasno da zbrišemo anksioznost koja je uzela maha. Još uvijek imamo izbora. Mnogo je pitanja o bližoj i daljoj budućnosti sporta. Željno isčekujemo odgovore. Navijamo da sport i svijet budu pozitivniji, na COVID 19 zauvijek negativni.

"Smisao života je život sa smislom" rekao je šahista Robert Birn (Robert Byrne Quotes, n.n.). Dodaću i sporta.

Ovo radovi uskoro će postati bajati. Opomena zvana koronavirus biće prošlot, ali nikad zaboravljena, već simbol novog, boljeg početka. Ukoliko ne izvučemo pouke, a sport, društvo i mi pojednici nastavimo stopama kojima smo išli donedavno, bojim se, poželjećemo ovu izolaciju.

**Acknowledgements**
There are no acknowledgements.

**Conflict of Interest**
The authors declare that there are no conflicts of interest.

**Received:** 30 April 2020 **| Accepted:** 5 May 2020 | **Published:** 17 July 2020

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DOI 10.26773/jaspe.200705

Journal of Anthropology of Sport and Physical Education

SHORT REPORT

# Sport and Physical Activity in Isolation Caused by Coronavirus

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**Abstract**

The coronavirus pandemic, officially declared on March 11, 2020, has temporarily stopped the planet, and paralyzed all sports activities. Millions of athletes around the world, locked in four walls, without the possibility of training and competition, faced a new challenge. This study tries to look at the psychological and sociological impact of quarantine on athletes, as well as the economic consequences that the pandemic will leave on the world of sports. Interviews with a sports psychologist, sports worker and former athlete highlighted various aspects of the crisis. The aim of study is to assess how and to what extent a pandemic will change sport, with the conclusion that it will not change the human nature and strong need to engage in it.

***Keywords:*** *Physical Activity, Sport, Isolation*

*„Možete strpati u kavez pticu pjevačicu/ Ali je ne možete primorati da pjeva/ I možete da zarobite slobodnu pticu/ Ali ćete joj morati podsjeći krila/ Jer će se vinuti poput sokola kada odleti...“* - Cage the Songbird, Elton Džon (John, n.d.)

I oni koji su divinizovali Majkla Džordana tokom igračkih dana – a bilo ih je poprilično – sa nelagodom su pratili njegov dvadesetominutni govor na svečanosti uvrštavanja u košarkašku Kuću slavnih u Springfildu, 11. septembra 2009. godine.

Pojedini su ga nazvali samoljubivom tiradom.

„Jednog dana, možda ćete me vidjeti kako igram sa 50 godina“, privodio je solilokvij kraju.

„Ne smijte se. Nikad ne recite nikad, jer su prepreke, baš kao i strahovi, najčešće samo iluzija.“

„Prijetnja“ o povratku na parket, pokazalo se, bješe doskočica: biološka ograničenja su nadjačala i „Air Jordana“. U godini u kojoj je ugasio 57 svjećica na rođendanskoj torti, međutim, prepreke i strahovi su se izmjestili iz prostora iluzija u stvarni svijet.

Ispunjen virusom SARS-CoV-2.

U svega nekoliko sedmica, ispostavilo se u kolikoj mjeri su krhki doživljaji izvjesnosti, predvidivosti i sigurnosti, na kojima počiva moderna civilizacija. Brojevi oboljelih i umrlih rastu iz sata u sat, dok se svijet, strogo zatvoren u granice sopstvenih država, gradova, stanova, zatekao u limbu, kovačevskom „uvodu u drugi život”: život pogubljenih koordinata, uznemirenosti, strijepnje od budućnosti...

Omeđenosti i jeze.

Život u kome su medijski i komunikativni prostor okupirali termini „pandemija“, „socijalna/fizička distanca“, „(samo)izolacija“, „karantin“. Oštro sukobljeni sa prirodom sporta, koji se, prije i iznad svega, ostvaruje kao javna i društvena aktivnost.

Nepun mjesec nakon 19. februara i meča osmine finala fudbalske Lige šampiona između Atalante i Valensije na milanskom San Siru – kasnije nazvanim „nultom utakmicom“ zbog uticaja na masovno širenje zaraze – Uefa je 17. marta utvrdila da je stao fudbal u Evropi. Otkazala Euro 2020, do daljeg odgodila svoja takmičenja (UEFA, the European Club Association, European Leagues and FIFPRO Europe, 2020).

Prateći preporuke i mjere nacionalnih vlada, prvenstva na Starom kontinentu su, kao domino efektom, jedna za drugim prekidana ili nisu ni započeta. Šablon su pratile i ostale sportske aktivnosti.

U SAD su 12. marta suspendovane sezone u profesionalnim ligama (NBA, NHL, MLS), a tri dana kasnije otkazano je NCAA „martovsko ludilo“.

Šampionat Formule 1 nije ni počeo; tenis nije dočekao američke Masterse na betonu.

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Najzad, poslije usaglašavanja sa domaćinom, Međunarodni olimpijski komitet je 24. marta potvrdio da su Olimpijske igre u Tokiju – otvaranje je bilo zakazano za 27. jul – odgođene za 2021. Prvi put: ranije se dešavalo da planirana takmičenja, spriječena svjetskim ratovima, budu otkazana (Berlin 1916, Tokio 1940, London 1944).

Nedugo pošto je Svjetska zdravstvena organizacija proglasila pandemiju (11. mart), sport je – izuzimajući rijetke oaze (fudbalska prvenstva u Bjelorusiji, Tadžikistanu, Burundiju i Nikaragvi...) – paralisan.

Zatvoreni u četiri zida, bez mogućnosti za kretanjem i neposrednom komunikacijom, treniranjem i takmičenjem, samo neznatnim procentom lišeni egzistencijalnih briga, milioni sportista našli su se pred novim izazovom.

Zahtjevnijim od prethodnih.

*Život pod pritiskom*

Kao da je predvidjelo dešavanja, istraživanje grupe naučnika predvođenih dr Vinsentom Volšom, sa Instituta za kognitivnu neuronauku Londonskog univerzitetskog koledža, obavljeno 2017. godine, ukazalo je da se vrhunski sportisti bolje nose sa stresom od „normalnih" ljudi (Wilson, Walsh, & Parkin, 2017). Da je njihov kognitivni i emotivni odgovor u situacijama kada su suočeni sa pritiskom brži i efikasniji.

Pogledajmo kako Lionel Mesi ili Kristijano Ronaldo, Lebron Džejms ili Janis Adetokumbo, riješavaju jednačine protivničkih odbrana i pomislićemo isto.

No, „život nije što i polje preći", bilo ono fudbalsko ili košarkaško.

„Može se reći da su profesionalni sportisti prošli dugogodišnji dril da bi stigli do stadijuma na kome se nalaze", za potrebe istraživanja komentariše Nebojša Žižić iz Podgorice, specijalista medicinske psihologije, savjetnik u psihoterapiji i psiholog u sportu.

„Mnogo čega su se odricali, ulagali u karijeru, čak, iz ugla ljudi van sporta, i ekstremno, te, naravno, imaju veoma izraženu motivaciju da uspiju. Sve navedeno zahtijeva značajne visokofunkcionalne kapacitete ličnosti da se prilagodi i istraje, i konstantan rad na sebi, pa se može reći da su profesionalni sportisti većinom istrenirani da žive i funkcionišu pod pritiskom."

I u karantinu, ali ne sportskog tipa?

Da li sportiste u uslovima bitno različitim od onih u kojima se profesionalno dokazuju – pri nedostatku treninga i takmičenja, interakcije sa saigračima, protivnicima, navijačima, samopotvrđivanja kroz rezultate – njihov psihofiziološki profil čini otpornijim ili, pak, osjetljivijim?

„Nema pravila. Na različite vrste ličnosti vanredne okolnosti različito utiču. Nekoga će učiniti osjetljivijim, a nekoga će aktuelna situacija podstaći da pronađe u sebi nove snage i strategije za suočavanje sa stresom, što dalje može da iskoristi u karijeri. Naglašavam da je sada sportistima najvažnija podrška od sistema kojima pripadaju (timova, društva, porodice), kao i jedni od drugih", zaključuje Žižić.

*Prozor*

Zajedničko za sportiste, rekreativce i one kojima je jedini kontakt sa sportom posredstvom TV-a je da im je u izolaciji potrebno vježbanje.

Svjetska zdravstvena organizacija preporučila je „150 minuta fizičke aktivnosti umjerenog ili 75 minuta jakog intenziteta sedmično, ili kombinaciju" (World Health Organization, 2010). Uz napomenu da se savjeta „možete pridržavati i kod kuće, bez posebne opreme i u ograničenom prostoru."

Dobrobiti su opštepoznate. Ublažavaju se negativni uticaji socijalne odvojenosti, dnevna rutina vježbanja podražava psihološki efekat držanja situacije pod kontrolom, i sredstvo je za smanjenje anksioznosti, očuvanje psiho-fizičkog zdravlja.

Prozor kroz koji vidimo sebe boljima.

Studija „The Effects of the Current Economic Conditions on Sport Participation" autora Krisa Gratona i Temisa Kokolakakisa sugerisala je da je među posljedicama svjetske ekonomske krize 2009-2012. bilo i smanjeno učešće britanske populacije u sportskim aktivnostima (Gratton, & Kokolakakis, 2012). Pitanje je koliko je primjenjiva na nove okolnosti.

Ekonomska kriza biće dublja, ali će u nju čovječanstvo zakoračiti nakon karantina nezabilježenog u modernoj eri. Moglo bi da se nasluti da će izolacija mnoge da podsjeti, nekima i da otkrije esencijalnu važnost fizičke aktivnosti, kao i podstakne na usvajanje zdrave navike.

Na to će usmjeravati i društvene mreže, preplavljene video snimcima popularnih sportista – veliki broj njih se istakao i doniranjem sredstava za borbu protiv posljedica pandemije – koji vježbaju u svedenim uslovima.

Francuski atletičar Eliša Nohomovic je otišao korak dalje. Konkretnije: pedesetak hiljada koraka dalje. Na balkonu svog stana u Tuluzu, ne većem od 7 metara, istrčao je – maraton (42,195 kilometara).

„Želio sam da pokrenem pomalo ludi izazov", pojasnio je nakon gotovo 7 sati trčanja, „i da unesem malo humora, kako bih dedramatizovao atmosferu zatočenosti."

*Profit...*

Atmosferu koja će, kad-tad, ustupiti mjesto normalnosti. Šta god ona podrazumijevala u postpandemijskom vremenu.

Za profesionalni sport ta normalnost biće – iščašena. Po sistemu spojenih sudova, recesija svjetske ekonomije će se preliti na sve oblasti, plaveći ih.

Subjektivni osjećaj je da nije mnogo prošlo otkada su takmičari na olimpijskim igrama nastupali sa etiketom amatera; objektivno: sport je prerastao u visokoprofitabilnu privrednu granu. Koja, procjenjuje Njujork tajms, globalno vrijedi 160 milijardi dolara (Futterman, Draper, Belson, & Blinder, 2020) i, izdvojimo primjer, u njemačkoj fudbalskoj Bundes ligi generiše 56.000 radnih mjesta.

Granu koju čeka tektonski poremećaj u finansiranju. Prvi udar, neposredni, osjeća se: prekid sezone NBA lige nosi potencijalni gubitak od 700 miliona dolara, a tzv. fudbalskih Liga petice 4 milijardi eura.

Naredni, koji će se ispoljiti kroz smanjenje postojećih sponzorskih i ugovora od TV prava, zarade od ulaznica, te marketinških aktivnosti – odraziće se na poslovanje u narednim godinama. I odražava se.

Sedmostruki slovački fudbalski šampion Žilina je od 1. aprila u postupku likvidacije. Trećini francuskih profesionalnih fudbalskih klubova prijeti bankrot. Kada je i Barselona, sa godišnjim budžetom iznad milijardu eura, prinuđena da igračima smanji mjesečne plate za 70 odsto, nazire se kovitlac predstojeće krize, koja će ščepati svjetski sport.

„Fudbal neće doživjeti krah, nego – korekciju. Mislim da će obrt sredstava da padne za 20-30 odsto", kaže nam Ljubomir Radanović, proslavljeni jugoslovenski reprezentativac, osvajač olimpijske bronze, već decenijama žitelj Belgije. I dalje vezan za fudbal, sada kao agent.

„Postoji magični trougao: teren, TV, navijači. Dosad je važilo: ako nemaš publiku, ne prati te TV. Ako te ne prati TV, ne možeš da budeš veliki klub. Pandemija je poremetila te odnose. Biće prazni stadioni – do kada, pitanje je – drukčiji osjećaj, koji niko ne voli. Navijači će i dalje da strastveno prate svoje klubove. Ali, sada će to biti u smislu: sjedite kući, nemojte da dolazite na stadione, a plaćaćete da biste gledali utakmice u svojim domovima."

Ceh će dijeliti i povezane oblasti, poput sportskog turizma, koji je bio u ekspanziji: suma od 2,44 milijardi eura, koliko je

Španija – teško pogođena zarazom – prihodovala 2018. godine, u aprilu 2020. zvuče kao bolno prisjećanje na stanje „redovnosti".

*...i entuzijazam*

U kolikoj mjeri će patiti sport u Crnoj Gori, posebnim zakonom, usvojenim 26. juna 2018, označen kao „djelatnost od javnog interesa"? A čije finansiranje se odvija prema kombinovanom modelu, uključujući javna sredstva – iz državnog i opštinskih budžeta – i, u praksi znatno manjim dijelom, privatni kapital.

Kao bitna odlika, crnogorski sport nije profitabilan i ne troši puno. Budžet Ministarstva sporta za 2020. je 8,65 miliona eura; Glavni grad Podgorica namijenila je sportskim aktivnostima 1,25 miliona. Orijentir za pretpostavku da je suma koju privlači sport u Crnoj Gori višestruko manja od godišnje plate Mesija u Barseloni (70 miliona eura).

Što može da bude komparativna prednost.

„Možda će zazvučati paradoksalno, ali smatram da će kriza više da pogodi veće sportske sisteme. Tu, prije svega, mislim na klubove primarno finansirane od prodaje ulaznica, TV prava i transfera igrača", stav je Vida Đakonovića, predsjednika Lovćena, najtrofejnijeg crnogorskog muškog rukometnog kluba.

„Njihovi gubici već se mjere u milionima eura i za očekivati je da će to direktno da utiče na politiku transfera i plata igrača, odnosno na smanjivanje iznosa obeštećenja i zarada."

Crnogorski klubovi ne spadaju u tu kategoriju.

„Svakako ćemo osjetiti posljedice krize i 'prestrojavanja', ali, nadam se, u značajno manjoj mjeri. Puno toga zavisiće od stava, prvenstveno, Ministarstva sporta, i lokalnih samouprava kao osnivača klubova. Kako nijesu u pitanju iznosi koji bi, na bilo koji način, doveli u pitanje funkcionisanje finansijera, očekujem da ćemo i ubuduće nastaviti građenje sistema koji će u dogledno vrijeme postati samoodrživ."

Manjak novca dodatno će naglasiti okretanje vlastitim resursima, odnosno...

„Još kvalitetnijem radu sa mlađim kategorijama, kao bazom svakog značajnijeg projekta. U klubovima poput našeg, a mislim da je tako sa praktično svim rukometnim klubovima u Crnoj Gori, izuzimajući možda ŽRK Budućnost, kao potpuno uređenim sistemom, sve zavisi od entuzijazma pojedinaca. Toga, koliko god bilo teško, jer podrazumijeva ogromna lična odricanja, siguran sam da nam neće nedostajati. Sportski entuzijazam je ekonomski nemjerljiva kategorija, na koju ni pandemija neće uticati."

Mogla bi da se, ipak, odrazi na segmente koja traže veća ulaganja: razvoj infrastrukture i konkurentnost crnogorskih klubova u regionalnim i kontinentalnim takmičenjima.

*Homo sporticus*

Starogrčka riječ „krisis" – prevod nije potreban – značila je odvajanje, priliku, izbor, prosuđivanje, odluku.

Kakvu priliku nudi kriza proistekla iz pandemije korona virusa?

„Fudbal će se vratiti, a kada se to desi, slavićemo zajedno izlazak iz noćne more", kazao je 2. aprila predsjednik Fife Đani Infantino u intervjuu za italijansku novinsku agenciju ANSA.

