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HEALTH SPORT RECREATION

14th May 2021, Belgrade

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„ HEALTH, SPORT, RECREATION“

ČETVRTA MEĐUNARODNA NAUČNA KONFERENCIJA
„ ZDRAVLJE, SPORT, REKREACIJA“

BOOK OF ABSTRACTS

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ZBORNIK SAŽETAKA

COLLEGE OF SPORTS AND HEALTH /
VISOKA SPORTSKA I ZDRAVSTVENA ŠKOLA

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Editors:
PhD, Aleksandar Ivanovski, Prof., College of Sports and Health, Belgrade
PhD, Marijana Mladenović, Prof., College of Sports and Health, Belgrade
Biljana Đurđević, College of Sports and Health, Belgrade

Layout:
Ma, Bojan Ugrinić, College of Sports and Health, Belgrade

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Ma, Bojan Ugrinić, College of Sports and Health, Belgrade

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Izdavač:
Visoka sportska i zdravstvena škola, Toše Jovanovića 11, Beograd

Urednici:
Dr Aleksandar Ivanovski, Prof., Visoka sportska i zdravstvena škola, Beograd
Dr MarijanaMladenović, Prof., Visoka sportska i zdravstvena škola, Beograd
Biljana Đurđević, Visoka sportska i zdravstvena škola, Beograd

Tehnička obrada:
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Grafički dizajn:
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FOREWORD

The COVID-19 pandemic has affected all aspects of life in the past year and a half, not just health. A new way of life, which suppresses the natural need of the human organism to move, has governed the planet seemingly without a reasonable alternative. In an effort to preserve not only health, but also life, we were forced to engage in a new way of functioning, which in turn brings new challenges to maintaining health, as well as the affinity for sports and recreation.
This conference, the fourth in a row, entitled "Health, Sports, Recreation", is based on enthusiasm and the need to see the entire horizon of human functioning in the conditions of the COVID-19 pandemic. Focusing on health, we must not lose sight of the importance of sports and recreation in the function of preserving the overall psychophysical well-being of human functioning.
Through keynote lectures at the conference, the latest findings of scientific research on the interrelationship between sport, health and the COVID-19 pandemic were presented. Within three separate modules and scientific-professional fields: health, sports and recreation, conference participants coming from thirteen countries (Italy, Spain, Portugal, Greece, Turkey, Iran, Czech Republic, Moldova, Romania, Croatia, Bosnia and Herzegovina, North Macedonia, Serbia) presented and discussed the results of their scientific research and professional reflections.
We hope that with such a concept and realization of the conference, we managed to push the boundaries of scientific and professional knowledge in this moment marked by the COVID-19 pandemic.

Conference Programme and Organizing Committe

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UVODNA REČ

Pandemija covid19 obeležila je sve aspekte života u proteklih godinu i po dana, a ne samo zdravlje. Novi način života, koji potire prirodnu potrebu ljudskog organizma za kretanjem, zavladao je planetom naizgled bez argumentovane alternative. U nastojanju da se očuva ne samo zdravlje, već i život, bili smo primorani na nov način funkcionisanja, koji pak sa svoje strane donosi nove izazove očuvanju zdravlja, ali i afiniteta prema sportu i rekreaciji.
Ova konferencija, četvrta po redu, pod nazivom ’’Zdravlje, sport, rekreacija’’ iznikla je na entuzijazmu i potrebi da se sagleda celovit horizont ljudskog funkcionisanja u uslovima pandemije covid19. Stavljajući u prvi plan zdravlje, ne smemo izgubiti iz vida značaj sporta i rekreacije u funkciji očuvanja sveukupne psihofizičke dobrobiti ljudskog funkcionisanja.
Kroz uvodna predavanja na konferenciji predstavljeni su upravo najnoviji nalazi naučnih istraživanja o medjusobnoj povezanosti sporta, zdravlja i pandemije covid19. U okviru tri odvojene celine i naučno-stručna polja: zdravlje, sport i rekreacija, učesnici konferencije koji dolaze iz trinaest zemalja (Italija, Španija, Portugalija, Grčka, Turska, Iran, Češka, Moldavija, Rumunija, Hrvatska, Bosna i Herecegovina, Severna Makedonija, Srbija) prikazali su i diskutovali rezultate svojih naučnih istraživanja i stručnih promišljanja.
Nadamo se da smo tako koncipiranom i realizovanom konferencijom uspeli da pomerimo granice naučnog i stručnog saznanja u aktuelnom trenutku obeleženom covid19 pandemijom.

Programsko-organizacioni odbor konferencije

CONTENT / SADRŽAJ

ACCEPTED AUTHOR ABSTRACTS / PRIHVAĆENIH AUTORSKIH SAŽETAKA

KEYNOTE LECTURES / PLENARNA PREDAVANJA

HEALTH, SPORT, RECREATION
ZDRAVLJE, SPORT, REKREACIJA

KEYNOTE LECTURES

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PLENARNA PREDAVANJA

PSYCHOLOGICAL STATES IN ATHLETES AND COACHES DURING COVID-19 PANDEMIC: AN ALLOSTATIC PERSPECTIVE OF STRESS-RECOVERY BALANCE

Maurizio Bertollo

Behavioral Imaging and Neural Dynamics (BIND) Center, Department of Medicine and Aging Sciences, University "G. d'Annunzio" of Chieti-Pescara, Chieti, Italy

Abstract: Allostasis and homeostasis are two key concepts in sport and physical training (Bompa et al. 2019). Homeostasis refers to the psychophysiological state of quiet that keep us alive, whereas allostasis refers to the active process of adaptation to life challenges. Accordingly, allostasis should not be conceived as a set of controlled homeostatic conditions to defend, but rather as a series of processes and strategies that protect individuals' functionality in an ever-changing environment. Thus, what is important to seek is not the homeostatic permanency but rather the stability through change. The recent global outspread of the COVID-19 pandemic has influenced the lives of people across multiple countries including athletes, coaches, and supporting staff and impacted their well-being and they had to adapt to new challenges. The objectives of our investigation were to: a) explore differences by gender, typology of sport (individual vs. team), and competitive level (elite vs. non-elite) in perceived stress and functional/dysfunctional psychobiosocial states (di Fronso et al. 2020), athletic identity (Costa et al. 2020), cognitive emotion regulation (Santi et al., 2021) and b) to see the effect of a psychological intervention on mental health in elite professional cyclists (Bertollo et al.2021) during the Covid-19 lockdown period. 1354 competitive athletes and 2272 coaches were surveyed during the period of lockdown, and 38 professional cyclists were involved in the psychological intervention study. Multivariate and univariate analyses were run to evaluate differences between the different groups of athletes and RM-ANOVA was run to investigate the effect of the psychological intervention on professional athletes. Analysis of variance revealed significant differences by gender on perceived stress and psychobiosocial states, as well as by competitive level on perceived stress and functional psychobiosocial states. Specifically, women reported higher perceived stress and dysfunctional psychobiosocial states scores than men, and lower functional psychobiosocial states scores. Elite athletes reported lower perceived stress and higher functional psychobiosocial states scores than novice athletes. Moreover, during the lockdown, elite athletes and team sports athletes showed higher athletic identity. Cognitive emotion regulation strategies were different for gender and for competitive level. Finally, athletes with higher athletic identity tend to ruminate and catastrophize more. Professional cyclists who followed the psychological intervention were able to cope better with psychological stressors, showing improved well-being compared to the athletes that did not. The studies also provide practical implication related to cases of reduced mental health due to injury, illness, or similar situations of home confinement.

Keywords: Sport psychology Lockdown ·Mental health, Adversity, Psychological well-being

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ENHANCING ENJOYMENT AND MOTIVATION IN YOUTH SPORT AND PHYSICAL EDUCATION DURING AND AFTER THE COVID-19 PANDEMIC

Francesca Vitali

University of Verona

Abstract: Physical activity (PA) (e.g., sport, physical education) promotes the psychophysical development of youth, enhances health and wellbeing, offers opportunities for enjoyable experiences, increases self-efficacy (see Eime et al., 2013 for a review). A primary aim of youth sport programs is to promote psychological and social development as well as improvement of physical skills and fitness. Moreover, youth sport and physical education are generally recognized as contexts where life skills can be intentionally teached by coaches and teachers who seriously consider also the educational potentials of PA. It has been suggested that engagement in PA should results in a pleasant experience for youth to foster their motivation and participation throughout a lifetime. Covid-19 pandemic has posed new challenges to coaches and teachers to enhance enjoyment (e.g., pleasure, positive psychobiosocial (PBS) states) and motivation in youth. A short review of physical and psychological benefits of regular PA in youth is presented, emphasizing both the role of youth sport and physical education as powerful socializing agents having an important impact on establishing PA habits. The main theoretical frameworks studying motivational processes in sport and physical education considers self-efficacy and enjoyment as two main determinants of motivation and participation. A presentation of self-efficacy and enjoyment (Vitali et al., 2019) within motivational theories is given together with research findings that (a) highlight the importance of task-involving climate and competence need satisfaction in physical education to determine pleasant emotional states and, consequently, in promoting leisure-time PA (Di Battista et al., 2019) and (b) suggest that teachers' induced achievement motivational climates can influence students' perceptions and prompt PBS states consistent with the motivational atmosphere (Bortoli et al., 2015). Paper and pencil and pictorial scales (Morano et al., 2019) to measure these constructs in children and youngsters are also presented. Enjoyment and motivation can be enhanced in sport and physical education by coaches and teachers who create a task-involving climate that can foster individual intention to engage in PA.

Keywords: physical activity; enjoyment; self-efficacy; motivation; Covid-19.