„Fudbal" zamijenimo riječju „sport": značenje se ne mijenja.

„Moraćemo zajedno da usvojimo lekciju: fudbal nakon virusa će biti potpuno drukčiji... inkluzivniji, društveno osjetljiviji, pružaće veću podršku, biti povezaniji sa pojedinačnim državama, u isto vrijeme globalniji, manje arogantan... Bićemo humaniji, bolji i više usmjereni ka pravim vrijednostima" (Infantino, 2020).

Spisak lijepih želja?

Nadanja da će karantinski doživljaj imati katarzično dejstvo na vrhunski sport, koji će da prekine bjesomučnu potragu za profitom i „povrati dušu", ne djeluju utemeljeno. Istorijski procesi nisu reverzibilni: od akvarijuma možete da napravite riblju čorbu; ne i od riblje čorbe akvarijum.

Nova iskustva vodiće ka strukturnim tumbanjima, podstičući tradicionalne sportove na dinamičniji razvoj, mijenjanje pravila, brže usvajanje tehnoloških inovacija, udvaranje eri u kojoj striming servisi osvajaju tržište i pažnju korisnika. Sport je, uostalom, pokazao da je žilav, prilagodljiv. I – neophodan.

Svijet – novi, da li i vrli? – će se nepovratno promijeniti.

Po pesimističkom scenariju postaće nepovjerljiviji, zatvoreniji, isparcelisaniji, klaustrofobičniji; po optimističkom otvoreniji, solidarniji, otporniji, osjetljiviji na društveno-ekonomske nejednakosti, brižniji za svoju budućnost i planetu koju naseljava.

Ali, šta god bilo, neće se promijeniti ljudska potreba da se kreće i povezuje, da se u fizičkoj aktivnosti pronalazi sredstvo i cilj, smisao i svrha; stremi univerzalnim humanim vrijednostima, traga za uzorima i uzdiže ih, da se prepušta navijačkim strastima... Bude Homo sporticus.

Potreba da se igra i raduje sportu, baveći se njime ili ga posmatrajući, uvjeravajući se – ili hrabreći? – iznova i iznova kako su ograničenja, baš kao i strahovi, najčešće samo iluzija.

**Acknowledgements**
There are no acknowledgements.

**Conflict of Interest**
The authors declare that there are no conflicts of interest.

**Received:** 30 April 2020 **| Accepted:** 20 May 2020 | **Published:** 17 July 2020

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DOI 10.26773/jaspe.200706

JASPE Journal of Anthropology of Sport and Physical Education

SHORT REPORT

# Sport and Physical Activity in Corona Virus Isolation

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**Abstract**

The basic goal was presenting of sport in the time of the Covid 19 as a predominantly psychological struggle in which a competitor or recreational athlete is forced to beat himself. In addition, the goal is to put focus on the positive sides of the overall situation because the pandemic is a time when we can learn significant lessons that could be successfully applied at regular times. According to this, purpose of work was to spread awareness that each problem has its developmental aspects that we are obliged to notice and use. The method that lies behind the work is the observation of the behavior of the general population through their daily contacts with the challenges from the domain of isolation.

***Keywords:*** *Physical Activity, Sport, Isolation*

U velikoj bašti našeg postojanja, isprva na periferiji, rastao je jedan sasvim neobičan cvijet. Nazvaše ga sportom i namijeniše ga prevashodno igri, zabavi i razonodi. Trčeći put njega, mnogi su bježali od tamnijih strana svojih života. Istina je da nije bio najgraciozniji i najnježniji cvijet u čitavoj bašti, ali je od samog početka imao, bez dileme, najzarazniji polen. Svako ko je makar jednom osjetio njegov opijajući miris, poželio je u njemu zauvijek ostaviti dio sebe. Inače, korijenje tog cvijeta je bilo satkano od strasti, želja, snova i motivacije. Stabljika je bila kao neka čudna karotida u kojoj su se neprestano miješali krv, znoj i adrenalin, a latice iskonski željele da se približe nebu i zvijezdama, jer kako legenda kaže, na tom mjestu se nalazila pobjeda. Upravo zbog takve anatomske konfiguracije, cvijet sporta se jako brzo pomjerio sa periferije u centar čitavog sistema.

Baš u vremenu kada je cvijet sporta, nakon četiri godine, trebao ponovo zasijati svojim punim sjajem, sjesti u svečane kočije sa pet raznobojnih prstenova, pojavio se mikronski omaleni neprijatelj sa sufiksom 19, sijući strah i paniku po svim ćoškovima bašte. Sve boje ovog svijeta, pretvorio je u svoje tamne nijanse. Zbog svog „zaraznog" polena, cvijet sporta se morao privremeno pritajiti, a umjesto 5 prstenova uzbuđenja, zajahao je teške bukagije izolacije. Pisanje istorije je nažalost, odloženo na nedoređeno.

Činilo se da je samo jedna sila bila stvarno snažnija od sile sporta, a to je sila života. Sport se tada, u svim svojim dimenzijama, naprosto, morao povući u tom iznenadnom dvoboju.

…

Motivacija, želja, borba sa vremenima, daljinama i visinama se spakovala u četiri zida i preobrazila se u isključivu borbu čovjeka sa samim sobom. Za najkraći mogući tren, sve protivnike smo spakovali među zidinama svoga uma, pokušavajući da u pepelu kolektivnog bunila pronađemo punu dimenziju svog smisla. Ili da je, makar, držimo čvrsto na nišanu. Dakle, tjelesna bitka je konačno, javno, predala štafetu psihološkoj. Baš na tom mjestu predaje štafete je iznikla jedna „stiplčez" prepona, koju će mnogi ljudi preći, a na kojoj će pojedinci, nažalost, pasti.

Dalje, ideja i neugasiva želja da se na najljepši mogući način predstavimo na širokom sportskom nebu je zamijenjena potrebom da budemo koliko-toliko kreativni između prozora svojih domova. Snovi su privremeno utihnuli i bore se da ne postanu uspomene. Sve ono što se vremenom i brižljivo gradilo u sportskom procesu, bilo takmičarskom ili rekreativnom, sada stoji na klimavim temeljima. Zapete strune ili ono što ljudi zovu tempiranom formom, prolaze kroz fazu neželjene deaktivacije i sve što nam je ostalo jeste nepopularni „harm reduction" metodološki koncept u kom jedino težimo sačuvati ono što se može sačuvati.

Težnja za unaprjeđenjem zdravlja je stala u opsesivnu brigu za izbjegavanjem bolesti. Hiljade kilometara u polovnim patikama se ukoričilo u kakvu-takvu formu aktivnosti na kućnom pragu. Dnevne sportske rutine koje su postale zdravi način života, a ujedno i način ispoljavanja sebe su postale nijeme. More rekreativaca (koji su vjerovatno i najčistija dimenzija sporta) je ostalo bez šuma svojih talasa jer svaka sportska aktivnost, na mjestima gdje je obično upražnjavaju je ili zakonom zabranjena ili aktivira

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mehanizam prigovora savjesti.

Jedino što je ostalo nepromijenjeno je osnovni lajt motiv našeg svakodnevnog života. Neodustajanje. Neodustajanje je prkos sili vremena da istrajemo u onome što su naši najsnažniji ciljevi. Neodustajanje je hlorofil cjelokupnog življenja, a samim tim i cvijeta sporta i ono je danas na nenajavljenom kolokvijumu, na kojem se skupljaju bodovi za završni ispit koji će uskoro doći. Da ponovo tragamo za najboljom dimenzijom svog sveukupnog bića.

Iz neodustajanja rastu sve naše snage i nove pobjede. Snage na kojima se će se amortizovati neizvjesno sjutra i postati neko novo i potpuno uobičajeno danas. Prva stranica neodustajanja jeste redefinisanje nezvanog neprijatelja sa sufiksom 19 i bojanje svih njegovih sivih u neke mnogo vedrije nijanse. Oduzimanje istom, titule neprijatelja i dodjeljivanje titule učitelja, koji će nas privremeno izvesti iz zone komfora, zamisliti nas nad samim sobom i podariti neke lekcije koje bi se inače, sudarale same sa sobom u inerciji i kolotečini života.

Prva lekcija kazuje koliko je zapravo običan i svakodnevni život lijep, a koliko velika sreća, suštinski, sija punim sjajem čak i u običnom izostanku nesreće. Ta lekcija kaže i da je sloboda najveći blagoslov koji imamo, a sport kao manifestacija slobode, navika najbliža utopiji. Lekcija poručuje koliko su uzvišeni ciljevi koje iznad sebe postavljamo i koliko su snovi koje jurimo najsmislenija dimenzija našeg življenja. Ta lekcija, konačno, potvrđuje onu tezu da pravi blagoslov leži u našem putovanju, a ne u krajnjoj destinaciji (Wooden, 2001). Iz svega toga crpi se ogromna želja, motivacija i inspiracija da kada ova drama odradi svoj poslednji čin, povratak bude u najmanju ruku, skromno, veličanstven.

Druga lekcija je tišina koju nam je pandemična sadašnjost donijela. Mnoštvo trenutaka u kojima smo ostavljeni sami sebi, sa sobom, sa svojim iskričavim ali i najtamnijim momentima. Ta tišina donosi sa sobom sporu ali upornu silu preispitivanja, pod čijom lupom nevoljno liježu sve naše prošle odluke, odabiri, prioriteti, sa svim njihovim posledicama. Tu se suočavamo sa svojim snagama, sa kojima smo koračali po rubu neočekivanog, ali i sa greškama koje su nas koštale prelaska preko tog ruba nemogućeg.

Konačno, treća lekcija na svom dlanu donosu i svojevrsnu projekciju budućnosti. Ostavlja nam prostor da sami sebi, ambicijama precizno iscrtamo vlastitu budućnost, ugraviramo vlastite ciljeve, kako sportske tako i životne u naš genetski kod. Da li je taj genetski kod uopšte otporan na promjene, ne znamo, ali ako postoji optimalno vrijeme kada valja pokušati, onda je to to danas. Da se razumijemo, uvijek je to vrijeme danas, ali danas to danas ima značajno veću vjerovatnoću da uspije. U tim i takvim planovima se osvrćemo na pitanja zbog čega je sport sastavni dio našeg bića, zbog čega smo uprkos svim preprekama opstali i istrajali, i zbog čega ćemo pokušati da osvojimo sve ono što je za nas bilo do sada nedokučivo i neosvojivo.

Kada pružimo ruku učitelju prividno neprijateljskog nastupa, vjerovatno će nam odgovori biti značajno bliži. Ako ne odgovori, onda svakako izgovori. Jer kad se podvuku sve crte i stave neophodne tačke, sve će ovo biti jedan veliki ispit u kom će pitanje sa najviše bodova biti to koliko smo istinski spremni da odbranimo ono što smatramo da nam pripada. Jednako u sportu kao i u životu izvan njega.

Stoga je sport u ovim, rijetko mudrim danima, samo jedan veliki ispit ljubavi prema njemu. Neki će taj ispit položiti, a za ostatak se nadamo da neće imati priliku za drugi rok.

**Acknowledgements**
There are no acknowledgements.

**Conflict of Interest**
The authors declare that there are no conflicts of interest.

**Received:** 30 April 2020 **| Accepted:** 16 May 2020 | **Published:** 17 July 2020

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DOI 10.26773/jaspe.200707

Journal of Anthropology of Sport and Physical Education

SHORT REPORT

# Soccer Players of Winner of the Cup of Bosnia and Herzegovina and Kosovo Champion in Season 2016/17 and their Morphological Characteristics

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**Abstract**

This research aimed to determine the differences among the top soccer players of a club in Bosnia and Herzegovina, FC Siroki Brijeg, and the top soccer players of a club in Kosovo, FC Trepca ´89, in the morphological characteristics and body composition. A sample of 37 subjects was divided into two sub-samples. The first sub-sample consisted of 22 players FC Siroki Brijeg, the average age of 24.00±6.22, the winner of the Cup of Bosnia and Herzegovina in the season 2016/17, while the other sub-sample consisted of 15 players of FC Trepca ´89 of the average age of 21.80±3.57, the champions of the Kosovo Championship in the season 2016/17. Soccer players were tested immediately after the end of the 2016/17 competition season. Morphological characteristics were evaluated using a battery of seven variables: body height, body weight, waist circumference, triceps skinfold, biceps skinfold, skinfold of the back, and abdominal skinfold. The body composition was evaluated using a battery of three variables: body mass index, fat percentage, and muscle mass. The significance of the differences between the players of the top two soccer clubs in the morphological characteristics and variables for assessing body composition was determined using a t-test for independent samples. The t-test results showed a statistically significant difference only in one variable triceps skinfold.

***Keywords:*** *Soccer, Morphological Characteristics, Body Composition*

## Introduction

A soccer game is said to be the most important secondary thing in the world; it gathers huge masses at stadiums and in front of TVs (Gardasevic, Bjelica, & Vasiljevic, 2019; Bjelica, Gardasevic, Masanovic, & Vasiljevic, 2020). It is a highly dynamic and fast team game that, with its richness of movement, belongs to the category of polystructural sports games (Gardasevic, Bjelica, & Corluka, 2018; Bjelica, Popovic, Gardasevic, & Krivokapic, 2016). Soccer is a sport that is characterized by numerous and various complex and dynamic kinesiological activities, which are then characterized by either cyclical (Sermaxhaj, Popovic, Bjelica, Gardasevic, & Arifi, 2017; Gardasevic, Bjelica, & Vasiljevic, 2017) or acyclical movement (Gardasevic, Bjelica, & Vasiljevic, 2016; Gardasevic, Bjelica, Milasinovic & Vasiljevic, 2016; Gardasevic, Popovic, & Bjelica, 2016). In sport, top scores can be achieved only under conditions of well-programmed training processes (Gardasevic, Akpinar, Popovic, & Bjelica, 2019; Gardasevic & Bjelica, 2019; Bjelica, Popovic, Tanase, & Gardasevic, 2017; Bojanic, Petkovic, Gardasevic, Muratovic, & Vasiljevic, 2015). Various studies are to be done to establish certain principles and norms for the transformational processes of the anthropological characteristics essential for soccer (Bjelica & Gardasevic, 2018; Bjelica, Popovic, & Gardasevic, 2016a; Bjelica, Popovic, & Gardasevic, 2016b); with morphological characteristics and body composi-

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tion among them as expected (Vasiljevic, Bjelica, & Gardasevic, 2018; Corluka, Bjelica, & Gardasevic, 2018; Vasiljevic, Bjelica, Popovic, & Gardasevic, 2015; Gardasevic, Vasiljevic, Bjelica, & Popovic, 2015). Findings regarding morphological characteristics and body composition are of crucial importance for complex sports such as soccer (Milasinovic, Gardasevic, & Bjelica, 2017; Gardasevic, Rasidagic, Krivokapic, Corluka, & Bjelica, 2017). Research on morphological characteristics and body composition among athletes of different sports indicates that such athletes have their own specific characteristics (Gardasevic, 2019; Gardasevic, 2018; Gardasevic, Masanovic, & Arifi, 2018; Masanovic, Gardasevic, & Arifi, 2018a; Masanovic, Gardasevic, & Arifi, 2018b; Arifi, Sermaxhaj, Gardasevic, Alaj, & Metaj, 2018; Arifi, Gardasevic, & Masanovic, 2018; Arifi et al., 2017).

Today, soccer is undoubtedly the number one sport in the world in popularity (Gardasevic, Bjelica, Vasiljevic, & Corluka, 2019; Gardasevic, Georgiev & Bjelica, 2012), and the same applies to Bosnia and Herzegovina and Kosovo (Bjelica, Gardasevic, Vasiljevic, Arifi, & Sermaxhaj, 2019; Gardasevic, Bjelica, Vasiljevic, Arifi, & Sermaxhaj, 2019).

In the 2016/17 competitive season, FC Siroki Brijeg was the winner of the Cup of Bosnia and Herzegovina, and FC Trepca ´89 was the champion of the Kosovo Championship. This research aimed to analyse the differences in some morphological characteristics and body composition among top soccer players of FC Siroki Brijeg and FC Trepca ´89.