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HEALTH, SPORT, RECREATION

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ZDRAVLJE, SPORT, REKREACIJA

RELATIONSHIP BETWEEN COGNITIVE DEFICIT AND GAIT RECOVERY IN NEUROLOGICAL PATIENTS IN THE REHABILITATION PROCESS

Sladjana Arsic[1], Dragana Kljajic, Fadilj Eminovic; Goran Nedovic

The Academy of Applied Preschool Teaching and Health Studies Department Cuprija

Abstract: In the last few decades, there has been a lot of talk about the problem of cognitive deficit in neurological patients, as well as the connection with motor impairments, with an emphasis on gait function. Multiple cognitive effects on walking, movement control and certain behaviors during walking have been observed. Preservation of cognitive functions is of special importance for the rehabilitation of neurological patients. Purpose: The main goal of the research is based on the comparison of motor function and gait parameters with cognitive impairment in the examined patients after stroke. Methods: The study included 50 examined neurological patients after stroke, with diagnosed hemiparesis and completed early rehabilitation. The following were used to assess cognitive functioning: Mini Mental State Examination - MMSE; WCST - Wisconsin card sorting test and Trail Making Test - TMT A / B. The Functional Ambulation Category - FAC test was used to assess movement function. Results: The results show that the examined patients after stroke with cognitive impairment have lower walking speed, lower walking frequency and shorter stride length than the examined patients after stroke without cognitive impairment, the difference is statistically significant. The results support the claim that there are specific cognitive deficits in patients after stroke, which may have an impact on the motor difficulties of these patients. Conclusion: One of the important goals of the rehabilitation process is to help the patient achieve the highest possible level of functional independence, within which walking is a basic component of independent functioning. The practical significance of the research can be fully confirmed, if the established connection is significant for the application of cognitive rehabilitation within medical rehabilitation and enable the achievement of a high degree of functional independence of neurological patients.

Keywords: cognitive functions; motor recovery; stroke; rehabilitation

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[1] sarsic101@gmail.com

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INCIDENCE OF POSITIVE CASES IN ROMANIA, IN THE PERIOD 2005-2020

Berbecaru Claudia Florentina[1], Gabriela Andreiașu, Monica Stănescu

National University of Physical Education and Sports, Bucharest, Romania, Romanian Anti-Doping Agency

Abstract: Research in the field shows that substance abuse has a growing performance a growing problem in both performance and recreational sports. Doping undermines the values of sport: ethics, fair play, respect, health, courage, etc. and it can also cause various negative short- and long-term health consequences for its users. The National Anti-Doping Agency in Romania has an activity of 15 years in the field of testing and sports education. It is a public institution with legal personality, subordinated to the Romanian Government. Achieving anti-doping education is one of the most important responsibilities of specialized institutions in this field. Years ago, the focus was on testing athletes to detect the use of banned substances. Currently, national anti-doping organizations, independently or in partnership with various educational institutions (pre-university, university) or non-formal education, with shifted emphasis on values-based education and rehabilitation program for athletes who use substances of abuse. The paper proposes to present comprehensive data related to the use of prohibited substances and methods in the period 2005-2020, in Romania. This data could be used in the preparation of anti-doping policies and anti-doping prevention programs. More precisely, the objectives of this analysis is to explore the prevalence of doping in Romania, but also characteristics of age, gender, sports, banned substances used. The conclusions of the paper highlight that many cases of doping are in bodybuilding, athletics, weightlifting, rugby, handball, disciplines with high risk of doping; the most used substances being anabolic steroids and the year with the most cases of doping was 2015, when substantial changes were introduced in the 2015 version of the World Anti-Doping Code, as well as by introducing meldonium on the Prohibited List.

Keywords: anti-doping, the prohibited list, violation of anti-doping regulations

References:

1. National University of Physical Education and Sports, Bucharest, Romania and Romanian Anti-Doping Agency

[1] claudia_fox2004@yahoo.com

ŽENE U SPORTU KAO TRENERI, SUDIJE I IGRAČI

Zorica Bjelić, Branka Velojić[1]

Visoka sportska i zdravstvena škola, Beograd

Sažetak: Žene danas učestvuju u različitim sferama sporta. Mogu biti igrači, pomoćni ili glavni treneri, organizatori takmičenja, sudije, rukovodioci klubova, saveza i različitih sportskih organizacija, predsednici sportskih udruženja, sportski novinari i dr. Postoje razne predrasude o ženama u sportu, što zbog toga što je sport prevashodno bio namenjen muškarcima, što zbog uloge žene u porodici, religije, majčinstva i u nekim zemljama marginalizovanoj poziciji žene. Bez obzira na to što žena ima sve više u sportu i dalje su muškarci ti koji su poznatiji i slavniji i kojima se sponzori više „okreću". Žene su te koje moraju napraviti i uvek držati balans izmedju porodičnog, društvenog života, karijere i sporta. Ukoliko se ne bave profesionalno sportom, žene retko mogu da obezbede egzistenciju, samim tim su primorane da pored svih ostalih obaveza imaju i dodatni posao. Direktna diskriminacija žena u sportu je sve manje prisutna, ali se nameće samim položajem žene u društvu, pogotovu kada je reč o „muškim sportovima" ili ženama koje dolaze iz zemalja u kojima je na neki način ženama zabranjeno da učestvuju u bilo kakvim aktivnostima ovog tipa. Medijski su žene sportisti manje praćene od muškaraca i kada se piše o ženama u sportu ne piše se često samo o uspehu žene, već se često akcenat stavlja na njihov izgled i druge stvari koje nisu vezane za sport. Takodje, znatno je manje žena i na upravljačkim pozicijama u oblasti sporta kako kod nas, tako i u ostalim zemljama.

Ključne reči: žene, sport, porodica, posao, egzistencija

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[1] branka.velojic@vss.edu.rs

WOMEN AS A PART OF SPORTS - COACHES, REFEREES AND PLAYERS

Zorica Bjelić, Branka Velojić[1]

College of Sports and Health, Belgrade, Serbia

Abstract: Today, women can be a part of different sports fields. They can be players, assistant or head coaches, competitions organizers, referees, managers of clubs, sports federation or sports organizations, presidents of sports associations, sports journalists etc. There are many prejudices concering women as a part of sports because sports were first meant for men, and due to women's family role, religion, motherhood and marginalization of women in some countries. It can be concluded regardless of an increase of women in sports that sportsmen are still those who are more famous and popular and who sponsors would rather collaborate with. Women are the ones who have to create and keep the balance between their family and social life, their career and their sports involvement. If they are not professional sports players, rarely can women earn enough money to pay for basic living expenses. Thus, beside all their responsibilites, they have to search for another job. Explicit discrimination of women in sports is decreasing, but it is directly connected to their position in the society, especially when it comes to ''men's sports'' or women that come from countries which forbid them from participating in any activities of this kind. Female sportsplayer are talked about less that their male counterparts in the media. And when they are mentioned, the newspapers do not write only about their success, but their looks and other non-sports related deailes are noted as well. Also, the number of sports women who are sports managers and presidents is significantly lower both in Serbia and other countries. This paper focuses on highlighting women's position in sports. As references for this paper, various domestic and foreign sources were used: scientific and vocational magazines, as well as other publications that refer to matters which this paper focuses on.

Keywords: women, sports, family, work

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[1] branka.velojic@vss.edu.rs

TRETMAN SKOLIOTIČNOG DRŽANJA TELA KOREKTIVNIM VEŽBAMA KOD DECE PREDŠKOLSKOG I ŠKOLSKOG UZRASTA

Emir Biševac[1], Elvis Mahmutović, Zana Dolićanin

Departman za biomedicinske nauke, Državni univerzitet u Novom Pazaru, Srbija

Sažetak: Skoliotično držanje nastaje usled slabosti mišića jedne strane i skraćenosti mišića druge strane trupa. Karakteriše se spuštenošću jednog ramena u odnosu na drugo, denivelacijom lopatica i asimetrijom Lorencovih trouglova. Cilj rada je bio ispitati da li redovnim izvođenjem korektivnih vežbi kojima se isteže skraćena, a jača oslabljena muskulatura može da se popravi držanje tela. Prospektivna studija je obuhvatila 110 dece predškolskog i osnovnoškolskog uzrasta od 6 do 12 godina (prosečne starosti 6.6±2.4 godina). Za procenu skoliotičnog držanja primenjene su metode somatoskopije i somatometrije. Prilikom ispitivanja su korišćeni lenjir, dermograf i visak. Od 110 ispitane dece utvrđeno je da njih 11 (10%) na inicijalnom pregledu ima skoliotično držanje. Na prvom kontrolnom pregledu koji je izvršen nakon 3 meseca, ukupno 6 dece (5.5%) je imalo skoliotično držanje, dok je na drugom kontrolnom pregledu koji je izvršen nakon 6 meseci, 4 dece (3.6%) je imalo skoliotično držanje tela. Wilcoxonov test ranga je otkrio da ne postoji statistički značajna razlika između prvog i drugog pregleda (p=.059), dok između prvog i trećeg postoji (p=.008). Na osnovu toga možemo zaključiti da se šestomesečnim jačanjem slabih i istezanjem skraćenih mišića postiže pozitivan efekat kada je u pitanju nepravilno skoliotično držanje tela.

Ključne reči*:* skolioza, korektivne vežbe, jačanje mišića

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[1] emirbisevac95@gmail.com

TREATMENT OF SCOLIOTIC BODY POSTURE WITH CORRECTIVE EXERCISES IN PRESCHOOL AND SCHOOL AGED CHILDREN

Emir Biševac[1], Elvis Mahmutović, Zana Dolićanin

State University of Novi Pazar, Department of Biomedical sciences, Serbia

Abstract: Scoliotic posture occurs due to muscle weakness on one side and shortening of the muscles on the other side of the torso. It is characterized by one shoulder being lower in relation to the other, denivelation of the blades and asymmetry of the Lorentz triangles. The aim of the paper was to examine whether by performing corrective exercises which stretch shortened, and strengthen weakened muscles on a regular basis can improve body posture. The prospective study included 110 children (the average age 6.6±2.4). Corrective exercises were performed four times a week, for periods of 90 minutes. To assess the body posture we used somatoscopy and somatometry methods. A ruler, a dermograph, and a pendulum were used during the examination. Out of 110 children examined during the initial checkup, it was found that 11 (10%) had scoliotic posture. On the first follow-up checkup, which was performed 3 months later, 6 children (5.5%) had scoliotic posture, while on the second follow-up checkup, which was repeated 6 months later, 4 children (3.6%) had scoliotic body posture. The Wilcoxon rank test showed that there was a statistically significant difference between the first and the second checkups (p=.059), as well as between the first and the third checkups (p=.008). Based on that, it can be concluded that regular exercise for six months improves scoliotic body posture in children.

Keywords: scoliosis, corrective exercises, muscle strengthening

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[1] emirbisevac95@gmail.com

KOMPRESIVNO OPTEREĆENJE KAO FAKTOR RIZIKA ZA RAZVOJ TENDINOPATIJA RAZLIČITIH LOKALIZACIJA

Miloš Bojović[1,2], Katarina Vukosavljević[1], Dragana Drljačić[2], Kristina Vukušić[2]

[1]Univerzitet u Beogradu, Medicinski fakultet, Beograd, Srbija
[2]Visoka sportska i zdravstvena škola, Beograd, Srbija

Sažetak: Uloga tetiva je da prenose silu generisanu mišićnim kontrakcijama kako bi omogućile izvođenje pokreta i održavanje posture. One su dizajnirane da podnose elastična opterećenja, međutim prekomerno opterećenje može dovesti do razvoja tendinopatija kao sindroma prenaprezanja. Ovo rezultira opsežnim promenama u tenocitima i ekstracelularnom matriksu što dovodi do aktivacije ćelija, povećanog broja proteoglikana i raspada strukture kolagena. U okviru navedenih patoloških promena postoje područja fibrokartilaginozne metaplazije, gde nam mehanotransdukcijiski modeli pokazuju da ovakav odgovor može biti usled kompresivnog, a ne samo elastičnog opterećenja. Kako je upravljanje opterećenjem, pre svega kroz kineziterapiju, kamen temeljac lečenja tendinopatija, definisanje efekata elastičnog i kompresivnog opterećenja je veoma važno za kliničke ishode tretmana. Ovaj rad ispituje potencijalnu ulogu kompresivnih opterećenja u patogenezi tendinopatija različitih lokalizacija, i daje pregled anatomskih, epidemioloških i kliničkih dokaza koji ukazuju na ulogu ovog tipa opterećenja u razvoju insercione tendinopatije Ahilove tetive, tendinopatija nadgrebenog mišića (m. supraspinatus), zadnjeg golenjačnog mišića (m. tibialis posterior), proskimalnog dela mišića zadnje lože natkolenice, lateralnog epikondilitisa, proksimalne tendinopatije patelarne tetive itd.

Ključne reči: kineziterapija, ahilova tetiva, nadgrebeni mišić, lateralni epikondilitis, patelarna tetiva.

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[1] milos.bojovic@vss.edu.rs

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COMPRESSIVE LOAD AS A RISK FACTOR FOR THE DEVELOPMENT OF TENDINOPATHIES OF DIFFERENT LOCALIZATIONS

Miloš Bojović[1,2], Katarina Vukosavljević[1], Dragana Drljačić[2], Kristina Vukušić[2]

[1]University of Belgrade, Faculty of Medicine, Belgrade, Serbia
[2]College of Sports and Health, Belgrade, Serbia

Abstract: The role of tendons is to transmit the force generated by muscle contractions to allow them to perform movements and maintain posture. They are designed to withstand tensile loads, however, an excessive load can lead to the development of tendinopathy as an overexertion syndrome. This results in extensive changes in tenocytes and the extracellular matrix leading to cell activation, increased proteoglycan counts, and breakdown of collagen structure. Within the mentioned pathological changes, there are areas of fibrocartilaginous metaplasia, where mechanotransduction models show that such a response can be due to compressive, and not only tensile loading. As load management, primarily through kinesitherapy, is the cornerstone of tendinopathy treatment, defining the effects of the tensile and compressive load is very important for clinical treatment outcomes. This paper examines the potential role of compressive loads in the pathogenesis of tendinopathies of different localizations and provides an overview of anatomical, epidemiological and clinical evidence indicating the role of this type of load in the development of insertion tendinopathy of the Achilles tendon, supraspinatus muscle, posterior tibialis muscle, proximal part of the hamstring muscle, respectively, lateral epicondylitis, proximal patellar tendon tendinopathy, etc.

Keywords: kinesitherapy, Achilles tendon, supraspinatus muscle, lateral epicondylitis, patellar tendon.

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[1] milos.bojovic@vss.edu.rs

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EFFECTS OF A LOW-CARBOHYDRATE DIET ON BODY COMPOSITION AND PERFORMANCE IN ROAD CYCLING: A RANDOMIZED, CONTROLLED TRIAL

Rafel Cirer Sastre[1], Sebastian Sitko, Isaac López Laval

University of Lleida

Abstract: Low-carbohydrate diets are frequently used to improve performance in endurance sports, often with contradictory results. This study aimed to assess whether a low-carbohydrate diet can outperform an isocaloric conventional diet for improving body composition and performance in road cyclists. **Methods:** twenty-six trained male road cyclists (previous experience in cyclosportive events, 7.6 ± 4.4 years; age, 26.9 ± 4.9 years; weekly training volume, 7.8 ± 2.9 hours; height, 176 ± 7 centimeters; body fat percentage, 9.7 ± 0.8 %; weight, 65.3 ± 2.3 kg) took part in the study. Detraining and pretreatment periods in which nutrition and training were standardized were followed by an eight-week long intervention in which cyclists consumed either a low-carbohydrate diet (15 % of calories from carbohydrates) or a conventional endurance sports diet while maintaining the same training volumes and intensities. Body composition was assessed through electrical impedance, and performance was evaluated through a twenty-minute time trial performed on a smart bike trainer. **Results:** The results revealed an overall improvement over time in absolute and relative power, body mass, and body fat for both groups, whilst the improvement in absolute power was comparable. The improvements seen in relative power ($p = 0.042$), body mass ($p = 0.006$), and body fat ($p = 0.01$) were significantly higher in the low-carbohydrate group. **Discussion:** We concluded that eight weeks of a low-carbohydrate diet significantly reduced body weight and body fat percentage, and improved 20-minute relative power values in a sample of road cyclists when compared to an isocaloric conventional diet.

Keywords: cycling, power output, low carbohydrate diet, nutrition

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[1] rcirer@inefc.es

RAZLIKE U MOTORIČKIM SPOSOBNOSTIMA IZMEĐU DEČAKA I DEVOJČICA PREDŠKOLSKOG UZRASTA

Ilma Čaprić[1,2], Samir Hačković[1], Mila Manić[1]

[1] Fakultet za fizičko vaspitanje i sport, Državni univerzitet u Novom Pazaru
[2]Fakultet sporta i fizičkog vaspitanja, Univerzitet u Nišu

Sažetak: Do sada je poznato da postoje značajne razlike u motoričkim sposobnostima između dečaka i devojčica predškolskog uzrasta.Cilj istraživanja je da se kritičkom analizom dosadašnjih istraživanja i generalizacijom rezultata svih analiziranih istraživanja utvrde razlike u motoričkim sposobnostima između dečaka i devojčica predškolskog uzrasta. Pretrage su vršene u sledećim elektronskim bazama: Medline, Google Scholar i Kobson. Baze podataka su pretražene pomoću sledećih ključnih reči na srpskom i engleskom jeziku: motoričke sposobnosti (motor abilities), razlike (differences), predškolska deca (preeschool children). U prvoj fazi pregleda, proverena je relevantnost naslova i apstrakata identifikovanih radova. U drugoj fazi pretrage, kompletni radovi su preuzeti i razmatrani za inkluziju. Reference iz svih sakupljenih radova su pregledane da bi se dobilo više istraživanja koja su proučavana. Ukupno je 15 studija zadovoljilo kriterijume za uključivanje i bile su uključene u sistematski pregled. Značajno poboljšanje kod muškaraca primećeno je u brzini, koordinaciji i snazi, a kod devojčica u testovima ravnoteže, izdržljivosti i fleksibilnosti. Na osnovu analize i diskusije radova koji su uzeti u sistematsko istraživanje može se zaključiti da postoje razlike u motoričkim sposobnostima između dečaka I devojćica predškolske dobi.

Ključne reči: motoričke sposobnosti, razlike , predškolska deca

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[1] capricilma.np@gmail.com

DIFFERENCES IN MOTOR SKILLS BETWEEN PRESCHOOL BOYS AND GIRLS

Ilma Čaprić[1,2], Samir Hačković[1], Mila Manić[1]

[1]Faculty of Sports and Physical Education, University of Nis, Serbia
[2]Faculty of Physical Education and Sports, University of Novi Pazar

Abstract: So far, it is known that there are significant differences in motor skills between boys and girls of preschool age. The aim of the research is to determine the differences in motor abilities between boys and girls of preschool age by critical analysis of previous research and generalization of the results of all analyzed research. Searches were conducted in the following electronic databases: Medline, Google Scholar, and koBSON. The databases were searched using the following keywords in Serbian and English: motor abilities, differences, preschool children. In the first phase of the review, the relevance of the titles and abstracts of the identified papers was checked. In the second phase of the search, the complete papers were taken over and considered for inclusion. References from all collected papers were reviewed to obtain more research that was studied. A total of 15 studies met the inclusion criteria and were included in the systematic review. Significant improvement was observed in men in speed, coordination and strength, and in girls in tests of balance, endurance, and flexibility. Based on the analysis and discussion of the papers taken in the systematic research, it can be concluded that there are differences in motor abilities between boys and girls of preschool age.

Keywords: motor abilities, differences, preschool children.

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[1] capricilma.np@gmail.com

RAZVOJNI POTENCIJAL CIKLOTURIZMA U VOJVODINI

Nevena Ćurčić[1], Željko Bjeljac[2]

[1]Univerzitet u Novom Sadu, Prirodno-matematički fakultet
[2]Geografski institut „Jovan Cvijić“ SANU, Beograd

Sažetak: Razvoj cikloturizma doprinosi putovanju trasiranim stazama na biciklu i turističkoj valorizaciji manje razvijenih područja. Cikloturizam utiče na javno zdravlje, bolji kvalitet vazduha i smanjenu emisiju CO_2, ali isto tako otvara mogućnosti za kreiranje novih radnih mesta i razvoj ekonomije. Cikloturizam beleži stalan rast i predviđa se rast putovanja ove vrste prevoza za 10 procenata tokom narednih deset godina na globalnom nivou. Vojvodina zahvaljujući ravničarskom i blago zatalasanom reljefu ima odlične mogućnosti za razvoj cikloturizma, a to je otvorilo mogućnosti da se uključi u tri vodeće EuroVelo međunarodne biciklističke rute: EuroVelo 6, 11 i 13. Prvo trasiranje biciklističke rute i postavljanje signalizacije počelo je 2006. godine kroz projekat koji je pokrenuo GIZ na trasi od Bačkog Brega do Beograda i ruti poznatoj kao Dunavska biciklistička ruta. Cilj istraživanja u ovom radu je bio da utvrdi kako cikloturisti posle više od 10 godina od nastanka rute procenjuju sadržaje i usluge koje ona pruža. U toku istraživačkog procesa korišćeno je nekoliko različitih metoda: (1) istraživanje sekundarne građe, (2) prikupljanje primarnih podataka putem anketnog upitnika, (3) statistički metod, (4) analitičko-sintetički metod, (5) kritički metod. Rezultati do kojih se došlo obradom i analizom anketnih upitnika ukazuju na to da su cikloturisti generalno zadovoljni pruženim uslugama na Dunavskoj biciklističkoj ruti kroz Vojvodinu. Cikloturisti ističu kao posebne vrednosti pejzaž i kulturne znamenitosti koje su upoznali, a visoko su ocenjeni i postavljeni putokazi, samo uređenje staze i kvalitet asfalta. Cikloturizam, kao rastuća grana turizma, zahteva dalja ulaganja i unapređenje ponude kroz stanice za bicikliste, saobraćajne znake, uređenje okoline, objekte smeštaja. Cikloturizam će nastaviti da raste i dugoročno će doneti benefite privredi i generisati veći devizni priliv, uključiti prateće delatnosti i kreirati nova radna mesta, što razvojna politika turizma treba da podrži planski i finansijski, odnosno kroz strateške i akcione planove, kao i projekte usmerene na investicionu podršku.