## Methods

A sample of the subjects consists of a total of 37 top-level soccer players, divided into two sub-samples. The first one consists of 22 players of FC Siroki Brijeg, the average age of 24.00±6.22, and the second one that consists of 15 players of FC Trepca ´89 of the average age of 21.80±3.57.

Morphological research has been carried out with respect to the basic rules and principles related to the selection of measuring instruments and measurement techniques standardized in accordance with the IBP guidelines. For this study, seven morphological measures have been taken (body height, body weight, waist circumference, triceps skinfold, biceps skinfold, skinfold of the back, and abdominal skinfold) and three body composition assessment variables (body mass index, fat percentage, and muscle mass). An anthropometer, calliper, and measuring tape were used for morphological measurements. To evaluate the body composition, Tanita body fat scale - model BC-418MA, was used.

Differences in morphological characteristics and the body composition of the players of these two clubs were determined by using a discriminatory parametric procedure with t-test for small independent samples, with statistical significance of $p<0.05$.

## Results

Based on the obtained values of t-test results, it can be noted that there are statistically significant differences in one variable at $p<0.05$. It is one morphological measures triceps skinfold. It can be stated that the soccer players of FC Siroki Brijeg have statistically significantly smaller triceps skinfold than the soccer players of FC Trepca ´89 (Figure 1). In all other variables, the differences are negligible and not statistically significant.

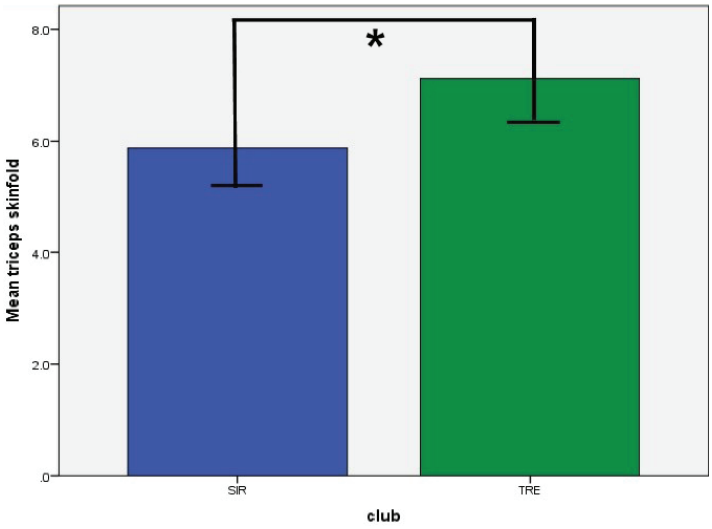


FIGURE 1. Statistically significant differences between soccer players FC Siroki Brijeg (SIR) and FC Trepca ´89 (TRE) in one variable triceps skinfold

## Discussion

It can be observed that the players of both clubs are of the approximately similar mean values of the variables analysed, which is not surprising because these are the top two clubs in Bosnia and Herzegovina and Kosovo. Gardasevic, Bjelica, and Vasiljevic (2019) found similar results on a sample of soccer players from Montenegro, and Bosnia and Herzegovina (Gardasevic, Bjelica, Vasiljevic, & Corluka, 2020; Bjelica, Gardasevic, Vasiljevic, Jeleskovic, & Covic, 2019) and Kosovo (Gardasevic et al., 2020; Gardasevic, Bjelica, & Vasiljevic, 2020). Very similar anthropometric characteristics of soccer players were obtained, which shows that they have similar characteristics and body composition throughout the region (Gardasevic, & Bjelica, 2020; Gardasevic, Bjelica, Popovic, Vasiljevic, & Milosevic, 2018; Corluka & Vasiljevic, 2018). The t-test results showed a statistically significant difference only in one variable: triceps skinfold. For other variables, some values are better for players of FC Siroki Brijeg and some for players of FC Trepca ´89, although, insignificantly for statistics, which indicates that these players have very similar body composition and anthropometric parameters. The values obtained in this research can be useful for coaches of these clubs for making a comparison of their players with others and formulate their work in a way that enables a reduction of those parameters that are not beneficial and raising those that are to a higher level. That will surely make their soccer players even better and more successful. Furthermore, both clubs should turn to other research studies and

check the functional-motoric status, psychological preparation, and tactical training of their players and analyse whether there is room for their improvement.

**Acknowledgements**
There are no acknowledgements.

**Conflict of Interest**
The authors declare that there are no conflicts of interest.

**Received:** 28 February 2020 **| Accepted:** 30 March 2020 | **Published:** 17 July 2020

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DOI 10.26773/jaspe.200708

Journal of Anthropology of Sport and Physical Education

REVIEW PAPER

# Content analysis of Published Articles in Sport Mont in the Period from 2003 - 2020 in the Field of Combat Sports

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**Abstract**

When it comes to sports science, it is inevitable to mention the Sport Mont Journal, which has an 18 years long respectable tradition, and which is progressing every year. Sport Mont was founded in 2003 as the official journal of the Montenegrin Sports Academy (MSA), by all merit to the great vision of a full professor at the Faculty for Sport and Physical Education, Dusko Bjelica. The Sport Mont, which is published in three editions annually (February, June, and October), records over 1.400 papers from almost all fields of sports science and sports medicine, signed by renowned scientists from all around the world. During a period of 18 years in Sport Mont is published 120 scientific papers on the topic of combat sports. It can be said that the biggest number of published articles about the mentioned topic was published in 2005 (17), and the activity of scientists from the field of combat sports was quite low in the last couple of years of existence Sport Mont. In 2020 is published 5 scientific papers in a topic of combat sports and it is the bigger number in comparison to the last couple of years, so it seems that authors from the field of combat sports are again active as in the period when Sport Mont established and there is hope that they will give a contribution to developing Sport Mont journal in the next period. This research can be useful for further theoretical research, as well as for theoreticians.

***Keywords:*** *Combat Sports, Montenegrin Sports Academy, Sport Mont, Sport Science*

## Uvod

Kada se govori o nauci u polju sporta i fizičke kulture neizostavno je pomenuti Sport Mont časopis (Slika 1), koji gaji tradiciju dugu već 18 godina i koji iz godine u godinu napreduje. Sport Mont je osnovan 2003. godine kao zvanični časopis Crnogorske sportske akademije (CSA), a sve zahvaljujući viziji redovnog profesora Fakulteta za sport i fizičko vaspitanje Univerziteta Crne Gore, prof. dr Duška Bjelice. Sport Mont izlazi u tri izdanja godišnje (februar, jun i oktobar) i bilježi preko 1400 naučnih radova iz gotovo svih oblasti sportske nauke i sportske medicine, koje potpisuju renomirani naučnici kako iz Crne Gore, tako i zemalja regiona, Evrope i svijeta. Tokom 18 godina duge tradicije časopis bilježi mnoge reforme, a najznačajnija se bilježi u 2016. godini kada postaje dostupno uputsvo za autore, bilježi se redizajn časopisa i donosi se odluka da se objavljuje u tri broja na godišnjem nivou. Naredne godine već postaje dostupna mogućnost preuzimanja naučnih radova u pdf formatu i svaki naučni rad dobija DOI broj (Digital Object Identifier), dok se u 2018. godini donosi odluka da svako izdanje broji 20 naučnih radova, koji su, pored arhive, dostupni i na početnoj stranici sajta časopisa. Na kraju svakog rada, postoji forum za diskusiju, u okviru kojeg svi zainteresovani čitaoci mogu ostaviti svoj komentar, što svakako utiče na pospješivanje kvaliteta samog časopisa. Bitno je navesti da Sport Mont indeksiran u 23 međunarodne baze podataka od kojih je najznačajnija Scopus. Takođe, bitno je napomenuti da prema posljednjem rengiranju, na osnovu Impact factora, Sport Mont spada u Q2 kategoriju u Scopus bazi podataka, što ga čini priznatim međunarodnim časopisom, kao i časopisom koji ubrzano napreduje ka ulasku u najprestižniju naučnu bazu podataka Web of Science (WoS).

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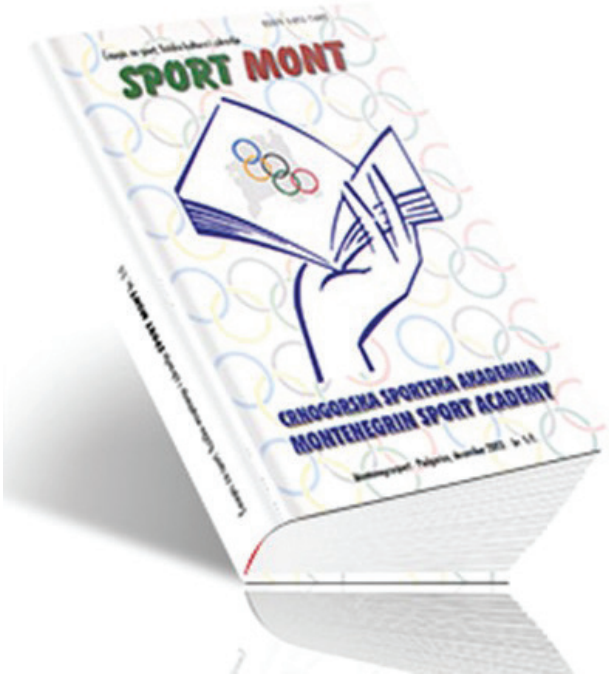


SLIKA1. ČASOPIS Sport Mont Vol. I No. 1 (2003)

S obzirom na to da je tema ove analize sadržaja usmjerenja isključivo na naučne radove koji u svojim okvirima govore o borilačkim sportovima, napraviće se kratak osvrt na pomenutu oblast. Naime, popularnost borilačkih sportova na našim prostorima je u ekspanziji i uprkos velikoj sličnosti postoje jasne smjernice i pravila u svim sportovima koji spadaju u polju borenja, što pravi jasnu distinkciju između njih. Dakle, razlike se pretežno ogledaju u tehnici i taktici borenja, opremi koju borci koriste, vrsti udaraca, fizičkoj konstituciji boraca, kao i životnim filozofijama i vrijednostima koje predstavljaju polaznici određenih borilačkih sportova i vještina (Ilic & Visnjic, 2012). Prema zapisima dr Novaka Jovanovića u Crnoj Gori se do 1914. godine sportske aktivnosti mogu grupisati u: "atletske (trčanja, bacanje kamena s ramena, skok u dalj smjesta i zatrke i nešto ređe skok u vis); rvanje u „koštac" i „u pojas"razne igre klisa, plovke, boćanje, potezanje konopa, dizanje tereta, penjanje na jarbol i drugo; konjičke trke, kao i gađanje oružjem na razne načine koje se posebno cijenilo u tom vremenu." (Radovic, 2005). Kao što može da se primijeti još u tom vremenu se bilježi aktivnost u borilačkim sportovima, što i ne čudi kada se akcenat stavi na tadašnju situaciju u Crnoj Gori, kada je bila prisutna borba protiv okupatora i kada su vještine borenja bile esencijalne kako u ratovanju, tako i u borbi za egzistenciju (Radovic, 2005). Danas, u Crnoj Gori su najzastupljeniji boks, kik boks, karate, džudo i rvanje i takmičari iz pomenutih sportova bilježe zavidne rezultate i kako tvrdi Selhanovic (2010) za njih se može reći da su najbolji ambasadori Crne Gore u zemljama širom svijeta. Isti autor navodi da što je zemlja manja, to su značajnija sportska postignuća, a u okviru borilačkih sportova se mora navesti uspjeh boksera Ivana Strugara i Gorana Radonjića koji su se našli na naslovnim stranama sportskog dodatka Washington Post i godišnjaku Svjetske asocijacije kikboks organizacija (WAKO) (citirano u Maros & Mujak, 2015).

Kako bi saželi detaljnije sve teme koje se tiču borilačkih sportova i učinili ih dostupnim široj javnosti za pregled i analizu, cilj ovog rada je upravo da se napravi selekcija svih naučnih radova koji su objavljeni u već pomenutom, prestižnom, časopisu Sport Mont za period od 18 godina, odnosno od njegovog nastanka 2003. godine, pa do junskog izdanja u 2020. godini. Nakon izvršene analize rezultata i evaluacije diskusije dobiće se precizne informacije o naučno-istraživačkoj aktivnosti naučnika u polju borilačkih sportova za pomenuti period.

## Metod

Za ovo istraživanje korišćena je metoda analize sadržaja. Metoda analize sadržaja se koristi za objektivnu sistemsku i kvantitativnu analizu očiglednog sadržaja saopštenja (filmova, knjiga, štampe, kao i elektronskih sadržaja). Jedinica koja je analizirana u ovom radu su svi naučni radovi koji u svom okviru obuhvataju borilačke sportove, za period od 2003. do 2020. godine, odnosno zaključno sa junskim izdanjem Sport Mont časopisa. Pretragom i detaljnim analiziranjem svih naučnih radova iz arhive časopisa, po godinama objavljivanja, izdvojeno je 120 naslova, a klasifikovani su po godinama kada su objavljeni.

## Rezultati

Nakon detaljne analize i pregleda naučnih radova objavljenih u Sport Mont-u, može se istaći da ih je objavljeno čak 120, a koji su se direktno ticali ili imali dodirnih tačaka sa borilačkim sportovima (Tabela 1).

U godini kada je osnovan časopis nije zabilježen nijedan naučni rad na temu borilačkih sportova, dok već u 2004. godini biva objavljeno čak 10 naučnih radova na pomenutu temu. To su sljedeći radovi: "Sport u XXI vijeku" (Bjelica, 2004), "Fizička priprema džudista" (Bratic & Nurkic, 2004), "Kako poboljšati pravila u džudou" (Drid & Obadov, 2004), "Crnogorski sportski laureati" (Gavrilovic, 2004), "Karate-sport kao terapija u 21 vijeku karate sport u Školi u 21 vijeku karate projekt za invalide u 21 vijeku" (Klac & Vujosevic, 2004), "Ju jutsu - sport budućnosti" (Kopas, 2004), "Karakteristike i specifičnosti trenažera u džudou" (Obadov & Drid, 2004), "Mogućnosti usavršavanja kretnih navika u etapi predtakmičarske pripreme rvača" (Radovic, 2004), "Nauka i karate sport" (Radovic, 2004), "Bokserski kamp u Somboru" (M. Savic, S. Savic, & Radovic, 2004).

U narednoj godini bilježi se porast naučne aktivnosti na temu borilačkih sportova, što čini ukupno 17 objavljenih naučnih radova, a to su sljedeći: "Sound karate as a school sport in Germany" (Bruning, 2005), "Plaketa Crnogorskoj sportskoj akademiji" (Ivezic, 2005), "Rehidracija u sportu" (Jankovic, 2005), "Re-

**Tabela 1.** Klasifikacija objavljenih naučnih radova u Sport Mont-u iz oblasti borilačkih sportova prema godini izdavanja

| Godina izdavanja | Broj objavljenih naučnih radova | % od ukupnog broja objavljenih naučnih radova |
|---|---|---|
| 2003. | / | / |
| 2004. | 10 | 8, 3% |
| 2005. | 17 | 14, 2% |
| 2006. | 13 | 10, 8% |
| 2007. | 11 | 9, 2% |
| 2008. | 11 | 9, 2% |
| 2009. | 4 | 3, 3% |
| 2010. | 7 | 5, 8% |
| 2011. | 14 | 11, 7% |
| 2012. | 8 | 6, 6% |
| 2013. | 9 | 7, 5% |
| 2014. | / | / |
| 2015. | 2 | 1, 7% |
| 2016. | 1 | 0, 8% |
| 2017. | 2 | 1, 7% |
| 2018. | 4 | 3, 3% |
| 2019. | 2 | 1, 7% |
| 2020. | 5 | 4, 2% |
| Total | 120 | 100% |

dukcija tjelesne mase evaporacijom i njene posledice na brzinu izvodjenja u karate sportu" (Jankovic, 2005), "Kompatibilnost nekih motoričkih zadataka sa osnovnim rvačkim algoritmima" (Kasum & Obradovic, 2005), "Prüfungsprogramm für behinderte anmerkungen zur karate-prüfungsordnung für behinderte" (Klac, 2005), "Bibliografija radova dr Duška Bjelice u časopisu „Ring" (Zemun, Beograd): 1987-1990. god." (Krivokapic, 2005), "Bibliografija radova dr Duška Bjelice u jugoslovenskom sportskom listu "Sport": 1980-1983" (Krivokapic, 2005), "Moralni aspekt dopinga" (Krsmanovic, 2005), "Analiza indukovanih efekata pod uticajem trenažnih operatora usmjerenih na izazivanje promjena bazičnih motoričkih sposobnosti kod visoko treniranih sportista" (Ljeskovic, 2005), "Ispitivanje strukture parametara situaciono motoričkih sposobnosti vrhunskih judo takmičara" (Ljeskovic, 2005), "Opservacija rvačkog sporta sa zdravstveno-vaspitnog aspekta" (Obradovic & Kasum, 2005), "Sport u Crnoj Gori do 1914. godine" (Radovic, 2005), "»momačke viteške igre«" (Radovic, 2005), "Neki aspekti bokserskog treninga" (M. Savic, S. Savic, 2005), "Predlog: kodeksa srpsko-crnogorskog bokserskog sporta" (Savic, S., & Savic, M., 2005), "Instrument za praćenje i procenu kvaliteta sportskog treninga" (Stamatovic & Sekeljic, 2005).