Ključne reči: cikloturizam, rute, usluge, mogućnosti razvoja, Vojvodina.

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[1] nevena.curcic@dgt.uns.ac.rs

DEVELOPMENT POTENTIAL OF CYCLOTURISM IN VOJVODINA

Nevena Ćurčić[1], Željko Bjeljac[2]

[1]University of Novi Sad, Faculty of Natural Sciences
[2]Geography Institute „Jovan Cvijić“ SASA, Belgrade

Abstract: The development of cycling tourism contributes to the travel of paved bike paths and the tourist valorization of less developed areas. Cyclotourism affects public health, better air quality and reduced CO_2 emissions, but also opens up opportunities for job creation and economic development. Cyclotourism is growing steadily and travel of this mode of transport is projected to grow by 10 percent over the next ten years globally. Thanks to the flat and slightly undulating relief, Vojvodina has excellent opportunities for the development of cycling tourism, which has opened up opportunities to join three leading EuroVelo international cycling routes: EuroVelo 6, 11 and 13. The first tracing of the bicycle route and the installation of signalization began in 2006 through a project initiated by GIZ on the route from Bački Breg to Belgrade and the route known as the Danube bicycle route. The aim of the research in this paper was to determine how cyclists, after more than 10 years since the origin of the route, evaluate the contents and services it provides. Several different methods were used during the research process: (1) research of secondary material, (2) collection of primary data through a questionnaire, (3) statistical method, (4) analytical-synthetic method, (5) critical method. The results obtained by processing and analyzing the survey questionnaires indicate that cyclists are generally satisfied with the services provided on the Danube cycling route through Vojvodina. Cyclists emphasize as special values the landscape and cultural sights they have met, and the signposts, the arrangement of the trail and the quality of the asphalt are highly rated and placed. Cycling tourism, as a growing branch of tourism, requires further investments and improvement of the offer through stations for cyclists, traffic signs, landscaping, accommodation facilities. Cyclotourism will continue to grow and will bring long-term benefits to the economy and generate higher foreign exchange inflow, include ancillary activities and create new jobs, which tourism development policy should support planned and financial, ie through strategic and action plans, as well as investment-oriented projects.

Keywords: cycling tourism, routes, services, development opportunities, Vojvodina.

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[1] nevena.curcic@dgt.uns.ac.rs

REKREATIVNE AKTIVNOSTI I NASTAVA U PRIRODI ZA DECU

Milica Đokić[1], Sreten Srećković, Aleksandar Ivanovski

Visoka sportska i zdravstvena škola, Beograd

Sažetak: Ekstremno brzim razvojem digitalizacije, manjkom fiskulturnih sala u školama, situacije prouzrokovane pandemijom (online nastava, čest boravak kod kuće),sve manje dece provodi vreme na otvorenom. Takve okolonosti su dovele do sporijeg psihofizičkog razvoja dece,sve više poteškoća u razvoju i upotrebi govora, motoričke nepravilnosti, gojaznosti, asocijalizacije.Cilj je da deca-učenici u neposrednom boravku u prirodi, pedagoškim delovanjima poboljšaju zdravlje, psiho-socijalni i fizički razvoj.
Posebni ciljevi i zadaci ogledaju se kroz:
-Bogaćenje socijalnih iskustava, interakcije,kooperacije i komunikacije kod dece.
-Razvoj navike i potrebe za boravkom u prirodi.
-Razvoj svesti o zaštiti, čuvanju i unapređivanju životne sredine.
-Razvoj fizičkih sposobnosti,zdrastvenih i higijenskih navika.
Bibliografski metod rada nam je poslužio kao osnova da možemo da uočimo značaj pripreme kako dece, tako i roditelja za odlazak i održavanje nastave u prirodi. I to u vidu informisanja roditelja kao i pedagoško-psihološke pripreme dece na odvajanje od porodice i boravak u novim i nesvakidašnjim životnim okolnostima. Nastavu treba organizovati tako da u potpunosti prati interesovanje učesnika. Njena suština treba da omogući teorijsko znanje koje će se praktično primenjivati i nadograditi, jer će samo tako i na taj način ostati upamćeno na upečatljiv način.Neposredno posmatranje prirodne sredine kao i kontakt sa predmetima i objektima u prirodi je neophodno, jer je ona sama po sebi učitelj, dovoljno podsticajan za usvajanje,shvatanje i sticanje određenih znanja. Treba istaći značaj rada u manjim grupama, kako bi se deca opredeljivali za određene nastavne programe i aktivnosti prema sopstvenom interesovanju. Kao rezultat rada uočavamo da nastavni i vaspitno-obrazovani sadržaji u skladu sa nastavnim planom su prilagođeni prirodnim, geografskim i istorijskim uslovima. Osnovu programskih sadržaja čine:
-Eko radionice (učenje o očuvanju životne sredine, o živoj i neživoj prirodi…)
-Fizičko-rekreativne i sportske aktivnosti i sportske aktivnosti (jutarnje vežbanje,trčanje,trčanje sa preprekama, grudvanje,provlačenje, igre loptom, klackanje, ljuljanje, tradicionalne igre...)
-Senzo-perceptivne igre i aktivnosti (igre vodom, snegom, dodirivanje kore drveta, igra lišćem…)
-Društveno-zabavne i kulturne aktivnost (izrada predmeta od drveća, kamenja, kalemljenje, uređenje zelenih površina…)
-Istraživačke aktivnosti (primena naučenog, orjentacija u prostoru, brojenje godova na drveću-određivanje starosti…)
-Zdravstveno-higijenske aktivnosti (održavanje lične higijene, sticanje znanja o zdravlju i zdravoj ishrani…)
Po ugledu na neke od zemalja u svetu, koje prirodu koriste u cilju sticanja znanja i razvijanja već naučenog, u zaključku se navodi da je poželjno da i u našoj zemlji radimo na osvešćivanju i edukaciji ljudi o značaju nastave u prirodi, kao i o uslovima boravka u grupi. Na taj način razviće se međusobno uvažavanje, pomaganje, poštovanje različitosti i doprineće se sopstvenoj izgradnji ličnosti.

[1] milicadjokic97@gmail.com

Ključne reči: rekreacija deca priroda

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RECREATIONAL ACTIVITIES AND OUTDOOR CLASSES FOR CHILDREN

Milica Đokić[1], Sreten Srećković, Aleksandar Ivanovski

College of Sports and Health, Belgrade

Abstract: Extremely fast development of digitalization, lack of gyms in schools, situations caused by the pandemic (online classes, frequent stay at home), fewer and fewer children spend time outdoors. Such circumstances have led to slower psychophysical development of children, increasing difficulties in the development and use of speech, motor irregularities, obesity, antisocialization. The goal is for children-students to improve their health, psycho-social and physical development in their immediate stay in nature through pedagogical activities.
Specific goals and tasks are reflected through:
-Enrichment of social experiences, interaction, cooperation and communication in children.
-Development of habits and needs for staying in nature.
-Development of awareness on protection, preservation and improvement of the environment.
-Development of physical abilities, health and hygiene habits.
The bibliographic method of work served as a basis for us to be able to see the importance of preparing both children and parents for going and teaching in nature. And that in the form of informing parents as well as pedagogical-psychological preparation of children for separation from the family and staying in new and unusual life circumstances. Classes should be organized so that they fully follow the interests of the participants. Its essence should enable theoretical knowledge that will be practically applied and upgraded, because only in that way will it be remembered in a striking way. Direct observation of the natural environment as well as contact with objects and objects in nature is necessary, because it is itself a teacher himself, sufficiently stimulating to adopt, understand and acquire certain knowledge. The importance of working in small groups should be emphasized, in order for children to opt for certain curricula and activities according to their own interests. As a result of our work, we notice that the teaching and educational contents in accordance with the curriculum are adjusted to natural, geographical and historical conditions. The basis of program content consists of:
-Eco workshops (learning about environmental protection, living and non-living nature)
-Physical-recreational and sports activities and sports activities (morning exercise, running, running with obstacles, snowballing, dragging, ball games, seesaws, rocking, traditional games ...)
-Senzo-perceptual games and activities (games with water, snow, touching the bark of a tree, playing with leaves)
-Social-entertaining and cultural activity (making objects from trees, stones, grafting, arranging green areas)
-Research activities (application of learning, spatial orientation, counting rings on trees-determining age)
-Health and hygiene activities (maintaining personal hygiene, acquiring knowledge about health and healthy eating)
Following the example of some of the countries in the world, which use nature in order to acquire knowledge and develop what has already been learned, the conclusion states that it is desirable to work in our country to raise awareness and educate people about the importance of teaching in nature and living conditions. in the group. In that way, they will develop mutual respect, help, respect for diversity and will contribute to their own personality building.

Keywords: recreation children nature

[1] milicadjokic97@gmail.com

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MERNI INSTRUMENTI ZA PROCENU SPECIFIČNE FLEKSIBILNOSTI GIMNASTIČARA

Đorđević Dušan[1], Stanković Mima, Paunović Miloš, Čaprić Ilma

Fakultet sporta i fizičkog vaspitanja, Univerzitet u Nišu, Niš, Srbija

Sažetak: Cilj ovog istraživanja bio je opis specifičnih mernih instrumenata za procenu fleksibilnosti kod gimnastičara. U sportskoj gimnastici, fleksibilnost je važna motorička sposobnost, kako za identifikaciju mladih talenata, tako i za sam sport, obzirom da je ona jedna od najistaknutijih karakternih crta ovog sporta. Iako se na nju ne obraća velika pažnja poslednjih decenija, ona je krucijalna za identifikaciju mladih talenata, nastup gimnastičara na samom takmičenju, pri čemu se olakšava realizacija trenažnog procesa, usled čega se javlja progresivniji napredak, smanjuje se mogućnost stvaranja povreda, ali i olakšava suđenje, jer zbog nedovoljno izraženog estetskog karaktera sudija može odbiti više negativnih bodova. Adekvatnih 7 mernih instrumenata se mogu primeniti za procenu specifične fleksibilnosti kod gimnastičara, a rezultati predstavljaju detaljan opis i način primene svakog mernog instrumenta ponaosob. Obzirom da je pokretljivost zglobova individualna za svakog pojedinca, fleksibilnost ima tendenciju smanjivanja, a datim mernim instrumentima je moguće proveriti, izvršiti monitoring i poboljšati specifičnu fleksibilnost kod gimnastičara. Stoga je potrebno stvoriti svest o značaju ove motoričke sposobnosti za sportsku gimnastiku, kao i samih mernih instrumenata i njihovoj pravilnoj primeni, a ovaj rad može imati i praktičnu primenu za buduće istraživače i trenere, koji bi na pravi način kreirali svoju bateriju testova za procenu ili monitoring fleksibilnosti kod gimnastičara, uz pravilnu primenu i pristup vežbi.

Ključne reči: sportska dijagnostika, specifična fleksibilnost, sportska gimnastika

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[1] dusandjordjevic1995@gmail.com

MEASURING INSTRUMENTS FOR ASSESSING THE SPECIFIC FLEXIBILITY OF GYMNASTS

Đorđević Dušan[1], Stanković Mima, Paunović Miloš, Čaprić Ilma

Faculty of Sport and Physical Education, University of Niš, Niš, Serbia

Abstract: The aim of this study was to describe specific measuring instruments for assessing flexibility in gymnasts. In artistic gymnastics, flexibility is an important motor ability, both for the identification of young talents and for the sport itself, given that it is one of the most prominent character traits of this sport. Although it has not received much attention in recent decades, it is crucial factor for the identification of young talents, the performance of gymnasts in the competition itself, which facilitates the implementation of the training process, resulting more progressive improvement, reducing possibility of injuries, because due to the insufficiently expressed aesthetic character, the judges may reject more negative points in competition. Adequate 7 measuring instruments can be used to assess the specific flexibility of gymnasts and the results represent a detailed description and method of application of each measuring instrument individually. Since joint mobility is individual, flexibility tends to decrease and with the given measuring instruments it is possible to check, monitor and improve the specific flexibility of gymnasts. Therefore, it is necessary to create awareness of the importance of this motor ability for artisitc gymnastics, as well as the measuring instruments themselves and their proper application. Also, this study may have practical application for future researchers and coaches, who would properly create their own battery of tests to assess or monitoring flexibility in gymnasts, with proper usage method and approach to exercises.

Keywords: sports diagnostics, specific flexibility, artistic gymnastics

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[1] dusandjordjevic1995@gmail.com

ANTOCIJANI U ISHRANI SPORTISTA

Jelena Đorđević[1], Marina Ivanović, Vladimir Ilić

Akademija strukovnih studija Beograd, odsek Visoka zdravstvena škola

Sažetak: Bavljenje sportskim aktivnostima, radi postizanja i održanja forme rekreativaca, a naročito profesionalnih sportista, podrazumeva maksimalnu posvećenost, posledično i telesno opterećenje. Presudan značaj u oporavku nakon trenažnog procesa čine periodi odmora u kombinaciji sa adekvatnom ishranom i hidratacijom. Od izuzetnog značaja, sa višestrukim koristima, je i ishrana svežim voćem, povrćem i žitaricama. Između ostalog, bogate su i antocijanima. Antocijani su flavoni - ljubičasti, crveni i plavi pigmenti biljka (posebno voća, povrća i žitarica) kojih ima preko 500 vrsta (Ćujić, Kundaković & Šavikin, 2013). Imaju antioksidativno i antiinflamatorno dejstvo, dovode do povećane vazodilatacije i smanjenja srednjeg arterijskog pritiska (Cook & Willems, 2019). Mogu se uzeti kroz namirnice i u novije vreme, kroz suplemente(Cook i dr., 2019; Ćujić i dr., 2013). U poslednje vreme sve se više koriste u ishrani sportista zato što poboljšavaju oporavak posle treninga (Cook i dr., 2019). Autori navode brojne benefite po ljudsko zdravlje. Analizom dostupnih podataka, zaključuje se da najveću antioksidativnu sposobnost uklanjanja slobodnih radikala imaju antocijani iz bobičavag voća i ona je procoprionalna sadržaju antocijana u tim namirnicama (Ćujić i dr., 2013). Značajno je da nemaju svi antioksidansi jednak učinak na oporavak posle treninga. Navodi se bolji efekat antocijana crne ribizle na oporavak posle vežbanja, u odnosu na antocijane trešnje (Cook i dr., 2019). Zapaženo je da antocijani crne ribizle olakšavaju performanse sportskog penjanja (Potter, Hodgson, Broadhurst, Howell, Gilbert, Willems & Perkins, 2020). Ishrana u sportu i vežbanju bogata antocijanima poboljšava oporavak posle treninga, posebno ishrana bogata antocijanima crne ribizle kod sportskog penjanja (Cook i dr., 2019; Potter i dr., 2020). Koncentracija antocijana u organski gajenoj namirnici je veća, nego u konvencionalno gajenoj (Golijan & Veličković, 2015), te se preporučuje konzumiranje organski gajenog voća radi postizanja boljeg efekta.

Ključne reči: antocijani, ishrana, sport, vežbanje

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[1] djordjevicjelena.nbg@gmail.com

ANTHOCYANINS IN THE DIET OF ATHLETES

Jelena Đorđević[1], Marina Ivanović, Vladimir Ilić

Academy of Vocational Studies Belgrade, Department of Health School

Abstract: Engaging in sports activities, in order to achieve and maintain the form of recreational athletes, and especially professional athletes, implies maximum commitment, and consequently physical load. Crucial in recovery after the training process are periods of rest combined with adequate nutrition and hydration. Of great importance, with multiple benefits, is the diet of fresh fruits, vegetables and cereals. Among other things, they are rich in anthocyanins. Anthocyanins are flavones - purple, red and blue pigments of plants (especially fruits, vegetables and cereals) of which there are over 500 species (Ćujić, Kundaković & Šavikin, 2013). They have antioxidant and anti-inflammatory effects, leading to increased vasodilation and a decrease in mean arterial pressure (Cook & Willems, 2019). They can be taken through foods and more recently, through supplements (Cook i dr., 2019; Ćujić i dr., 2013). Lately, they are increasingly used in the diet of athletes because they improve recovery after training (Cook i dr., 2019). The authors list numerous benefits for human health. By analyzing the available data, it is concluded that anthocyanins from berries have the highest antioxidant ability to remove free radicals and it is procoprional to the anthocyanin content in these foods (Ćujić i dr., 2013). Significantly, not all antioxidants have the same effect on post-workout recovery. A better effect of black currant anthocyanins on recovery after exercise is reported, compared to anthocyanin cherries (Cook i dr., 2019). Black currant anthocyanins have been observed to facilitate the performance of sport climbing (Potter, Hodgson, Broadhurst, Howell, Gilbert, Willems & Perkins, 2020). A diet rich in anthocyanins in sports and exercise improves recovery after training, especially a diet rich in blackcurrant anthocyanins in sport climbing (Cook i dr., 2019; Potter i dr., 2020). The concentration of anthocyanins in organically grown food is higher than in conventionally grown (Golijan & Veličković, 2015), and it is recommended to consume organically grown fruit in order to achieve a better effect.

Keywords: anthocyanins, diet, sports, exercise

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[1] djordjevicjelena.nbg@gmail.com

UTICAJ FIZIČKE AKTIVNOSTI NA KARDIORESPIRATORNI FITNES ADOLESCENATA RAZLIČITOG NIVOA UHRANjENOSTI – PILOT STUDIJA

Anđela Đošić[1], Danijela Živković[1], Ljiljana Bjelaković[1], Aleksandar Ivanovski[2], Saša Pantelić[1]

[1]Fakultet sporta i fizičkog vaspitanja, Univerzitet u Nišu
[2]Visoka sportska i zdravstvena škola, Beograd

Sažetak: Visok nivo kardiorespiratornog fitnesa tokom detinjstva i adolescencije usko je povezan sa kardiovaskularnim zdravljem u ovom periodu, ali i u kasnijem životnom dobu. Veći nivo fizičke aktivnosti utiče pozitivno na kardiovaskularni sistem. Cilj istraživanja bio je da se utvrdi uticaj nivoa fizičke aktivnosti na kardiorespiratorni fitnes adolescenata različitog nivoa uhranjenosti. Uzorak ispitanika činilo je ukupno 104 adolescenta uzrasta 16 godina, od kojih je 64 bilo normalno uhranjeno, a 40 sa povećanom telesnom masom. Fizička aktivnost procenjivana je FELS upitnikom, a nivo kardiorespiratornog fitnesa Shutle Run testom na 20m. Obrada podataka realizovana je pomoću SPSS programa, a za utvrđivanje uticaja primenjena je regresiona analiza. Rezultati su pokazali da fizička aktivnost utiče značajno na kardiorespiratorni fitnes normalno uhranjenih adolescenata $F(4,59)=2,5145$ $p<,050$ i adolescenata sa povećanom telesnom masom $p<,045$. Istraživanjem je potvrđeno da nizak nivo fizičkih aktivnosti utiče na kardiorespiratorni fitnes adolescenata različitog nivoa uhranjenosti. Bavljenje fizičkom aktivnošću pozitivno utiče na kardiorespiratorni fitnes, što je u saglasnosti sa drugim istraživanja.