U 2006. godini se bilježi blagi pad u odnosu na prethodnu, ali je svakako objavljen veliki broj radova (13). To su sljedeći naučni radovi: "Prophylaxical effect at the intensive training process af combat sports" (Cirkovic & Kasum, 2006), "Diagnostic karate tests" (Doder, 2006), "Analysis of relations between judo techniques and specific motor abilities" (Drid, 2006), "Reliability of certain tests of specific motor abilities in judo" (Drid, 2006), "Razlike u performancama situacijske efikasnosti između juniora i juniorki sa Svjetskog prvenstva u džudou - Tunis, 2000. godine" (Kajmovic & Kapo, 2006), "Komparacija tehničko - taktičkih karate elemenata između učesnica međunarodnog karate turnira "Sarajevo open" 2004" (Kapo & Kajmovic, 2006), "Dilemas and ideas connected with free-styling wrestling in Serbia and Montenegro" (Kasum, 2006), "Newly constructed tests for repetitive strength evaluation in judo" (Kopas, 2006), "Uloga tai či čuana u očuvanju zdravlja, sprečavanja i lečenja bolesti" (Mikalacki & Cokorilo, 2006), "Motivational determinants of managers in karate" (Nesic, 2006), "Effects of the specific motor exercises on the basic motor status of judokas" (Obadov, 2006), "Structural analysis of conditional preparation in judo" (Obadov, 2006), "Methods of organizing in endurance and prognosis of results in wrestling of Greek-Rome style" (Radovic, 2006).

U 2007. godini je objavljeno 11 naučnih radova, a to su sljedeći: "Connection of explosive power with top-class results in karate" (Doder & Babiak, 2007), "The differences between morphological and motor indicators between groups of professional wrestlers and boxers" (Drapsin & Drid, 2007), "The differences in functional and motor indicators between the professional groups of karate and judo female competitors" (Drid & Vujkov, 2007), "Starosna struktura vrhunskih rvačica" (Kasum & Radovic, 2007), "Influence of motoric abilities on effectively of specific motoric tests in wrestling" (Mikic, & Ahmeti, 2007), "Training and advance tai otoshi technique" (Obadov, 2007), "Reliability of certain tests for evaluation of judo techniques" (Obadov & Kopas, 2007), "Bridge as a dominate technical structure in the wrestling of Greek and Roman and free style" (Radovic & Kasum, 2007), "Morphofunctional status of elite serbian taekwon-do athletes" (Rajkovic & Obradovic, 2007), "Differences between motor abilities of criminal-police academy students and categorized sportsmen-karatists" (Vuckovic & Koropanovski, 2007), "Plyometry training in karate- specifics" (Vujkov, 2007).

U 2008. godini je objavljen identičan broj naučnih radova, na pomenutu temu, kao u prethodnoj (11). To su sljedeći radovi: "Sportski objekti – indeks iskoristivosti "arena" u različitim sportovima" (Bonacin, 2008), "The application of a rope for condition preparation of boxers" (Kahrovic, Muric, & Radenkovic, 2008), "Contemporary tendencies in sport wrestling" (Kasum &

Radovic, 2008), "Structure of boxers´ morphological characteristics" (Muric & Kahrovic, 2008), "Coaches' work experience as an indicator of management attitudes in karate" (Nesic & Lolic, 2008), "Weight regulation and rules of alimentation for high-level wrestlers" (Radovic, 2008), "Improvement and result tracking of the special resistence of the wrestlers as an altitude response" (Radovic & Kasum, 2008), "New Olympic Games and their meanings for sport in Montenegro" (Rasovic, 2008), "Contemporary aspects of the ancient games at Nemea" (Siljak, Mijatovic, & Cilerdzic, 2008), "Training camp as a method of enhance specific motor abillity judokas" (Trivic & Drid, 2008), "Effects of specific training models on quadriceps and hamstring" (Vujkov, Trivic, & Drid, 2008).

U 2009. godini se bilježi značajan pad objavljenih naučnih radova na temu borilačkih sportova. Objavljena su svega 4 rada i to su: "Parcijalne kvantitativne promjene antropoloških karakteristika studentica pod uticajem fitness programa thai-bo" (Djug, Mikic, & Mehinovic, 2009), "Direct kicks in boxing" (Kahrovic, Muric, & Radenkovic, 2009), "Some caracteristics wrestling development in the slaveholding system in Egypt and Greece" (Radovic & Kasum, 2009), "Začeci organizovanog sporta u Crnoj Gori" (Rasovic, 2009).

U 2010. godini je objavljeno 7 naučnih radova. To su sljedeći: "History of savate (French boxing) in Serbia from XIX century till the end of the First World War" (Gavrilovic, Kasum, & Radovic, 2010), "Antičke olimpijske igre i moderni olimpizam" (Goranovic & Bjelica, 2010), "Transformed motoric characteristics after received programmed training process on superior karate athletes" (Kostovski, 2010), "Relations between šihon mae geri test for evaluating specific karate coordination and some of the basic motoric abilities" (Kostovski & Mehinovic, 2010), "Uticaj određenih bazično motorickih sposobnosti za ocenu specifične karate koordinacije" (Kostovski, Preljevic, & Shala, 2010), "Youth sport and parents" (Nesic, 2010), "Montenegro and olympism" (Rasovic, 2010).

Tokom 2011. godine se još jednom bilježi veliki broj naučnih radova na temu borilačkih sportova (14). To su sljedeći radovi: "Žene i sport u Crnoj Gori" (Cooky, Begovic, Sabo, Oglesby, & Snyder, 2011), "Klasifikovanje studenata na osnovu kriterija motoričkih sposobnosti i tehničke izvedbe elemenata" (Goletic, Redzic, Huremovic, & Mehinovic, 2011), "Razlike u morfološkim karakteristikama između boksera i nesportista" (Kahrovic, Muric, & Radenkovic, 2011), "Kinematička analiza aperkata boksera reprezentativnog nivoa" (Kahrovic, Radenkovic, & Mujanovic, 2011), "The influence of certain tests for evaluating the antropometric, motor and specific motor dimensions on the elements of the attack in sport karate fighting" (Kostovski, Masic, & Djukanovic, 2011), "Efekti modela kate (heian shodan) na transformacione procese motoričkih sposobnosti karatista" (Mujanovic, Kahrovic, & Muric, 2011), "Struktura kognitivnih sposobnosti perspektivnih boksera" (Muric, Kahrovic, Milic, & Mujanovic, 2011), "Razlike u motoričkim sposobnostima boksera i nesportista" (Muric, Kahrovic, & Radenkovic, 2011), "Elementary techniques of basic hand strokes in modern karate" (Radovanovic & Popovic, 2011), "Basic biomechanical characteristics of the second phase (tsukuri) of judo throwing technique osoto gari" (Rexhepi & Hraski, 2011), "Razlike u antropometriskim karakteristikama i motoričkim sposobnostime između dječaka hrvača, dječaka fudbalera i dječaka ne sportaša" (Sahit, Lulzim, Sylejman, & Shkelzen, 2011), "Material funds allocation for sports in Kosovo" (Tahiraj, Shatri, & Fazlija, 2011), "Level of anthropometric characteristics and motor abilities of sedentary and children who are in training in various sports orientation" (Tatar & Cupic, 2011), "Individual about collective risks in sport and possibilities their cover" (Vojinovic, 2011).

U 2012. godini je objavljeno sljedećih 8 naučnih radova: "Predictive value of some anthropometric characteristics on the specific motor test mae geri in Macedonian members of the karate team" (Asani, Zivkovic, & Telai, 2012), "Correlation of the morphological characteristics and sports achievements in karate" (Bjelica & Petkovic, 2012), "Influence of the morphological characteristics and motor abilities on performing situational movement structures in judo" (Ilic, Mikic, Zeljkovic, & Huremovic, 2012), "Specifics of motivation in combat sports" (Ilic & Visnjic, 2012), "Managerial factors of motivation in karate sport" (Nesic & Fratric, 2012), "Insurance of athletes in Serbia" (S. Ostojic, & N. Ostojic, 2012), "Thermovision application in kendo training" (Roglic, Fratric, Nesic, Bjelica, & Madic, 2012), "Level of motor abilities of children untrained and children that were in the training process a variety of sportsorientation (karate and volleyball)" (Tatar & Karadzic, 2012).

U toku 2013. godine objavljeno je 9 naučnih radova na pomenutu temu. To su sljedeći radovi: "Multivariant and univariant intergroup differences in the anthropometric understudied area between respondents juniors and seniors members of the Macedonian national karate team" (Asani, 2013), "Multivariant and univariant intergroup differences in the investigated specific motor space between respondents juniors and seniors members of the Macedonian national karate team" (Asani & Zivkovic, 2013), "Comparative analysis of postural state non-athletest and judo atletes of young adolescents" (Dacevic & Jovovic, 2013), "Discriminative analysis of morphologic and motoric parameter to judo and karate sportiest boys" (Ibri & Shala, 2013), "Canonical correlation of morphologic characteristic and motoric abilities of young judo athletes" (Ibri & Shala, 2013). "Effects of partial quantitative changes in dynamic power and static force of athletes aged 15-16" (Mikic, S. Kurtovic, N. Kurtovic, & Dedic, 2013), "Analysis of the 2012 european fencing championship for men and women, held in Legnano, Italy" (Petkov & Panayotov, 2013), "Predictive value of motor abilities in relation to karate technique" (Scepanovic, 2013), "The influence of motor abilities on kicking karate technique" (Scepanovic & Vlahovic 2013).

U 2014. godini nema objavljenih naučnih radova na temu borilačkih sportova, dok u 2015. godini bivaju objavljena svega 2 rada: "Athletes' knowledge of reduced sports nutrition" (Bojanic, Vasiljevic, Petkovic, & Muratovic, 2015), "Success of our athletes as a way of promoting Montenegro" (Maros & Mujak, 2015).

U toku 2016. godine objavljen je jedan rad, i to "Ultra short-term heart rate recovery after maximal exercise in two different body positions in elite male judokas compared to students of the sport faculty" (Vujkov, Casals, Krneta, & Drid, 2016), dok u narednoj, 2017. godini bivaju objavljena 2 rada: "Effect of an 8-week judo course on muscular endurance, trunk flexibility, and explosive strength of male university students" (Mohammed & Choi, 2017), "Competition efficiency analysis of Croatian junior wrestlers in European Championship" (Slacanac, Baic, & Starcevic, 2017).

U 2018. godini su objavljena 4 rada: "Perceptual and motor performances between fencers and non-fencers" (Akpinar & Beyaz, 2018), "A content analysis of published articles in Montenegrin Journal of Sports Science and Medicine from 2012 to 2018" (Maros, 2018), "Effect of ballistic warm-up on isokinetic strength, balance, agility, flexibility and speed in elite freestyle wrestlers" (Polat, Cetin, Yarim, Bulgay, & Cicioglu, 2018), "Special features of consumption of water and drinks by Kazakhstan athletes" (Yerzhanova, Sabyrbek, Kalmatayeva, & Milasius, 2018).

U toku 2019. godine objavljena su sljedeća 2 rada: "Crossfit training impact on the level of special physical fitness of young athletes practicing judo" (Osipov, Nagovitsyn, Zekrin, Vladimirovna, Zubkov, & Zhavner, 2019), "Evaluation of knowledge and competence of Kazakhstani athletes about nutrition" (Yerzhano-

va, Sabyrbek, Dilmakhanbetov, Madiyeva, & Milasius, 2019).

U toku 2020. godine, odnosno do posljednjeg broja koji je izašao u junu, objavljeno je sljedećih 5 naučnih radova u okviru borilačkih sportova: "Functional state of military personnel engaged in unarmed combat" (Klymovych, Oderov, Romanchuk, Pankevich, Pylypchak, Roliuk, Lesko, Olena, Dobrovolskyi, & Vorontsov, 2020), "Differences in the isokinetic strength of thigh muscles between track and field and karate athletes" (Mekic, Kapo, Alic, Bajramovic, Likic, Besirevic, & Covic, 2020), "Objective and subjective assessments of the psychological gender of female athletes practicing martial arts" (Osipov, Kovalev, Sadyrin, Nagovitsyn, Rubtsova, Druzhinina, Zhavner, & Vapaeva, 2020), "The difference between male and female sport participation in Turkey: "Determination always finds a way" (Yenilmez & Celik, 2020), "Multi-functional technical devices for improvement and control of athletes' preparedness in martial arts" (Zadorozhna, Briskin, Pityn, Smyrnovskyy, Semeryak, Khomiak, & Hlukhov, 2020).

## Diskusija

U ovom radu su klasifikovani naučni radovi koji su objavljeni u Sport Mont-u, a tiču se borilačkih sportova i klasifikovani su prema godinama izdavanja, odnosno od nastanka časopisa u 2003. godini, a zaključno sa junskim izdanjem u 2020. godini (Slika 2). Analizirajući rezultate iz tabele 1 može se zaključiti da u prvoj godini nije bila velika zainteresovanost naučnika iz polja borilačkih sportova, ali već naredne godine prepoznavaju potencijal Sport Mont-a i ova tema postaje jedna od dominantnijh u narednih par godina. Naime, za period od 2004. do 2008. godine bilježi se velika aktivnost naučnika iz pomenute oblasti, sa tim što je 2005. godina obilježena kao godina u kojoj je objavljeno najviše naučnih radova na temu borilačkih sportova u toku 18 godina duge tradicije postojanja Sport Mont-a (17). Zavidan broj naučnih radova se bilježi sve do 2014. godine, kada po prvi put nakon 2003. godine, nema objavljenih naslova koji imaju dodirnih tačaka sa borilačkim sportovima. U narednom periodu, odnosno od 2015. do 2019. godine bilježi se aktivnost naučnika u pomenutom polju, ali je u pitanju mnogo manji broj radova nego u proteklim godinama. Ipak, u 2020. godini se bilježi 5 naučnih radova na temu borilačih sportova, što je veći broj nego u proteklih 5 godina, a to daje nadu da će se naučnici iz oblasti borilačkih sportova uključiti u unapređivanju Sport Mont-a, kao što je to bio slučaj u prvih nekoliko godina od njegovog osnivanja.


SLIKA 2. Časopis Sport Mont Vol. 18 No. 2 (2020)

U okviru 18 godina dugog perioda, bilježe se radovi koji se vežu kako za istorijski razvoj pojedinih borilačkih sportova, pregleda značajnih rezultata sportista i naučnika koji su djelovali u okviru pomenute teme, tako i određene specifičnosti sportskog treninga, principa ishrane i analize u okviru određenih sposobnosti i karakteristika antropološkog statusa sportista.

Sve što je do sada navedeno ide u prilog konstataciji da je Sport Mont časopis koji, tokom svoje duge tradicije, njeguje mnoge oblasti sporta i fizičke kulture i da iz godine u godinu bilježi rast, što mu osigurava put uspjeha i prepoznatljivosti u najprestižnijim svjetskim naučnim bibliografsko-citatnim bazama.

**Acknowledgements**
There are no acknowledgements.

**Conflict of Interest**
The authors declare that there are no conflicts of interest.

**Received:** 20 May 2020 | **Accepted:** 12 June 2020 | **Published:** 17 July 2020

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DOI 10.26773/jaspe.200709

Journal of Anthropology of Sport and Physical Education

REVIEW PAPER

# A Content Analysis Original Scientific Papers of Physical Activity of Old People Published in Journal of Anthropology of Sport and Physical Education

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**Abstract**

The purpose of this paper has been to collected researches that have been published in JASPE journal that is showing the study of the physical activity of old people between the ages of 50 to 69. They were placed in two groups, first group was people from 50 to 59 age and second group was people with 60 to 69 ages. On these five papers that have been collected, from one to another there have been different views but all of them have had the same point and the same idea. The main point of all these papers is that physical activity must be risen to a higher level. Every research has been done by surveys and old people were giving their answers according to that what they were doing in the last 7 days for example; at work, at home, in their free time, etc. Also, all those activities had 3 groups, hard activity, medium activity, light activity. Results have been showed that physical activity of old people was on quite good level, but that level is not enough. There was a difference, between two groups. Results showed that younger group was more active than older one.

***Keywords:*** *Systematic Review, Older Adult, Physical Activity*

## Uvod

Kod većine ljudi veoma je ukorijenjeno shvatanje da motorna aktivnost sama po sebi jača i unapređuje čovjekovo zdravlje (Bjelica, 1995, 1999, 2002a, 2002b, 2004, 2005a). Premda su ove pretpostavke empirijski i teorijski zasnovane i provjerene, jasno je da se one mogu dosljedno realizovati samo ako se motorna aktivnost sprovodi u optimalnim higijenskim i drugim uslovima i ako se trajno i svrsishodno usmjerava (Bjelica i Krivokapić, 2010). Fizička aktivnost je važno sredstvo za smanjenje hroničnih bolesti, a takođe je i snažan faktor koji može pomoći starijim ljudima da se integrišu u društvo (Mašanović, Popović, Bjelica, Vukotic, & Zoric, 2018; Masanovic, Vukotic, Bjelica, & Popovic, 2018; Popovic, Bjelica, Vukotic, & Masanovic, 2018; Vukotic, Bjelica, Masanovic, & Popovic, 2019). Zajednička fizička aktivnost u grupama pomaže starijim ljudima da se upoznaju sa drugima, prošire svoju društvenu mrežu, poboljšaju svoje zdravlje (Popovic & Bjelica, 2017).

Kardiovaskularne bolesti vodeći su uzrok umiranja u većini razvijenih zemalja, kao i u mnogim zemljama u razvoju (Vasiljević, Bjelica, & Gardašević, 2018; Vasiljević, Bjelica, Kezunović, & Gardašević, 2016; Vasiljević, Bjelica, Popović, & Gardašević, 2015; Vasiljevic, Gardasevic, Kezunovic, & Bojanic, 2017). One predstavljaju značajan uzrok invalidnosti, smanjene radne sposobnosti, kao i rastućih troškova zdravstvene zaštite (Stojanović, Višnjić, Mitrović i Stojanović, 2009). Starenje je prirodna, normalna fiziološka pojava, nepovratan individualan proces koji kod pojedinih ljudi napreduje različitom brzinom i u različitoj životnoj dobi (Bjelica, 2006; Bjelica i Petković, 2009; Bjelica, 2015; Bjelica i Fratrić, 2018; Bjelica i Krivokapić, 2019). Proces starenja započinje od začeća i traje do smrti. Po klasifikaciji Ujedinjenih naroda, 65 godina je dobna granica kojom se ljudi smatraju starim ljudima. Starost (SZO-a) dijelimo na: raniju (65-74 godine), srednju (75 - 84 godine) i duboku starost (od 85 i više godina) (Stevanović, 2015). Najvažnije je razlikovati zdravo starenje od

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pojave bolesnog i patološkog starenja.

Međutim, starost je povezana s nekim negativnim zdravstvenim ponašanjima: neodržavanje lične i higijene okoline, fizička neaktivnost, psihička neaktivnost, neprihvatanje radne terapije, debljina itd. (Stevanović, 2015). Ljudski organizam je predodređen za fizičku aktivnost, pa se stoga ne treba čuditi što u situacijama dugotrajne neaktivnosti pokazuje znake opadanja funkcija. U poslednjih 20 godina dugotrajne epidemiološke i eksperimentalne studije ustanovile su da neaktivnost izaziva bolesti i preranu smrt (Ostojić, Stojanović, Veljović, Stojanović, Međedović i Ahmetović, 2009).

Fizička radna sposobnost pojedinca predstavlja vrlo integralno-kombinovan rezultat velikog broja različitih funkcija (Bjelica i Fratrić, 2011). Motorna aktivnost omogućava čovjeku da razvija psihofizičke sposobnosti putem kojih on sa minimun napora izvodi veću količinu kvalitetnih pokreta bez štete po zdravlje (Bjelica i Krivokapić, 2010; Gjonbalaj, Georgiev, & Bjelica, 2018; Masanovic, Popovic, & Bjelica, 2018; Arifi, Bjelica, & Masanovic, 2019; Masanovic, Milosevic, & Bjelica, 2019; Masanovic, Popovic, & Bjelica, 2019; Bjelica, Gardasevic, Masanovic, & Vasiljevic, 2020; Gardasevic, Bjelica, Vasiljevic, & Masanovic, 2020; Bjelica, Masanovic, & Krivokapic, 2020).

Prema urađenom istraživanju na više od 130 000 000 ispitanika, starijih od 5 godina, u časopisu „Lancet“ (NCD Risc Collaboration, 2017, 2019), došlo se do zaključka da je gojaznost kod odraslih povećana sa 100 000 000 (rezultat iz 1975. godine) na 671 000 000 gojaznih u 2016. godini. Redovna fizička aktivnost sprečava naglo povećanje tjelesne mase i nastanak bolesti koje su vezane sa gojaznošću (Mitić, 2011). U ovome radu analizirani su radovi koji su se bavili problemom fizičke aktivnosti kod starije populacije, ljudi između 50 i 69 godina starosti a koji su objavljeni u časopisu „Journal of anthropology of sport and physical education„. „Journal of anthropology of sport and physical education“, časopis za antropologiju sporta i fizičkog vaspitanja, je štampani i elektronski naučni časopis. Objavljuje orginalne naučne radove, pregledne članke, kratke izvještaje, iz oblasti antropologije sporta i fizičkog vaspitanja. „JASPE“ izdaje „Montenegrosport“ u saradnji sa Fakultetom za sport i fizičko vaspitanje iz Nikšića kao i Crnogorskom sportskom akademijom. Izlazi četiri puta u toku godine, u januaru, aprilu, julu i oktobru. Od 2017. do danas je objavljeno 5 izdanja časopisa (Slika 1). Časopis je zavrijedio pažnju međunarodne naučne zajednice i trenutno je indeksiran u naučnim bazama kao što su : DOAJ, Index Copernicus, Google Scholar, Crossref, ROAD. Uređivački tim čine naučnici i profesori iz Brazila, Turske, Malezije ali i iz regiona, Srbije, Bosne i Hercegovine, Kosova, Albanije. Glavni urednik časopisa je doc. dr Bojan Mašanović sa Fakulteta za sport i fizičko vaspitanje iz Nikšića. Treba istaći da su sada izvršene brojne analize sadržaja iz časopisa, na taj način je omogućen lakši pristup i pretraga onim autorima koji se budu bavili neki narednim istraživanjima. Jaspe je mlad časopis, za kratak vremenski period pokazuje veliki napredak s toga u narednom periodu treba očekivati veći broj radova koji će se baviti prikupaljanjem i analizom istraživanja objavljenih u pomenutom časopisu. Ovaj rad se bavi, kako je naglašeno, radovima koji prate fizičku aktivnost starije populacije. Ovim problemom treba se i u budućnosti baviti tako da ovaj rad predstavlja jednu olakšicu narednim istraživačima koji se budu bavili sličnom tematikom.


SLIKA 1 Časopis JASPE Vol.1 No.1 (2017)

## Metoda rada

Za ovaj tip istraživanja korišćena je metoda analize sadržaja koja se koristi za objektivnu sistemsku i kvantitativnu analizu očiglednog sadržaja saopštenja (filmova, knjiga, štampe, kao i elektronskih sadržaja). Ona podrazumijeva korišćenje pisanih izvora kao osnovne jedinice izvora informacija. Predmet istraživanja bili su naslovi radova objavljeni u časopisu „Jaspe“ a koji su se bavili problemom fizičke aktivnosti ljudi 3. doba. U periodu od prvog izdanja časopisa do danas objavljeno je 5 radova. Svih 5 radova se bavilo istim problemom i imalo isti cilj istraživanja a to je da se utvrdi koliko je fizička aktivnost prisutna kod starije populacije.

## Rezultati

U Tabeli 1 su prikazani radovi, koji su pronađeni u časopisu Jaspe a koji su se bavili problemom fizičke aktivnosti starije populacije.

Uzorak u navedenim radovima sačinjavao se od po 100 ispitanika u svakome radu, starosti od 50 do 69 godina. Uzorak je podi-

**Tabela 1** Prikaz analiziranih radova objavljenih u časopisu JASPE

| Autori | Cilj istraživanja | Uzorak | Statistička obrada | Rezultat |
|---|---|---|---|---|
| Dragutinović (2018) | Fizička aktivnost ljudi trećeg doba | 100 ispitanika (žene) | Deskriptivna statistika, T-test | Fizička aktivnost na zadovoljavajućem nivou, mlađa grupa fizički aktivnija od starije |
| Radulović (2018) | Fizička aktivnost ljudi trećeg doba | 100 ispitanika (muškarci) | Deskriptivna statistika, T-test | Fizička aktivnost na niskom nivou, mlađa grupa fizički aktivnija od starije |
| Kovačević (2018) | Fizička aktivnost ljudi trećeg doba | 100 ispitanika (muškarci) | Deskriptivna statistika, T-test | Fizička aktivnost na, zadovoljavajućem nivou, mlađa grupa fizički aktivnija od starije |
| Knežević (2018) | Fizička aktivnost ljudi trećeg doba | 100 ispitanika (muškarci) | Deskriptivna statistika, T-test | Fizička aktivnost na zadovoljavajućem nivou, mlađa grupa fizički aktivnija od starije |
| Mitrović (2018) | Fizička aktivnost ljudi trećeg doba | 100 ispitanika (žene) | Deskriptivna statistika, T-test | Fizička aktivnost na zadovoljavajućem nivou, mlađa grupa fizički aktivnija od starije |

jeljen na dva sub-uzorka tj. mlađu i stariju grupu. Mlađa grupa su bili ljudi od 50 do 59 godina, dok su stariju grupu sačinjavali ljudi od 60 do 69 godina starosti. U navedenim istraživanjima korišćena je anketa. Ispitanici su odgovarali na pitanja, vezana za njihovo kretanje u posljednih sedam dana. Aktivnosti su se odnosile na posao, prevoz, domaćinstvo kao i rekreacija, odnosno slobodno vrijeme, dok je svaka od tih djelatnosi imala aktivnosti laganog, umjerenog i jakog inteziteta.

Iz istraživanja jasna je slika o nivou fizičke aktivnosti kod ljudi treće dobi. U navedenih 5 istraživanja, 2 su se bavila ženskom populacijom, a preostala 3 muškom. Sva ona daju na kraju jedan opšti zaključak, a to je da je fizička aktivnost generalno na zadovoljavajućem nivou ali ne i dovoljno. Kod svih 5 istraživanja takođe se može naglasiti da fizička aktivnost opada s godinama, s toga je u svakom istraživanju mlađa grupa (50 do 59 godina) bila aktivnija od starije grupe (60 do 69). Generalno, kada se analiziraju radovi i mlađa i starija grupa se slabo bave fizičkom aktivnošću u svojem slobodnom vremenu. Kod mlađih grupa fizička aktivnost je najviše prisutna na poslu i u domćinstvu, gdje prednjače u odnosu na stariju grupu, dok je starija grupa više aktivna u slobodnom vremenu što je i donekle i bilo za očekivati s obzirom na činjenicu da veći broj njih nema profesionalne obaveze na poslu, imajući tako više slobodnog vremena.

U radu koji je objavila, Dragutinović (2018) naglašava da je fizička aktivnost na zadovljavajućem nivou u svim segmentima ali da postoje određene razlike. Žene trećeg doba su fizički najaktivne na poslu, gdje su veoma zastupljene naporne aktivnosti. Ostale aktivnosti ukazuju na to da žene ove dobi dosta fizičkih aktivnosti sprovode u domaćinstvu. Podatak koji nam ukazuje da žene minimalno ispunjavaju svoje slobodno vrijeme na fizičke aktivnosti je veoma zabrinjavajući, jer po dobijenim rezultatima nijedan od dva subuzorka ne koristi fizičku aktivnost u slobodnom vremenu, tačnije u svrsi rekreacije.

Knezevic (2018) je došao takođe do sličnih rezultata, on navodi da su ispitanici mlađe grupe (od 50 do 59 godina) postigli bolje rezultate od ispitanika starije grupe (od 60 do 69 godina). Rezultati do kojih je došao u istraživanju govore, da iako je zastupljenost fizičke aktivnosti u slobodnom padu na generalnom nivou, starija grupa ljudi i dalje upražnjava fizičke aktivnosti na zadovoljavajućem ili veoma visokom nivou, što se možda može pripisati njihovom načinu vaspitanja .

Kovacevic (2018) koji je testiranje radio u Baru, naglašava da je zadovoljavajući nivo fizičkih aktivnosti kada je u pitanju starija grupa, odnosno osobe od 60 do 69 godina starosti. Kod drugog dijela uzorka, označenog kao mlađa grupa, odnosno osobe od 50 do 59 godina, rezultati su takođe na zadovoljavajućem nivou. Jedini parametar koji nije na zadovoljavajućem nivou kod obije grupe, je aktivnost u prevozu.

U radu Mitrovic (2018) obije grupe ispitanika imaju visok nivo fizičkih aktivnosti kada je u pitanju obavljanje izrazito napornih fizičkih aktivnosti i hodanje. Ispitanici od 50 do 69 godina imaju visok nivo fizičkih aktivnosti i kada je u pitanju obavljanje fizičkih aktivnosti umjerenog inteziteta, dok grupa od 60 do 69 godina posjeduje umjeren nivo u obavljanju takvih aktivnosti. Ispitanici od 50 do 60 godina su u velikoj mjeri fizički aktivniji od ispitanika od 60 do 69 godina. Kao što se može primjetiti od rada do rada, stanje varira ali neki osnovni zaključak koji bi se mogao navesti jeste da svijest ljudi treće dobi o fizičkoj aktivnosti nije na visokom nivou, te se treba njome pozabaviti.

Radulovic (2018) naglašava da generalno, rezultati ovih istraživanja nisu ohrabrujući. Oni ukazuju na to da se mora raditi na pobuđivanju svijesti o važnosti fizičke aktivnosti u slobodnom vremenu, podaci govore da se nekvalitetno provodi slobodno vrijeme.

## Diskusija

Kada se sumiraju utisci, može se ustanoviti da na osnovu ovih radova, fizička aktivnost jeste prisutna u životima ljudi treće dobi. Ta prisutnost se ogleda najviše kroz posao, aktivnost u domaćinstvu, prevozu. To je podatak koji uglavnom se mogao pronaći u većini istraživanja. Isto tako svaki rad je imao jednu zajedničku stvar a to je da fizička aktivnost opada sa godinama i sve je manje prisutna u životima starijih osoba. Većina radova je pokazala da mlađa grupa je bila aktivnija na poslu, dok je starija grupa prednjačila u domaćinstvu i u prevozu.