Ključne reči: adolescencija, fizička aktivnost, adolescent, VO2max, uticaj

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[1] andjela.djosic88@gmail.com

INFLUENCE OF PHYSICAL ACTIVITY ON CARDIORESPIRATORY FITNESS OF ADOLESCENTS OF DIFFERENT LEVELS OF NUTRITION - PILOT STUDIES

Anđela Đošić[1], Danijela Živković[1], Ljiljana Bjelaković[1], Aleksandar Ivanovski[2], Saša Pantelić[1]

[1]Faculty of Sport and Physical Education, University of Nis
[2] College of Sport and Health, Beograd

Abstract: High levels of cardiorespiratory fitness during childhood and adolescence are closely related to cardiovascular health in this period, but also in later life. Higher levels of physical activity have a positive effect on the cardiovascular system. The aim of the study was to determine the impact of physical activity levels on the cardiorespiratory fitness of adolescents of different nutritional levels. The sample consisted of a total of 104 adolescents aged 16 years, of which 64 were normally fed and 40 with increased body weight. Physical activity was assessed by the FELS questionnaire, and the level of cardiorespiratory fitness by the Shutle Run test at 20m. Data processing was performed using the SPSS program, and regression analysis was applied to determine the impact. The results showed that physical activity significantly affects the cardiorespiratory fitness of normally nourished adolescents F (4,59) = 2,5145 p <, 050 and adolescents with increased body weight p <, 045. Research has confirmed that low levels of physical activity affect the cardiorespiratory fitness of adolescents with different levels of nutrition. Exercise has a positive effect on cardiorespiratory fitness, which is in line with other research.

Keywords: adolescent, physical activity, VO2max, impact

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[1] andjela.djosic88@gmail.com

MODEL OF PREVENTING YOUTH SPORT DROPOUT

Milan Đupovac[1], Aleksandar Ivanovski[2], Cristina Agostinelli[3], Dragana Drljačić[2]

[1]Sports Diagnostic Center Šabac
[2]College of Sports and Health, Belgrade
[3]Centro Giovanile di Formazione Sportiva – Youth Centre for Physical Training, Italy

Abstract: In introduction we have to mention that recent projects at European level giving various solutions to prevent sport dropout especially at youth. Most of them show best practice models and identify dropout factors but there are very few studies that connect resilience, as psychological ability of the person to overcome difficulties, stress, burnout etc. and staying longer in sport. In sports, athletes are exposed to many psychological stressful experiences in their competitive sports activities (Petrie, 1992) thus capacity for successful adaptation despite challenging or threatening circumstances (what we call "resilience"; Masten, Best, & Garmezy, 1990) is of particular importance. Preventing Youth Sport Dropouts - PYSD model consist of identification of the resilience level of youth athletes and their relations with parents and coaches, and through the different scientific methods is providing proposals for actions to parents and coaches in order to build up youth athlete's resilience as a predictive factor of youth sport dropout. Taking into account all mentioned findings of previous researches, we assume that building resilience at youth and developing relations with parents and coaches will lead to staying longer in sport or return practicing sport. Preventing Youth Sport Dropouts - PYSD has main goal to show a best practice model, issued from activities carried on real sport activities to provide clear technical guidelines for trainers, coaches and sport association. Youth sports participation holds positive potential for enabling the development of children and youth. In conclusion, there has been a growing emphasis among parents, coaches, and youth participants on co modifying sport as an arena for winning, status, and living out parental and coaches, rather than players' dreams. In many situations, parents and coaches need to rethink their motivations and their goals and become more youth development focused as they pursue sport involvements for children and youth.

Keywords: Prevention,Youth, Sport, Dropout

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[1] milandjupovac@gmail.com

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PILOT STUDY - HEALTH STATUS IN QUARANTINE PANDEMIC- COVID 19

Adina Geambasu[1]

National University Of Physical Education And Sport- Physiotherapy Faculty- Bucharest Romania

Abstract: Introduction: The issue raised with the quarantine situation due to the current pandemic situation is that of sedentary of both children and adults due to school and online work, many hours spent with tablet, phone and other gadgets that limit movement and lead to metabolic disorders such as obesity, physical deficiencies of posture and dynamics, sensory deficiencies of the visual analyzer type, decreased coordination and mobility, balance disorders, cardio-respiratory dysfunctions with decreased exercise capacity, to mental disorders and anxiety. Methods: This short pilot questionnaire aims to gather initial data on health in the first quarantine period from March-May 2020 to the present, starting from the basic elements of human health: strength, mobility, stability, balance, coordination , capacity for effort, mental state. Results: The individual need for movement, especially the need of the child in growth and development of movement appropriate to the age and integrated school, but especially the need of the adult, through the difficulty of mobilization inside the house, to practice movement both in online study and at home, but especially in his free time he raises new questions regarding human health both from a prophylactic and especially long-term therapeutic point of view. In order to answer these questions and needs and to find optimal solutions, it is necessary to start from the problem and from the study of its scope. Discussion: Recent global studies have raised the issue of online study and work on sedentary and appropriate ways to practice movement (see references).

Keywords: covid 19, quarantine, health, fear, motor skills

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[1] adina.p.geambasu@gmail.com

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SHOOTING SPEED DIFFERENCES BETWEEN SHOOTING POSITIONS IN TOP LEVEL HANDBALL

Nikola Foretić[1], Vladimir Pavlinović[1], Šime Veršić[1]

[1]University of Split, Faculty of Kinesiology

Abstract: Scoring the goal in handball is performed by shooting action. Action of shooting can appear in many different situations and positions. Shooting speed is one of the most important features that influence successful shooting performance in handball. Faster the shot, less time defenders have to block, and goalkeeper to react and rebound the ball. Regardless of mentioned importance, there is a lack of scientific data considering shooting speed between different shooting positions. The main aim of this study was to determine differences in shooting speed between shooting positions in top level male handball players. Data used in this study were collected from 15 official match reports of European handball championship held in Austria, Norway and Sweden 2020. 784 shoots (goals) were analyzed and variables included were shooting speed (SS) and shooting positions (SP). Shooting speed was measured with iBall (SELECT, Denmark), that has a built-in chip for tracking and distributing data in real time regarding ball speed, shot detection, shot position and the position of the ball in the goal (Kinexon, Germany). Shooting position (SP) is defined as geometrical point and tactical situation from which shot was taken. SP has 7 different sub-categories: 9m (shoots taken out of nine meters), 6m (shoots taken between nine meters and goalkeepers' area), W (shoots taken from right- and left-wing positions), BT (break through shoots), 7m (penalty shoots), FB (fast break shoots) and FT (flying throw shoots). Differences between shooting positions were calculated with Kruskal-Wallis test. Test of normality detected that data are not normally distributed (K-S $p < ,05$, $W=0,97$; $p=0,00$). As so non-parametric statistical methods were used for calculating differences between shooting positions' ball speed. Significant difference in shooting speed was noticed between shooting positions (Chi-Square=95,83). Post-hoc analysis revealed that shoots taken out of nine meters are significantly faster than from other shooting positions. No significant differences in speed were found between any other shooting position. Shoots taken out of 9 meters demand fastest shoots since players can't outsmart goalkeepers with modified slow shoots (e.g. lob shot, shot with rotation or "dry leave" shoot). Modified slow shoots are commonly used in closer distance shoots like wing shoot, fast break shoot, break through shoot or penalty shoot. In these situations, players have more demanding angle in which shooting speed isn't always an advantage. Fast ball speed can even be a disturbing factor of efficiency. On the contrary, shoots performed from the nine meters must be as fast as possible since slow shoots are easily controlled and precepted either from defender or from goalkeeper.

Keywords: ball velocity, ball speed, elite handball, attack, throwing, team sport

[1] nikolaforetic@gmail.com

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EFEKTI HODANJA NA KONTROLU ARTERIJSKOG KRVNOG PRITISKA: PREGLEDNO ISTRAŽIVANJE

Aco Gajević[1], Jelena Ivanović[1,2], Borislav Cicović[3]

[1]Fakultet za sport, Univerzitet "Union Nikola Tesla", Beograd, Srbija;
[2]Zavod za sport i medicinu sporta RS, Beograd, Srbija;
[3]Fakultet fizičkog vaspitanja i sporta, Pale, Univerzitet u Istočnom Sarajevu

Sažetak: Na osnovu brojnih istraživanja prepoznata je sve učestalija pojava hipertenzije kod svih uzrasnih kategorija i bez obzira na pol. S obzirom da se na hipertenziju direktno može uticati uspostavljanjem pravilnih životnih navika, između ostalog i povećanjem fizičke aktivnosti, primarni cilj ovog istraživanja je da se utvrdi da li su posebno osmišljeni programi hodanja, rezultirali značajnim promenama na nivo arterijskog krvnog pritiska kod osoba svih uzrasnih kategorija i oba pola. Obavljena je elektronska pretraga baza podataka PubMed, Google scholar, SCIndeks. Pretraživani su radovi koji su publikovani u vremenskom periodu od 2007. do 2019. godine. Studije koje su uključene u rad ispunile su sledeće kriterijume: (1) studija je napisana na engleskom ili srpskom jeziku, (2) studije su mogle uključiti osobe svih uzrasnih kategorija bez obzira na pol, (3) studije su sadržale podatke o karakteristikama arterijskog krvnog pritiska, (4) hodanje je bilo sastavni deo programa vežbanja u studijama. Rezultati ovog preglednog rada su još jednom pokazali da su povišen krvni pritisak i hipertenzija vodeći zdravstveni problemi i ozbiljno javno zdravstveno pitanje koje pogađa veliki broj osoba različitog uzrasta i oba pola širom Sveta. U ovom pregledu, većina ispitivanja utvrdila je pozitivan uticaj hodanja na kontrolu krvnog pritiska. Ispitivanja koja su dala blagotvorne rezultate na smanjenju krvnog pritiska bila su ona koja su imala duži period trajanja, veći uzorak ispitanika i veći intenzitet hodanja. Efekti hodanja utvrđeni su i za sistolni i dijastolni krvni pritisak, ali i za oba parametra.