Aktivnost je postojala ali ako se uzme u obzir da slobodno vrijeme nije korišćeno u svrhu vježbanja ili nekih zdravih stilova života, može predstavljati problem. Na površini ovog problema nalazi se rješenje koje je krajnje jednostavno - ljudi moraju više i češće da se kreću. Nažalost, veliki dio populacije, naročito oni kojima fizička aktivnost može najviše da pomogne, a to su osobe srednjih godina i treće životne dobi, ne uključuju se u vježbanje. Razvoj međunarodne strategije u oblasti promocije fizičkog vježbanja je neophodan. Takođe, promocija fizičke aktivnosti mora biti uključena u nacionalne i lokalne strategije i kampanje kako bi se podigla svijest javnosti o značaju koja fizička aktivnost ima za pojedinca, a samim tim i za društvo uopšte. Istovremeno, pojedinci moraju da preuzmu dio odgovornosti na sebe i da preispitaju svoje prioritete, kao i da razviju životni stil koji će da uključuje zdraviju ishranu i svakodnevno bavljenje nekim vidom fizičke

aktivnosti (Ostojić i sar., 2009). Razumijevanje različitih aspekata biološkog, psihološkog i socijalnog funkcionisanja i potreba ljudi starije životne dobi može pomoći izboru adekvatnih metoda djelovanja kojima će se kvalitet života tih osoba učiniti boljim (Maček, Balagović, Mandić, Telebuh i Benko, 2016)

Radova ovakvog tipa treba biti što više, putem njih bi se podigla svijest kod osoba treće dobi, ali i svih ostalih, kada su benefiti fizičke aktivnosti u pitanju. Nužno je povećavati fiskulturne sadržaje na nivou grada kako bi na taj način pivukli što veći broj osoba, naročito starijih. Preporuka je otvoriti više multifunkcionalnih sportsko – rekreativnih centara, adekvatnih i rehabilitacionih centara, kako bi pružili mogućnost da putem kineziterapije pomognemo i osobama koje nijesu u mogućnosti, da na bilo koji način (kao zdrava osoba) učestvuju i upražnjavaju fizičku aktivnost (Radulovic, 2018). Edukacija i promocija zdravog i aktivnog stila života ne bi se trebala odnositi samo na osobe starije životne dobi, već bi usvajanje zdravih navika trebalo započeti od najranije dobi (22). Izgradnja svijesti o aktivnom i zdravom starenju zahtijeva i pozitivna sociokulturna obilježja društva prema zdravom stilu života (Maček i sar., 2016).

**Acknowledgements**
There are no acknowledgements.

**Conflict of Interest**
The authors declare that there are no conflicts of interest.

**Received:** 28 September 2019 **| Accepted:** 29 April 2020 | **Published:** 17 July 2020

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DOI 10.26773/jaspe.200710

Journal of Anthropology of Sport and Physical Education

SHORT REPORT

# Report of the 17th Annual International Scientific Conference of the Montenegrin Sports Academy "Sport, Physical Activity and Health: Contemporary Perspectives"

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**Abstract**

The article is providing highlights of the Report of the 17th Annual International Scientific Conference of the Montenegrin Sports Academy "Sport, Physical Activity and Health: Contemporary Perspectives", hosted by the Montenegrin Sports Academy. The event was held on April 2-5, 2019 in Montenegro. The conference was held online, as a Video Conference, from the Montenegro, organized by the Montenegrin Sports Academy, and with the technical support of the Center of Information System (CIS). The participants of the conference were welcomed by Associate Professor Stevo Popovic, dean of the Faculty for Sport and Physical Education, University of Montenegro via Zoom application. This prestigious event gathered about 200 scientists from 46 countries.

***Keywords:*** *Scientific Conference, Video Conference, Sports, Physical Activity, Health.*

From the well-known situation connected to pandemic issues and realistic force majeure, as well as parallel to the recommendation of EU and regional authorities the 17th Annual International Scientific Conference of the Montenegrin Sports Academy "Sport, Physical Activity and Health: Contemporary Perspectives" was not held as a physical meeting in Cavtat, Dubrovnik - Croatia. The Organizing Board seated and decided to switch Physical Meeting to Video Conference which was held in the same period and according to an already established program (with minor corrections).

The conference was held online, as a Video Conference, from the Montenegro, via Zoom application. Montenegrin Sports Academy organized this conference in cooperation with Faculty for Sport and Physical Education of University of Montenegro and other international partners, also by sponsorship of traditional and new sponsors, and with the technical support of the Centre of Information System (CIS).

This prestigious event gathered about 200 scientists from 46 countries. Online Registration and Live ZOOM Training it's done on Thursday, 2 April 2020 from 12 a.m. to 2 p.m. All presentations were held in three meeting rooms on April 3rd and 4th. Attendance was achieved through links that were posted on the official website of the conference.

Edition XVII of international scientific conference of Montenegrin Sports Academy it rewarded of the best young researcher and the best female in science, for science works connected to public health topic.

The best young researcher is Ana Barbosa from University in Porto, Portugal, and the best female in science is Marlena Rosa from University in Leiria, Portugal.

Chairperson of MSA conference Professor Dusko Bjelica, PhD, congratulated the laureates via Zoom application, and announced the following: "There are more and more young researchers who actively and independent take part in conferences'

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**STEP 6**

Be on time in the ZOOM Meeting Room and help us to continue fighting against Coronavirus with the usual routine and hard working.

If you cannot click the bottom directly from the Conference Programme (if your device don't support it), please use the direct links to join the meeting rooms:

- Online Registration: https://zoom.us/j/225467662
- Meeting Room 1 on 3 April 2020: https://zoom.us/j/935090618
- Meeting Room 2 on 3 April 2020: https://zoom.us/s/242864301
- Meeting Room 3 on 3 April 2020: https://zoom.us/j/311945432
- Meeting Room 1 on 4 April 2020: https://zoom.us/j/277955595
- Meeting Room 2 on 4 April 2020: https://zoom.us/j/311222533
- Meeting Room 3 on 4 April 2020: https://zoom.us/j/965687528

You are not required to enter any kind of passwords, just make sure to be there on time.

Look forward to meeting you all: invited speakers, oral and poster presenters as well as non-presenters from 2 to 5 April online,

Sincerely,
Prof Dusko Bjelica, PhD

PICTURE 1. Links to enter the meeting rooms

scientific program, what is one the highest strategic aims in MSA agenda. Even though numerically less female than male participated, award ceremony proved that trend is slowly changing, when it comes to female contribution in science, since the organizers put emphasis on gender equality, as well as the best female in science award changes practice so far".

Dean of the Faculty for Sport and Physical Education, Associate Professor Stevo Popovic, PhD, stated that both awarded studies were related to public health.

"Presented study of the best young researcher Ana Barbosa was to aim for indication on influence of 12 week long program of walking football activities on cognitive abilities of diabetes patients. On the other side, study of the best female in science Marlena Rosa, was aimed for indication of traditional games influence on participants in games, respectively Parkinson's disease patients", said Popovic.


PICTURE 2. Prof. Stevo Popovic, chairs of the scientific committee when addressing the audience

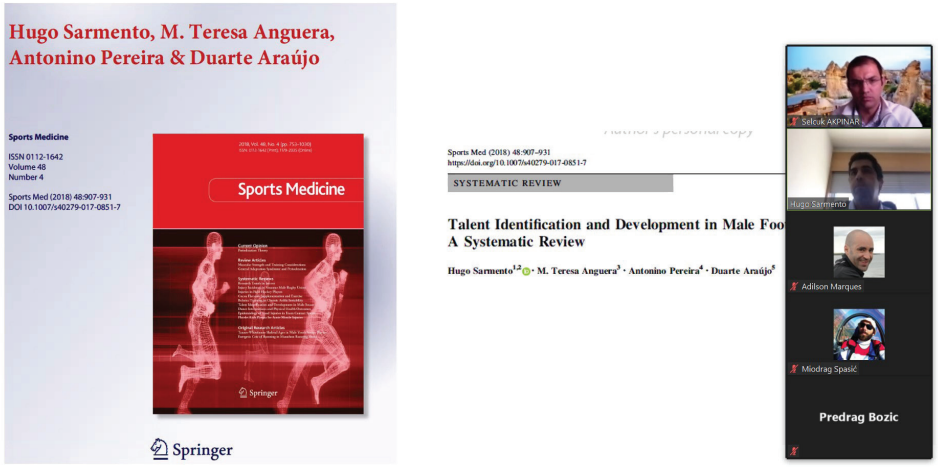
Bjelica and Popovic assert that for this conference success was significant partners support, among them especially partner universities from France, Germany, Portugal, Croatia, North Macedonia, Serbia, Kosovo, also University of Montenegro and university units, and Montenegrin Olympic Committee.

Presented abstracts from the online conference was published in Montenegrin Journal of Sports Science and Medicine, issued by Montenegrin Sports Academy and Faculty for Sport and Physical Education of University of Montenegro.

This is the first time in last 17 years that the conference is held online, caused by global pandemics and implementation of measures for prevention of expansion of virus COVID 19.

Popovic underlines that the success of the conference significantly deserving moderators in many sessions, and that relates to Selcuk Akpinar from University in Nevsehir, Turkey, Predrag Bozic from Serbian Institute of Sport and Sports Medicine, as well as Bojan Masanovic, and Jovan Gardasevic, form University of Montenegro.

"Likewise, it is worth to highlight that lecturers by call made significant part in good quality impression when it comes to conference quality, and Dean Popovic expressed gratitude to: Assoc. Prof. Gregor Starc, PhD, from University in Ljubljana, Slovenia, Assoc. Prof. Goran Gabrilo, PhD, from University in Split, Croatia, Assist. Prof. Hugo Sarmento, PhD, from University in Coimbra and Assist. Prof. Adilson Markis, PhD, from University in Lisbon, Portugal, Assoc. Prof. Selcuk Akpinar from University in Nevsehir, Turkey and Assoc. Prof. Mutlu Turkmen, PhD, from World Bowling Federation".




PICTURE 3. Picture from one of the sessions

**Acknowledgements**
There are no acknowledgements.

**Conflict of Interest**
The authors declare that there are no conflicts of interest.

**Received:** 18 May 2020 | **Accepted:** 1 June 2020 | **Published:** 17 July 2020

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Authors should submit the manuscripts as one Microsoft Word (.doc) file.

Manuscripts must be provided either in standard UK or US English or Montenegrin language. Chosen language standards should be consistent throughout the manuscripts.

Format the manuscript in A4 paper size; margins are 1 inch or 2.5 cm all around.

Type the whole manuscript double-spaced, justified alignment.

Use Times New Roman font, size eleven (11) point.

Number (Arabic numerals) the pages consecutively (centering at the bottom of each page), beginning with the title page as page 1 and ending with the Figure legend page.

Include line numbers (continuous) for the convenience of the reviewers.

Apart from chapter headings and sub-headings avoid any kind of formatting in the main text of the manuscripts.

### 1.2. Type & Length

JASPE publishes following types of papers:

Original scientific papers are the results of empirically- or theoretically-based scientific research, which employ scientific methods, and which report experimental or observational aspects of anthropology of sport and physical education from five major fields of anthropology: cultural, global, biological, linguistic and medical. Descriptive analyses or data inferences should include rigorous methodological structure as well as sound theory. Your manuscript should include the following sections: Introduction, Methods, Results, and Discussion.

☑Open Submissions ☑Indexed ☑Peer Reviewed

Original scientific papers should be:

- Up to 3000 words (excluding title, abstract, tables/figures, figure legends, Acknowledgements, Conflict of Interest, and References);
- A structured abstract of less than 250 words;
- Maximum number of references is 30;
- Maximum combined total of 6 Tables/Figures.

Review papers should provide concise in-depth reviews of both established and new areas, based on a critical examination of the literature, analyzing the various approaches to a specific topic in all aspects of anthropology of sport and physical education from five major fields of anthropology: cultural, global, biological, linguistic and medical.

☑Open Submissions ☑Indexed ☑Peer Reviewed

Review papers should be:
- Up to 6000 words (excluding title, abstract, tables/figures, figure legends, Acknowledgements, Conflict of Interest, and References);
- A structured abstract of less than 250 words;
- Maximum number of references is 100.

Editorials are written or commissioned by the editors, but suggestions for possible topics and authors are welcome. It could be peer reviewed by two reviewers who may be external or by the Editorial Board.

☐Open Submissions ☑Indexed ☑Peer Reviewed

Editorials should be:
- Up to 1000 words (excluding title, abstract, tables/figures, figure legends, Acknowledgements, Conflict of Interest, and References);
- A structured abstract of less than 250 words;
- Maximum number of references is 10.

Short reports of experimental work, new methods, or a preliminary report can be accepted as two page papers. Your manuscript should include the following sections: Introduction, Methods, Results, and Discussion.

☑Open Submissions ☑Indexed ☑Peer Reviewed

Short reports should be:
- Up to 1500 words (excluding title, abstract, tables/figures, figure legends, Acknowledgements, Conflict of Interest, and References);
- A structured abstract of less than 250 words;
- Maximum number of references is 15.

Peer review - fair review provides authors who feel their paper has been unfairly rejected (at any journal) the opportunity to share reviewer comments, explain their concerns, and have their paper reviewed for possible publication in JASPE.

☑Open Submissions ☑Indexed ☐Peer Reviewed

Peer review - fair review should be:
- Up to 1500 words (excluding title, abstract, tables/figures, figure legends, Acknowledgements, Conflict of Interest, and References);
- A structured abstract of less than 250 words;
- Maximum number of references is 15.

Invited papers and award papers include invited papers from authors with outstanding scientific credentials. Nomination of invited authors is at the discretion of the JASPE editorial board. JASPE also publishes award papers selected by the scientific committee of the publisher's conferences.

☐Open Submissions ☑Indexed ☐Peer Reviewed

Invited papers and award papers should be:
- Up to 3000 words (excluding title, abstract, tables/figures, figure legends, Acknowledgements, Conflict of Interest, and References);
- A structured abstract of less than 250 words;
- Maximum number of references is 30;
- Maximum combined total of 6 Tables/Figures.

## 1.3. Submission

JASPE only accepts electronic submission to the e-mail of the Journal Office: **jaspe@ac.me**.

Submitted material includes:

- A manuscript prepared according to the Guidelines for the Authors;
- A signed form that states the study was not previously published, nor has been submitted simultaneously for consideration of publication elsewhere, that states that all of the authors are in agreement with submission of the manuscript to JASPE, and that, for studies that use animal or human individuals, authors must include information regarding their institution's ethics committee, and which identifies the official approval number;
- A signed form that there is no conflict of interest.

Name the files according to the family name of the first author. Authors submitting revised versions of the manuscript can use the identification number of their manuscript as provided by the Journal Office. *See* example:

- ✓ FAMILY NAME-manuscript.doc – (main manuscript file)
- ✓ FAMILY NAME-statement.PDF – (authorship statement)
- ✓ FAMILY NAME-declaration.PDF – (declaration of potential conflict of interest)
- ✓ FAMILY NAME-fig1.tiff – (Figure 1)

## 1.4. Peer Review Process

A manuscript submitted for publication will be submitted to the review process as long as it fits the following criteria:

- The study was not previously published, nor has been submitted simultaneously for consideration of publication elsewhere;
- All persons listed as authors approved its submission to JASPE;
- Any person cited as a source of personal communication has approved the quote;
- The opinions expressed by the authors are their exclusive responsibility;
- The author signs a formal statement that the submitted manuscript complies with the directions and guidelines of JASPE.

The editors-in-chief and associate editors will make a preliminary analysis regarding the appropriateness, quality, originality and written style/grammar of the submitted manuscript. The editors reserve the right to request additional information, corrections, and guideline compliance before they submit the manuscript to the ad-hoc review process.

JASPE uses ad-hoc reviewers, who volunteer to analyze the merit of the study. Typically, one or two expert reviewers are consulted in a double-blind process. Authors are notified by e-mail when their submission has been accepted (or rejected). Minor changes in the text may be made at the discretion of the editors-in-chief and/or associate editors. Changes can include spelling and grammar in the chosen language, written style, journal citations, and reference guidelines. The author is notified of changes via email. The final version is available to the author for his or her approval before it is published.

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## 1.6. After Acceptance

After the manuscript has been accepted, authors will receive a PDF version of the manuscripts for authorization, as it should look in printed version of JASPE. Authors should carefully check for omissions. Reporting errors after this point will not be possible and the Editorial Board will not be eligible for them.

Should there be any errors, authors should report them to the Office e-mail address **jaspe@ac.me**. If there are not any errors authors should also write a short e-mail stating that they agree with the received version.

## 1.7. Code of Conduct Ethics Committee of Publications

JASPE is hosting the Code of Conduct Ethics Committee of Publications of the **COPE** (the Committee on Publication Ethics), which provides a forum for publishers and Editors of scientific journals to discuss issues relating to the integrity of the work submitted to or published in their journals.