Ključne reči: hipertenzija, fizička aktivnosti, programiranje vežbanja

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[1] aco.gajevic@fzs.edu.rs

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EFFECTS OF WALKING ON ARTERIAL BLOOD PRESSURE CONTROL: A SYSTEMATIC REVIEW

Aco Gajević[1], Jelena Ivanović[1,2], Borislav Cicović[3]

[1]Faculty of Sport, University "Union - Nikola Tesla", Belgrade, Serbia;
[2]Serbian Institute for Sport and Sports Medicine, Belgrade, Serbia
[3]Faculty of Physical Education and Sport, Pale, University of East Sarajevo

Abstract: Based on numerous studies, the increasing incidence of hypertension in all age categories and regardless of gender has been identified. Since hypertension can be directly affected by establishing a proper lifestyle habits, including increased physical activity, the primary goal of this study was to determine whether the specially designed walking programs have resulted in significant changes in arterial blood pressure levels in people of all ages and both genders. Electronic search of databases PubMed, Google Scholar, SCIndeks was performed. Papers published in the period from 2007 to 2019 were searched. The included studies met the following criteria: (1) the study was written in English or Serbian, (2) the studies could include persons of all ages regardless of gender, (3) the studies contained data on the characteristics of arterial blood pressure, (4) walking was an integral part of the exercise program in the studies. The results of this systematic review showed once again that the high blood pressure and hypertension are leading health problems and a serious public health issue, which affects a large number of people of different ages and both gender all around the world. In this systematic review, most of the studies have founded a positive effect of walking on the blood pressure control. Studies that gave beneficial results in lowering blood pressure were those that had a longer duration, a larger sample of subjects, and a higher intensity of walking. The effects of walking were determined for both systolic and diastolic blood pressure, but also for the both parameters.

Keywords: hypertension, physical activity, exercise programming

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[1] aco.gajevic@fzs.edu.rs

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ENDOCRINE RESPONSE IN ADULT WOMEN TO RESISTANCE EXERCISE

Ghervan Oana-Emilia[1], Leuciuc Florin

State University of Physical Education and Sports, Chisinau,Republic of Moldova

Abstract: Resistance exercise has been shown to elicit a significant acute hormonal response. It appears that this acute response is more critical to tissue growth andremodelling than chronic changes in resting hormonal concentrations, as many studies have not shown a significant change during resistance training despite in creases in muscle strength and hypertrophy. The different hormonal context between women and men leads to a different behavior in terms of managing resistance training. A thorough analysis leads to the understanding of the hormonal response of the adult woman during resistance training. Purpose: The purpose of this systematic analysis is to identify and evaluate the literature and current studies on the endocrine response and hormonal changes that occur during and after resistance training. Methods: The following electronic databases were searched: PubMed, Physiotherapy Evidence Database (PEDro), Cochrane Central Register of Controlled Trials, Scopus, and Web of Science. Discussions: The endocrine system supports the normal homeostatic function of the body and helps it responds to external stimuli. It is part of a complex signaling system in the human body to affect change and support exercise demands and recovery. The importance of the endocrine system in the field of strength and conditioning is reflected by the critical role this this system played in the theoretical development of periodiyation of training. Hormonal mechanisms are a part of an integrated signaling system that meditates change in the metabolic in cellular processes of muscle as a result of resistance exercise and training. Muscle remodeling involves the disruption end damage the muscle fiber an inflammatory response, degradation of damaged proteins, hormonal and other signal interaction, and ultimately the synthesis of new protein and orderly incorporation into existing or new sarcomeres. The primary anabolic hormones involved in muscle tissue growth and remodeling are testosterone, growth hormone and IGFs, which are discusses which are just cause it here as well as insulin and the thyroid hormone, which are examined in greater detail in other sources. Some study observed acute increase in free testosterone in man and women who are trained in response to a heavy resistance exercise protocol, but the concentration in women were dramatically lower than in man. The testosterone concentration can vary substantially between individual woman, as some woman security secrete higher concentration of adrenal androgens. In one report, changes were observated in baseline concentration of testosterone in woman who exercises regularly compared with inactive controls. Conclusions: Hormone concentration and hormone response to exercise vary with menstrual phase, althouth the mechanisms of this variation are unclear. At present, womens reduced concentration of testosterone and different resting hormonal concentration over the course of the menstrual cycle appear to be their most striking neuroendocrine differences from men.

Keywords: hormones, endocrine, resistance, exercise,women, training

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[1] oanaghervan@gmail.com

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THE NONLINEAR PEDAGOGY APPLIED TO SOCCER COACHING

Cofano Giacomo[1], Traficante Paolo, Sannicandro Italo

Carpi Football Club, Italy

Abstract: Introduction: In the world there are over 240 million active footballers: for these reasons, the team sports, and the soccer in particular, are looking for a methodology capable of structuring more effectively the requirements necessary for the training of the future athlete / player. The aim of this study is to describe how non-linear pedagogy can be beneficial for the young soccer player training. Methods: For the bibliographic search PubMed and Sport Discuss databases were used selecting articles published between 01/01/2011 and 01/03/2021. Two keyword groups were identified, using synonyms and similar terms, using the operator "OR":1)"nonlinear pedagogy" OR "soccer" 2)" nonlinear pedagogy" OR "young soccer players". Subsequently, all the categories were combined together using the "AND" operator. Results: The database search produced 5 results. Research shows that non-linear pedagogy is not widespread in youth football. Discussion and conclusions: In the soccer the perceptual, decisional and cognitive aspects play a very significant role in solving motor problems. The relationships between motor and cognitive functions have been highlighted by neuroimaging studies providing evidence that motor and cognitive processes draw on common neural mechanisms and resources. Many studies have indicated that the relationship between these two processes is influenced by the novelty and difficulty of the task. At this time it is advisable to question how to make the training sessions highly variable, both for what is known about motor learning methods, and for what is known about the benefits deriving from the diversification of sports activity in the pre-pubertal phase.

Keywords: nonlinear pedagogy, young soccer players, game approach

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[1] italo.sannicandro@unifg.it

ULOGA DOZIRANOG VEŽBANJA U PREVENCIJI I LEČENJU HRONIČNIH NEZARAZNIH BOLESTI

Aleksa Grbović[1], Sead Malićević

FizioTim Srbija

Sažetak: Hronične nezarazne bolesti (HNB) karakteriše dugo trajanje, sporo napredovanje i hronično stanje (Hardman, & Stensel, 2009). Ove bolesti predstavljaju vodeće uzroke morbiditeta i mortaliteta i globalna su pretnja zdravlju čovečanstva (Sears, & Genuis, 2012). Različiti činioci dovode do funkcionalnih promena u organizmu koje mogu da rezultiraju HNB, a faktori rizika povećavaju verovatnoću oboljevanja. Faktori rizika mogu biti metabolički (hipertenzija, hiperglikemija, hiperlipidemija i gojaznost), nezdrave životne navike (konzumiranje alkohola i duvana, fizička aktivnost i ishrana) i opšti faktori (starenje ili uticaj životne sredine). Ipak, u osnovi pojave HNB leži životni stil, tj. navike u vezi sa ishranim i fizičkom aktivnošću. Cilj rada je prikaz uloge doziranog vežbanja u prvenciji i lečenju najčešćih hroničnih nezaraznih bolesti, uz pružanje opštih smernica za izradu programa vežbanja koji bi odgovarao najvećem broju obolelih osoba. Analiza releventne literature. **Mehanizam delovanja fizičkih vežbi na prevenciju i lečenje HNB.** Budući da u osnovi HNB leži visokokalorična ishrana uz značajno umanjenu energetsku potrošnju, odnosno sedenteran način života, terapija medikamentima nije dovoljna. S tim u vezi, ključna stvar u lečenju ali i prevenciji HNB, treba da bude promena načina života. Fizička aktivnost obezbeđuje veliku zdravstvenu dobit, a saznanja o preventivnim i terapijskim efektima dobrog nivoa fizičke spremnosti smatraju se značajnim dostignućima savremene medicine. Vežbanje poboljšava sposobnost mišića da koriste masne kiseline kao izvor energije, poboljšava kontraktilnost srčanog mišića, povećava zapreminu krvi, pojačava udarni volumen srca i snižava frekvenciju srca (Stojiljković i sar., 2011). Fizička aktivnosti smanjuje količinu lošeg holesterola i stimuliše aktivnost enzima i proteina koji umanjuju nakupljanje naslaga u krvnim sudovima (Svilar, i sar., 2015). Osim metaboličke promene u smislu kontrole glikemije, lipidnog statusa i krvnog pritiska smanuju rizik od koronarnih oboljenja i moždanog udara. Dodatno, fizička aktivnost doprinosi mentalnom blagostanju. Pojačano lučenje neurotransmitera izaziva osećaj zadovoljstva, dovodi do regulacije ponašanja (Cordeiro et al., 2017), doprinosi smanjenju zamora i stresa, poboljšava raspoloženje, smanjuje anksioznost i simptome depresije.
Za obolele od HNB potreban je individualan pristup vežbanju. Treba voditi računa o doziranju opterećenja u skladu sa osnovnom bolešću, ali i ostalim faktorima (starost, pol, životne i radne navike i sl.). Uopšteno, program treba da se bazira na elementima treninga snage, aerobnim aktivnostima i vežbama istezanja. Aerobne vežbe omogućavaju bolji dotok kiseonika, jačaju srce, krvne sudove i pluća. Vežbe snage su efikasne za povećanje mineralne gustine kostiju i osetljivosti receptira na insulin, smanjenje krvnog pritiska, poboljšanje lipidnog profila i vaskularnog stanja, bolju aktivnost gastrointestinalnog trakta, smanjenje depresije, poboljšanje funkcije srca i pluća. Vežbe istezanja smanjuju rizik od povreda i bolova u mišićima i pomažu u lakšem izvođenju drugih vežbi (ACSM, 2011., prema Svilar, i sar., 2015). Planiranje fizičkih aktivnosti osoba obolelih od HNB podrazumeva poštovanje navedenih opštih smernica. Međutim, individualno sagledavanje funkcionalnih kapaciteta i komorbiditeta obolelih je ključno za sačinjavanje usmerenog, doziranog i kontrolisang programa vežbanja. Učestalost, intenzitet, vrstu i trajanje aktivnosti treba pažljivo planirati u skladu sa karakteristikama vežbača i odlikama osnovne bolesti.

[1] aleksagrbovic@gmail.com

Ključne reči: hronične nezarazne bolesti, dozirano vežbanje, prevencija, lečenje.