# *2. MANUSCRIPT STRUCTURE*

## 2.1. Title Page

The first page of the manuscripts should be the title page, containing: title, type of publication, running head, authors, affiliations, corresponding author, and manuscript information. *See* example:

Analysis of Dietary Intake and Body Composition of Female Athletes over a Competitive Season

Original Scientific Paper

Diet and Body Composition of Female Athletes

Svetlana Nepocatych[1], Gytis Balilionis[1], Eric K. O'Neal[2]

[1]Elon University, Department of Exercise Science1, Elon, NC 27215
[2]University of North Alabama, Department of Health, Physical Education and Recreation, Florence, AL 35632

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*Elon University*

*Department of Exercise Science*

*100 Campus Dr.*

*2525 CB*

*Elon, NC 27244*

*United States*

*E-mail: snepocatych@elon.edu*

Word count: 2,946

Word count: 4259

Abstract word count: 211

Number of Tables: 3

### 2.1.1. Title

Title should be short and informative and the recommended length is no more than 20 words. The title should be in Title Case, written in uppercase and lowercase letters (initial uppercase for all words except articles, conjunctions, short prepositions no longer than four letters etc.) so that first letters of the words in the title are capitalized. Exceptions are words like: "and", "or", "between" etc. The word following a colon (:) or a hyphen (-) in the title is always capitalized.

### 2.1.2. Type of publication

Authors should suggest the type of their submission.

**2.1.3. Running head**

Short running title should not exceed 50 characters including spaces.

**2.1.4. Authors**

The form of an author's name is first name, middle initial(s), and last name. In one line list all authors with full names separated by a comma (and space). Avoid any abbreviations of academic or professional titles. If authors belong to different institutions, following a family name of the author there should be a number in superscript designating affiliation.

**2.1.5. Affiliations**

Affiliation consists of the name of an institution, department, city, country/territory (in this order) to which the author(s) belong and to which the presented / submitted work should be attributed. List all affiliations (each in a separate line) in the order corresponding to the list of authors. Affiliations must be written in English, so carefully check the official English translation of the names of institutions and departments.

Only if there is more than one affiliation, should a number be given to each affiliation in order of appearance. This number should be written in superscript at the beginning of the line, separated from corresponding affiliation with a space. This number should also be put after corresponding name of the author, in superscript with no space in between.

If an author belongs to more than one institution, all corresponding superscript digits, separated with a comma with no space in between, should be present behind the family name of this author.

In case all authors belong to the same institution affiliation numbering is not needed.

Whenever possible expand your authors' affiliations with departments, or some other, specific and lower levels of organization.

**2.1.6. Corresponding author**

Corresponding author's name with full postal address in English and e-mail address should appear, after the affiliations. It is preferred that submitted address is institutional and not private. Corresponding author's name should include only initials of the first and middle names separated by a full stop (and a space) and the last name. Postal address should be written in the following line in sentence case. Parts of the address should be separated by a comma instead of a line break. E-mail (if possible) should be placed in the line following the postal address. Author should clearly state whether or not the e-mail should be published.

**2.1.7. Manuscript information**

All authors are required to provide word count (excluding title page, abstract, tables/figures, figure legends, Acknowledgements, Conflict of Interest, and References), the Abstract word count, the number of Tables, and the number of Figures.

## 2.2. Abstract

The second page of the manuscripts should be the abstract and key words. It should be placed on second page of the manuscripts after the standard title written in upper and lower case letters, bold.

Since abstract is independent part of your paper, all abbreviations used in the abstract should also be explained in it. If an abbreviation is used, the term should always be first written in full with the abbreviation in parentheses immediately after it. Abstract should not have any special headings (e.g., Aim, Results…).

Authors should provide up to six key words that capture the main topics of the article. Terms from the Medical Subject Headings (MeSH) list of Index Medicus are recommended to be used.

Key words should be placed on the second page of the manuscript right below the abstract, written in italic. Separate each key word by a comma (and a space). Do not put a full stop after the last key word. *See* example:

**Abstract**

Results of the analysis of

***Key words:*** *spatial memory, blind, transfer of learning, feedback*

## 2.3. Main Chapters

Starting from the third page of the manuscripts, it should be the main chapters. Depending on the type of publication main manuscript chapters may vary. The general outline is: Introduction, Methods, Results, Discussion, Acknowledgements (optional), Conflict of Interest (optional), and Title, Author's Affiliations, Abstract and Key words must be in English (for both each chosen language of full paper). However, this scheme may not be suitable for reviews or publications from some areas and authors should then adjust their chapters accordingly but use the general outline as much as possible.

### 2.3.1. Headings

Main chapter headings: written in bold and in Title Case. *See* example:

- ✓ **Methods**

Sub-headings: written in italic and in normal sentence case. Do not put a full stop or any other sign at the end of the title. Do not create more than one level of sub-heading. *See* example:

- ✓ *Table position of the research football team*

### 2.3.2 Ethics

When reporting experiments on human subjects, there must be a declaration of Ethics compliance. Inclusion of a statement such as follow in Methods section will be understood by the Editor as authors' affirmation of compliance: "This study was approved in advance by [name of committee and/or its institutional sponsor]. Each participant voluntarily provided written informed consent before participating." Authors that fail to submit an Ethics statement will be asked to resubmit the manuscripts, which may delay publication.

### 2.3.3 Statistics reporting

JASPE encourages authors to report precise p-values. When possible, quantify findings and present them with appropriate indicators of measurement error or uncertainty (such as confidence intervals). Use normal text (i.e., non-capitalized, non-italic) for statistical term "p".

### 2.3.4. 'Acknowledgements' and 'Conflict of Interest' (optional)

All contributors who do not meet the criteria for authorship should be listed in the 'Acknowledgements' section. If applicable, in 'Conflict of Interest' section, authors must clearly disclose any grants, financial or material supports, or any sort of technical assistances from an institution, organization, group or an individual that might be perceived as leading to a conflict of interest.

## 2.4. References

References should be placed on a new page after the standard title written in upper and lower case letters, bold.

All information needed for each type of must be present as specified in guidelines. Authors are solely responsible for accuracy of each reference. Use authoritative source for information such as Web of Science, Medline, or PubMed to check the validity of citations.

### 2.4.1. References style

JASPE adheres to the American Psychological Association 6th Edition reference style. Check "American Psychological Association. (2009). Concise rules of APA style. American Psychological Association." to ensure the manuscripts conform to this reference style. Authors using EndNote® to organize the references must convert the citations and bibliography to plain text before submission.

**2.4.2. Examples for Reference citations**

One work by one author
- ✓ In one study (Reilly, 1997), soccer players
- ✓ In the study by Reilly (1997), soccer players
- ✓ In 1997, Reilly's study of soccer players

Works by two authors
- ✓ Duffield and Marino (2007) studied
- ✓ In one study (Duffield & Marino, 2007), soccer players
- ✓ In 2007, Duffield and Marino's study of soccer players

Works by three to five authors: cite all the author names the first time the reference occurs and then subsequently include only the first author followed by et al.
- ✓ First citation: Bangsbo, Iaia, and Krustrup (2008) stated that
- ✓ Subséquent citation: Bangsbo et al. (2008) stated that

Works by six or more authors: cite only the name of the first author followed by et al. and the year
- ✓ Krustrup et al. (2003) studied
- ✓ In one study (Krustrup et al., 2003), soccer players

Two or more works in the same parenthetical citation: Citation of two or more works in the same parentheses should be listed in the order they appear in the reference list (i.e., alphabetically, then chronologically)
- ✓ Several studies (Bangsbo et al., 2008; Duffield & Marino, 2007; Reilly, 1997) suggest that

**2.4.3. Examples for Reference list**

Journal article (print):

Nepocatych, S., Balilionis, G., & O'Neal, E. K. (2017). Analysis of dietary intake and body composition of female athletes over a competitive season. *Montenegrin Journal of Sports Science and Medicine, 6*(2), 57-65. doi: 10.26773/mjssm.2017.09.008

Duffield, R., & Marino, F. E. (2007). Effects of pre-cooling procedures on intermittent-sprint exercise performance in warm conditions. *European Journal of Applied Physiology, 100*(6), 727-735. doi: 10.1007/s00421-007-0468-x

Krustrup, P., Mohr, M., Amstrup, T., Rysgaard, T., Johansen, J., Steensberg, A., Bangsbo, J. (2003). The yo-yo intermittent recovery test: physiological response, reliability, and validity. *Medicine and Science in Sports and Exercise, 35*(4), 697-705. doi: 10.1249/01.MSS.0000058441.94520.32

Journal article (online; electronic version of print source):

Williams, R. (2016). Krishna's Neglected Responsibilities: Religious devotion and social critique in eighteenth-century North India [Electronic version]. *Modern Asian Studies, 50*(5), 1403-1440. doi:10.1017/S0026749X14000444

Journal article (online; electronic only):

Chantavanich, S. (2003, October). Recent research on human trafficking. *Kyoto Review of Southeast Asia, 4*. Retrieved November 15, 2005, from http://kyotoreview.cseas.kyoto-u.ac.jp/issue/issue3/index.html

Conference paper:

Pasadilla, G. O., & Milo, M. (2005, June 27). *Effect of liberalization on banking competition*. Paper presented at the conference on Policies to Strengthen Productivity in the Philippines, Manila, Philippines. Retrieved August 23, 2006, from http://siteresources.worldbank.org/INTPHILIPPINES/Resources/Pasadilla.pdf

Encyclopedia entry (print, with author):

Pittau, J. (1983). Meiji constitution. In *Kodansha encyclopedia of Japan* (Vol. 2, pp. 1-3). Tokyo: Kodansha.

Encyclopedia entry (online, no author):

Ethnology. (2005, July). In *The Columbia encyclopedia* (6th ed.). New York: Columbia University Press. Retrieved November 21, 2005, from http://www.bartleby.com/65/et/ethnolog.html

Thesis and dissertation:

Pyun, D. Y. (2006). *The proposed model of attitude toward advertising through sport.* Unpublished Doctoral Dissertation. Tallahassee, FL: The Florida State University.

Book:
Borg, G. (1998). *Borg's perceived exertion and pain scales*: Human kinetics.

Chapter of a book:
Kellmann, M. (2012). Chapter 31-Overtraining and recovery: Chapter taken from Routledge Handbook of Applied Sport Psychology ISBN: 978-0-203-85104-3 *Routledge Online Studies on the Olympic and Paralympic Games* (Vol. 1, pp. 292-302).

Reference to an internet source:
Agency. (2007). Water for Health: Hydration Best Practice Toolkit for Hospitals and Healthcare. Retrieved 10/29, 2013, from www.rcn.org.uk/newsevents/hydration

## 2.5. Tables

All tables should be included in the main manuscript file, each on a separate page right after the Reference section.

Tables should be presented as standard MS Word tables.

Number (Arabic) tables consecutively in the order of their first citation in the text.

Tables and table headings should be completely intelligible without reference to the text. Give each column a short or abbreviated heading. Authors should place explanatory matter in footnotes, not in the heading. All abbreviations appearing in a table and not considered standard must be explained in a footnote of that table. Avoid any shading or coloring in your tables and be sure that each table is cited in the text.

If you use data from another published or unpublished source, it is the authors' responsibility to obtain permission and acknowledge them fully.

### 2.5.1. Table heading

Table heading should be written above the table, in Title Case, and without a full stop at the end of the heading. Do not use suffix letters (e.g., Table 1a, 1b, 1c); instead, combine the related tables. *See* example:

- ✓ **Table 1.** Repeated Sprint Time Following Ingestion of Carbohydrate-Electrolyte Beverage

### 2.5.2. Table sub-heading

All text appearing in tables should be written beginning only with first letter of the first word in all capitals, i.e., all words for variable names, column headings etc. in tables should start with the first letter in all capitals. Avoid any formatting (e.g., bold, italic, underline) in tables.

### 2.5.3. Table footnotes

Table footnotes should be written below the table.

General notes explain, qualify or provide information about the table as a whole. Put explanations of abbreviations, symbols, etc. here. General notes are designated by the word *Note* (italicized) followed by a period.

- ✓ *Note.* CI: confidence interval; Con: control group; CE: carbohydrate-electrolyte group.

Specific notes explain, qualify or provide information about a particular column, row, or individual entry. To indicate specific notes, use superscript lowercase letters (e.g. $^{a, b, c}$), and order the superscripts from left to right, top to bottom. Each table's first footnote must be the superscript $^{a}$.

- ✓ $^{a}$One participant was diagnosed with heat illness and n = 19.$^{b}$n =20.

Probability notes provide the reader with the results of the texts for statistical significance. Probability notes must be indicated with consecutive use of the following symbols: * † ‡ § ¶ || etc.

- ✓ *P<0.05,†p<0.01.

#### 2.5.4. Table citation

In the text, tables should be cited as full words. *See* example:

- ✓ Table 1 (first letter in all capitals and no full stop)
- ✓ ...as shown in Tables 1 and 3. (citing more tables at once)
- ✓ ...result has shown (Tables 1-3) that... (citing more tables at once)
- ✓ ....in our results (Tables 1, 2 and 5)... (citing more tables at once)

## 2.6. Figures

On the last separate page of the main manuscript file, authors should place the legends of all the figures submitted separately.

All graphic materials should be of sufficient quality for print with a minimum resolution of 600 dpi. JASPE prefers TIFF, EPS and PNG formats.

If a figure has been published previously, acknowledge the original source and submit a written permission from the copyright holder to reproduce the material. Permission is required irrespective of authorship or publisher except for documents in the public domain. If photographs of people are used, either the subjects must not be identifiable or their pictures must be accompanied by written permission to use the photograph whenever possible permission for publication should be obtained.

Figures and figure legends should be completely intelligible without reference to the text.

The price of printing in color is 50 EUR per page as printed in an issue of JASPE.

#### 2.6.1. Figure legends

Figures should not contain footnotes. All information, including explanations of abbreviations must be present in figure legends. Figure legends should be written bellow the figure, in sentence case. *See* example:

- ✓ **Figure 1.** Changes in accuracy of instep football kick measured before and after fatigued. SR – resting state, SF – state of fatigue, *p>0.01, †p>0.05.

#### 2.6.2. Figure citation

All graphic materials should be referred to as Figures in the text. Figures are cited in the text as full words. *See* example:

- ✓ Figure 1
  - × figure 1
  - × Figure 1.
  - ✓ ….exhibit greater variance than the year before (Figure 2). Therefore…
  - ✓ ….as shown in Figures 1 and 3. (citing more figures at once)
  - ✓ ….result has shown (Figures 1-3) that... (citing more figures at once)
  - ✓ ….in our results (Figures 1, 2 and 5)... (citing more figures at once)

#### 2.6.3. Sub-figures

If there is a figure divided in several sub-figures, each sub-figure should be marked with a small letter, starting with a, b, c etc. The letter should be marked for each subfigure in a logical and consistent way. *See* example:

- ✓ Figure 1a
- ✓ …in Figures 1a and b we can…
- ✓ …data represent (Figures 1a-d)…

## 2.7. Scientific Terminology

All units of measures should conform to the International System of Units (SI).

Measurements of length, height, weight, and volume should be reported in metric units (meter, kilogram, or liter) or their decimal multiples.

Decimal places in English language are separated with a full stop and not with a comma. Thousands are separated with a comma.

| Percentage | Degrees | All other units of measure | Ratios | Decimal numbers |
|---|---|---|---|---|
| ✓ 10% | ✓ 10º | ✓ 10 kg | ✓ 12:2 | ✓ 0.056 |
| × 10 % | × 10 º | × 10kg | × 12 : 2 | × .056 |

| Signs should be placed immediately preceding the relevant number. | | |
|---|---|---|
| ✓ 45±3.4 | ✓ p<0.01 | ✓ males >30 years of age |
| × 45 ± 3.4 | × p < 0.01 | × males > 30 years of age |

## 2.8. Latin Names

Latin names of species, families etc. should be written in italics (even in titles). If you mention Latin names in your abstract they should be written in non-italic since the rest of the text in abstract is in italic. The first time the name of a species appears in the text both genus and species must be present; later on in the text it is possible to use genus abbreviations. *See* example:

- ✓ First time appearing: *musculus biceps brachii*

Abbreviated: *m. biceps brachii*

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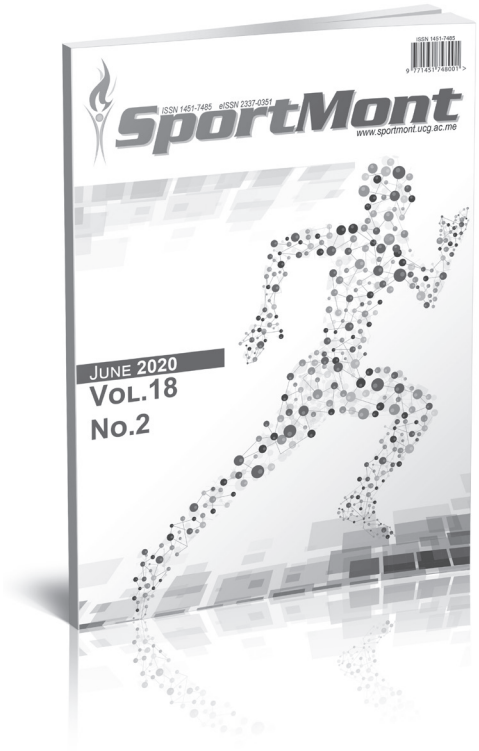


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- Community-based dialogue on articles;
- Worldwide media coverage.

SMJ is published three times a year, in February, June and October of each year. SMJ publishes original scientific papers, review papers, editorials, short reports, peer review - fair review, as well as invited papers and award papers in the fields of Sports Science and Medicine, as well as it can function as an open discussion forum on significant issues of current interest.

SMJ covers all aspects of sports science and medicine; all clinical aspects of exercise, health, and sport; exercise physiology and biophysical investigation of sports performance; sport biomechanics; sports nutrition; rehabilitation, physiotherapy; sports psychology; sport pedagogy, sport history, sport philosophy, sport sociology, sport management; and all aspects of scientific support of the sports coaches from the natural, social and humanistic side.

Prospective authors should submit manuscripts for consideration in Microsoft Word-compatible format. For more complete descriptions and submission instructions, please access the Guidelines for Authors pages at the SMJ website: http://www.sportmont.ucg.ac.me/?sekcija=page&p=51. Contributors are urged to read SMJ's guidelines for the authors carefully before submitting manuscripts. Manuscripts submissions should be sent in electronic format to sportmont@ac.me or contact following Editors:

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Publication date: Autumn issue – October 2020
Winter issue – February 2021
Summer issue – June 2021

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The University of Montenegro is the leading higher education and research institution in Montenegro. It is a public institution, established by the state, operating as a unique legal entity represented by the Rector. It is an integrated university organized on the model of the most European universities. Organizational units are competent for provision of study programmes, scientific-research and artistic work, use of allocated funds and membership in professional associations.

Since its foundation, the University of Montenegro has continuously been conducting reforms in the area of education and research, while since 2003 in line with the trends in EHEA. After adoption of the Bologna Declaration, University of Montenegro organized systematic preparation of documents aligned with it. Already in 2003, the experimental teaching programme started and today, all studies are organised in line with the Bologna principles. During the last two years systematic reforms of the University`s study programes have been conducted in order to harmonize domestic higher education system with European standards and market needs to highest extent.

The University of Montenegro has unique academic, business and development objectives. It comprises 19 faculties and two research institutes. The seat of the UoM is in Podgorica, the capital city, while university units are located in eight Montenegrin towns. The University support services and centers (advisory services, accounting department, international cooperation, career orientation) are located in the Rectorate.

Academic community of University of Montenegro is aware of the importance of its functioning for further development of the state and wider region. It has been so far, and will be in the future, the leader in processes of social and cultural changes, along with the economic development.

In the aspect of attaining its mission, University of Montenegro is oriented towards the priority social needs of the time in which it accomplishes its mission; open for all the students and staff exclusively based on their knowledge and abilities; dedicated to preservation of multicultural and multi-ethnic society in Montenegro; entrepreneurial in stimulating social and economic application of supreme achievements within the scope of its activities.

In 2015/16 there were a total of 1.192 employees at UoM, 845 of which were engaged in teaching. In the same year there were 20.236 students registered at all three cycles of studies.

Internationalization is high on the agenda of UoM priorities, thus it has participated in a number of international projects – over 50 projects funded under the Tempus programme, over 15 Erasmus Mundus Action 2 projects for student mobility, a number of projects under FP7 funding scheme or IPA supported projects, Erasmus + capacity building and International credit mobility projects and other.

For more information about University of Montenegro, please visit our website www.ucg.ac.me or send e-mail to pr.centar@ac.me.

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# Sports Science and Medicine Journals

## from Montenegrin Sports Academy

We have expanded the quality of our journals considerably over the past years and can now claim to be the market leader in terms of breadth of coverage.

As we continue to increase the quality of our publications across the field, we hope that you will continue to regard MSA journals as authoritative and stimulating sources for your research. We would be delighted to receive your comments and suggestions, mostly due to the reason your proposals are always welcome.

# Look Inside!


## Sport Mont Journal

Editors-in-Chief: **Dusko Bjelica**, Montenegro; **Zoran Milosevic**, Serbia
Managing Editor: **Jovan Gardasevic**, Montenegro

*Volume 18, 2020, 3 issues per year; Print ISSN: 1451-7485, Online ISSN: 2337-0351*

Sport Mont Journal is a scientific journal that provides: Open-access and freely accessible online; Fast publication time; Peer review by expert, practicing researchers; Post-publication tools to indicate quality and impact; Community-based dialogue on articles; Worldwide media coverage. SMJ is published three times a year, in February, June and October of each year. SMJ publishes original scientific papers, review papers, editorials, short reports, peer review - fair review, as well as invited papers and award papers in the fields of Sports Science and Medicine, as well as it can function as an open discussion forum on significant issues of current interest.

**www.sportmont.ucg.ac.me**


## Montenegrin Journal of Sports Science and Medicine

Editors-in-Chief: **Dusko Bjelica**, Montenegro; **Stevo Popovic**, Montenegro
Executive Editor: **Selçuk Akpınar**, Turkey
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*Volume 9, 2020, 2 issues per year; Print ISSN: 1800-8755, Online ISSN: 1800-8763*

Montenegrin Journal of Sports Science and Medicine (MJSSM) is published biannually, in September and March of each year. MJSSM publishes original scientific papers, review papers, editorials, short reports, peer review - fair review, as well as invited papers and award papers in the fields of Sports Science and Medicine, as well as it can function as an open discussion forum on significant issues of current interest. MJSSM covers all aspects of sports science and medicine; all clinical aspects of exercise, health, and sport; exercise physiology and biophysical investigation of sports performance; sport biomechanics; sports nutrition; rehabilitation, physiotherapy; sports psychology; sport pedagogy, sport history, sport philosophy, sport sociology, sport management; and all aspects of scientific support of the sports coaches from the natural, social and humanistic side.

**www.mjssm.me**

Montenegrin Journal of Sports Science and Medicine

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OF **S**PORTS **S**CIENCE
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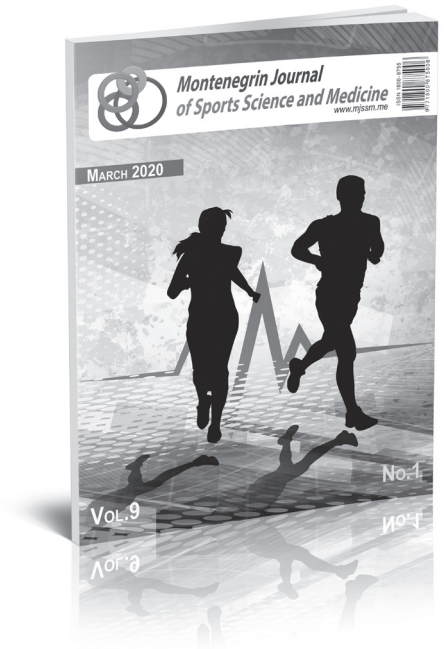


ISSN 1800-8755

# CALL FOR CONTRIBUTIONS

Montenegrin Journal of Sports Science and Medicine (MJSSM) is a print (ISSN 1800-8755) and electronic scientific journal (eISSN 1800-8763) aims to present easy access to the scientific knowledge for sport-conscious individuals using contemporary methods. The purpose is to minimize the problems like the delays in publishing process of the articles or to acquire previous issues by drawing advantage from electronic medium. Hence, it provides:

- Open-access and freely accessible online;
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- Peer review by expert, practicing researchers;
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Prospective authors should submit manuscripts for consideration in Microsoft Word-compatible format. For more complete descriptions and submission instructions, please access the Guidelines for Authors pages at the MJSSM website: http://www.mjssm.me/?sekcija=page&p=51. Contributors are urged to read MJSSM's guidelines for the authors carefully before submitting manuscripts. Manuscripts submissions should be sent in electronic format to office@mjssm.me or contact following Editors:

Dusko BJELICA, Editor-in Chief – dbjelica@ucg.ac.me
Stevo POPOVIC, Editor-in Chief – stevop@ucg.ac.me
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Publication date: Autumn issue – September 2020
Spring issue – March 2021

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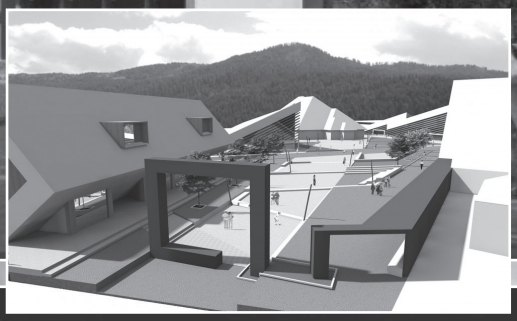

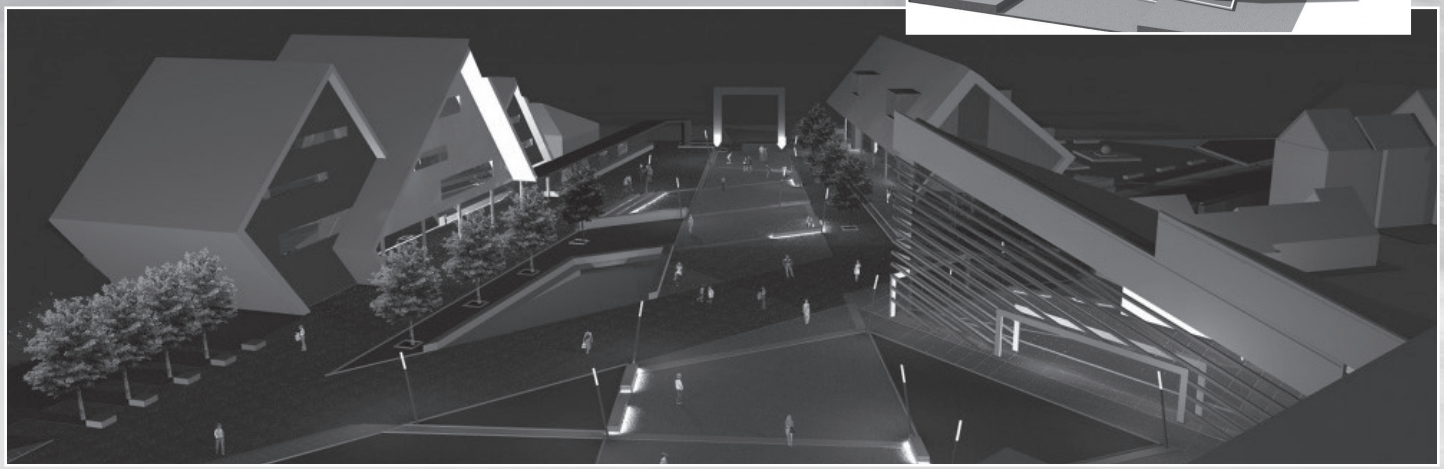

The goal of establishment of our institution is the education highly qualified professional cadre based on the best knowledge of the theory and practice in the world, and its application to the development and implementation of plans and projects in the space - as a basic condition for the quality valorization, programming, management and protection of natural and inherited built environment. In this way conceptualized school forms internationally experts in all areas of creativity - in the field of urban planning, architecture, construction and design - which includes the ability to create useful objects, architectural forms of all categories, urban and vacant space at different levels. Such qualified cadre are the spiritus movens of development of culture and technology in the modern world.

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Montenegrin Journal
of Sports Science and Medicine
www.mjssm.me
ISSN 1800-8755
SEPTEMBER 2020
VOL.9
NO.2

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Fakultet za sport i fizičko vaspitanje
Univerzitet Crne Gore

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*Znanje i zdravlje!*

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# UNIVERZITET CRNE GORE
# INSTITUT ZA BIOLOGIJU MORA

INSTITUT ZA BIOLOGIJU MORA

University of Montenegro – Institute for marine biology is located in Kotor, Montenegro. Since its establishment in 1961, the Institute performed comprehensive research of the marine and coastal area, which has its wide impact to the environmental protection, pollution-prevention and practical application. Core competencies of the Institute are focused on research in the fields of marine conservation, ichthyology and marine fisheries, marine chemistry, aquaculture, plankton research, neuro and eco-physiology. The main research area is investigating and protection of Adriatic sea with special interest of South Adriatic area. Institute for marine biology have a wide range of international cooperation with Marine research institutions and Universities all over Mediterranean area trough a numerous Eu funded scientific projects.

All over the year Institute is looking to hire a young students from the field of general biology, marine biology, marine chemistry, molecular biology or similar disciplines on voluntary basis to work with us. We need opportunity for international internship or MSc or PhD thesis that could be performed on Institute in our 5 different labs: Fisheries and ichthyology, Aquaculture, Marine chemistry, Plankton and sea water quality and Benthos and marine conservation.

Every year Institute organize several summer schools and workshop for interested students, MSc and PhD candidates. From 01-05 July 2019 we will organize Summer school "Blue Growth: emerging technologies, trends and opportunities" in frame of InnoBlueGrowth Project who is financed by Interreg Med programme. Through the specific theme courses, workshops and working labs offered – covering different areas of the blue economy – the Summer School aims at encouraging young people involvement in blue economy sectors by offering high-quality technical knowledge and fostering their entrepreneurial spirit. The Summer School will facilitate fruitful exchanges and a stronger understanding among a variety of actors coming from different Mediterranean countries with diverse profiles, including representatives from the academia, the public and private sectors, but also potential funders and investors. These activities will count on specific team building activities for participants as well to reinforce interpersonal skills and foster cohesion among blue academia and sectors.

If You are interested apply on the following link: https://www.ucg.ac.me/objava/blog/1221/objava/45392-ljetnja-skola-plavi-rast-nove-tehnologije-trendovi-i-mogucnosti

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University of Montenegro
FACULTY of ECONOMICS PODGORICA

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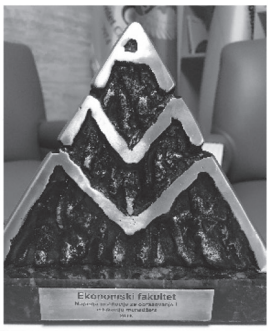
# Faculty of Economics
# University of Montenegro

The Faculty of Economics celebrated its 57th anniversary this year, and it is the oldest higher education institution in the country. Since its establishment, 8,630 students graduated at our Faculty.

Today, Faculty of Economics is a largely interdisciplinary institution, characterized by expressed dynamism in its work. Employees at the Faculty are dedicated to constant improvements and enhancements, all in accordance with the needs brought by the changes.




We provide our students with the best theoretical and practical knowledge, enabling them to develop critical spirit in approaching economic phenomena and solving concrete problems in daily work. From September 2017, at the Faculty, the new generation will start a 3 + 2 + 3 study, which will improve the quality of studying.

Development of Faculty of Economics in the coming period will follow the vision of development of the University of Montenegro, pursuing full achievement of its mission

Comprehensive literature, contemporary authors and works have always been imperative in creation of new academic directions at Faculty of Economics, which will form the basis of our future.

Faculty and its employees are dedicated to developing interest in strengthening the entrepreneurial initiative, creative and interdisciplinary approach among young people, using modern teaching and research methods. In this regard, the Faculty has modern textbooks and adequate IT technology, which supports the objectives set.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CIP – Каталогизација у публикацији
Национална библиотека Црне Горе, Цетиње

ISSN 2536-569X
COBISS.CG-ID 33826832

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