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THE EFFECT OF DOSED EXERCISE IN THE PREVENTION AND TREATMENT OF CHRONIC NON-COMMUNICABLE DISEASES

Aleksa Grbović[1], Sead Malićević

Fizio Team Serbia

Abstract: Chronic non-communicable diseases (NCD) are characterized by long duration, slow progress and chronic state (Hardman, & Stensel, 2009). These diseases represent leading causes of morbidity and mortality and they are global threat to the health of humanity (Sears, & Genuis, 2012). Different factors lead to functional changes in an organism that may result in NCD, while risk factors increase the possibility of affliction. Risk factors may be metabolic (hypertension, hyperglycemia, hyperlipidemia and obesity), unhealthy lifestyle habits (alcohol and tobacco consumption, physical activity and diet) and general factors (age or environmental impact) (Ezzati, & Riboli, 2013). However, the base cause for the appearance of NCD lies in the style of living, nutritional and physical activity habits respectively. The aim of this paper is to point out the effect of dosed exercise in prevention and healing of most common chronic non-communicable diseases, whilst providing guidelines for developing an exercise program which would be fitting to a large number of afflicted people. Analysis of relevant literature. **Mechanism of action of physical exercises on prevention and treatment NCD.** Given that is the base cause for NCD is high-calorie diet combined with considerably low energy output, meaning, sedentary lifestyle, drug therapy is not enough. This considered a key to healing and prevention of NCD should be changing the life style. Physical activity is a great boost to ones health, and findings about preventive and therapeutic effects of good physical condition are considered important achievements of modern medicine. Exercise enhances the ability of muscles to use fat acids as energy sources, it improves heart muscle contractility, it increases blood volume and stroke volume of the heart, and lowers heart-rate (Stojiljković, et al., 2011). Physical activity lowers the amount of bad cholesterol and stimulates the activity of enzymes and proteins that reduce accumulation of deposits within blood vessels (Svilar, et al., 2015). Beside metabolic changes regarding glycemic control, lipid status and blood pressure, they reduce the risk of coronary disease and stroke. Moreover, physical activity improves mental health. Increased neurotransmitter activity leads to a sense of wellbeing and regulates behavior, lowers stress and fatigue, improves mood, decreases anxiety and symptoms of depression (Molanorouzi, et al., 2015). For people with NCDs, an individual approach to exercise is required. The distribution of load should be taken with care, in accordance with the underlying disease, but also other factors (age, sex, life and work habits, etc.). In general, program should be based on elements of strength training, aerobic activities and stretching exercises. Aerobic exercises enable better oxygen supply; strengthen the heart, blood vessels and lungs. Strength exercises are effective for increasing bone mineral density and sensitivity to insulin receptors, reducing blood pressure, improving lipid profile and vascular status, better activity of the gastrointestinal tract, reducing depression, improving heart and lung function (Westcott et al., 2009). Stretching exercises reduce the risk of injury and muscle pain and help with making other exercises easier (ACSM, 2011. according to Svilar, at al., 2015). Planning physical activities for persons suffering from NCDs implies compliance with the stated general guidelines. However, individual consideration of the functional capacities and co-morbidity of patients is key factor for creating a dosed and controlled exercise program. The frequency, intensity, type and duration of activities should be carefully planned in accordance with the characteristics of the exerciser and the characteristics of the underlying disease.

[1] aleksagrbovic@gmail.com

Keywords: chronic non-communicable diseases, dosed exercise, prevention, treatment.

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PRIMENA KONCEPTA PERSONALIZOVANE ISHRANE U SPORTU

Vladimir Ilić[1] , Marina Ivanović, Jelena Đorđević

Akademija strukovnih studija Beograd, odsek Visoka zdravstvena škola

Sažetak: Adekvatna ishrana predstavlja jednu od osnovnih komponenti za uspešno bavljenje sportom. Usled povećane energetske potrošnje, sportisti imaju povećane nutritivne zahteve. Radi postizanja boljih rezultata, neophodno je optimalno dizajniranje ishrane pojedinca. Ona mora biti dobro isplanirana i organizovana, i individualno prilagođena telesnim karakteristikama, kao i zahtevima vrste sporta. Usklađivanjem programa ishrane sa trenažnim procesom, njegovom frekvencijom, dužinom i intenzitetom treninga, doprinosi se bržem oporavku i izbegavanju premora. Optimalnim unosom neophodnih hranljivih materija kroz ishranu, koje prati adekvatna hidratacija i dopunska suplementacija, unapređuju se sportske performanse i dostignuća. Nutricionistički programi danas, uglavnom, obuhvataju dijete sa jelovnicima, koje karakteriše određeni kalorijski unos i zastupljenost hranljivih materija, sačinjene prema osnovnim telesnim parametrima pojedinca i zahtevima konkretnog sporta. Međutim, uzimajući u obzir sve praktične i kulturološke faktore i različitosti, koji zapravo određuju ponašanje u ishrani i izboru hrane, nameće se nužnost inoviranja sportskih nutricionističkih procedura koje bi bile prilagođenje pojedincu. Veliki doprinos personalizaciji programa ishrane danas daju saznanja iz oblasti nutrigenomike. Genetske razlike utiču na apsorpciju, metabolizam, usvajanje, korišćenje i izlučivanje hranljivih i bioaktivnih sastojaka prisutnih u hrani, što na kraju, utiče na brojne metaboličke puteve. Pregledom literaturnih podataka uočava se da je cilj nutrigenomičkih istraživanja otkrivanje uzročno-posledičnih veza u ovoj oblasti i uspostavljanje sistema personalizovane ishrane. Nutrigenomika koristi genomske informacije i tehnologije genetskog ispitivanja da bi se ispitala uloga individualnih genetskih razlika u modifikovanju reakcije sportiste na hranljive sastojke prisutne u hrani. Sam koncept baziran je na preporukama za konzumiranje hrane i dodataka ishrani, koje se temelje na ukupnom genetskom profilu neke osobe. Individualizacija planiranja ishrane, po autorima, prevazilazi okvire naučnih istraživanja, te nalazi svoje utemeljenje i u praksi. Primarni motiv gotovo svake sportske individue je postizanje boljih rezultata. Primena saznanja iz ove naučne oblasti u sportu, bez obzira na sportsku disciplinu, unapredila bi dosadašnje telesne mogućnosti zahvaljujući savremenim nutritivnim procedurama. Često vrlo mala i suptilna korekcija ishrane, bazirana na ovim saznanjima, može dovesti do poboljšanja fizičkih performansi sportista i unapređenja takmičarskih rezultata do nivoa prevazilaženja konkurencije ili ostvarivanja rekorda. Personalizovana ishrana nije ograničena samo na identifikaciju genetskih varijanti. Genotip je samo jedan aspekt ličnih podataka koji se može koristiti za individualizaciju saveta o ishrani sportista. Genetski profil sportiste, koji se odnosi na ishranu, treba koristiti u kombinaciji sa drugim relevantnim informacijama kao što su pol, starost, antropometrija, zdravstveni status, porodična istorija, socioekonomski status, vrsta i zahtevi sporta. Pri tome, zajedno sa utvrđivanjem prehrambenih preferencija, treba voditi računa i o eventualnom prisustvu intolerancija na neku hranu ili postojećim alergijama. Personalizovana ishrana ima za cilj razvitak sveobuhvatnije i dinamičnije, nutritivno vrednije ishrane i međusobno se dopunjuje sa ostalim preporukama za unapređenje rezultata, zasnovanim na interakciji parametara u unutrašnjem i spoljašnjem okruženju sportista tokom njihove karijere. Bolja analiza, uz primenu dostupnih alata i tehnika, kao i najnovijih saznanja iz nutricionizma i srodnih naučnih oblasti, kao i davanjem karaktera individualnosti sportskim dijetama, rezultiralo bi dostizanjem maksimalnih ishoda sportiste.

[1] ivvs@live.com

Ključne reči: personalizovana ishrana, nutrigenomika, ishrana sportista, sportske performanse

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APPLICATION OF THE CONCEPT OF PERSONALIZED NUTRITION IN SPORTS

Vladimir Ilić[1] , Marina Ivanović, Jelena Đorđević

Academy of Vocational Studies Belgrade, Department of Health School

Abstract: In order to achieve better results, it is necessary to optimally design an individual's diet. It must be well planned and organized, and individually adapted to the physical characteristics, as well as the requirements of the sport. By aligning the nutrition program with the training process, its frequency, length and intensity of training, it contributes to faster recovery and avoidance of fatigue. Optimal intake of essential nutrients through the diet, which is accompanied by adequate hydration and supplementary supplementation, improves sports performance and achievements. Nutrition programs today mainly include diets with menus, which are characterized by a certain caloric intake and nutrient content, made up according to the basic body parameters of the individual and the requirements of a particular sport. However, taking into account all the practical and cultural factors and differences, which actually determine the behavior in the diet and food choice, it is necessary to innovate sports nutrition procedures that would be adapted to the individual. Today, knowledge in the field of nutrigenomics makes a great contribution to the personalization of nutrition programs. Genetic differences affect the absorption, metabolism, uptake, use and excretion of nutrients and bioactive ingredients present in food, which ultimately affects a number of metabolic pathways. A review of the literature data shows that the goal of nutrigenomic research is to discover cause-and-effect relationships in this area and to establish a system of personalized nutrition. Nutrigenomics uses genomic information and genetic testing technologies to examine the role of individual genetic differences in modifying an athlete's response to nutrients present in food. The concept itself is based on recommendations for consuming food and dietary supplements, which are based on a person's genetic profile. According to the authors, the individualization of nutrition planning goes beyond the scope of scientific research, and finds its foundation in practice. The primary motive of almost every sports individual is to achieve better results. Often a very small and subtle dietary correction, based on this knowledge, can lead to an improvement in the physical performance of athletes and an improvement in competitive results to the level of surpassing competition or setting records. The application of knowledge from this scientific field in sports, regardless of the sports discipline, would improve the body's abilities, thanks to modern nutritional procedures. Personalized nutrition is not limited to the identification of genetic variants. Genotype is just one aspect of personal data that can be used to individualize athlete's nutrition advice. The athlete's genetic profile, which relates to nutrition, should be used in combination with other relevant information such as gender, age, anthropometry, health status, family history, socioeconomic status, type and requirements of sport. In addition to determining dietary preferences, one should take into account the possible presence of food intolerances or existing allergies. Personalized nutrition aims to develop a more comprehensive and dynamic, nutritionally valuable diet and complements each other with recommendations for improving results, based on the interaction of parameters in the internal and external environment of athletes during their careers. Better analysis, with the application of available tools and techniques, as well as the latest knowledge from nutrition and related scientific fields, and giving the character of individuality to sports diets, would result in achieving maximum results for the athlete.

Keywords: personalized nutrition, nutrigenomics, athletes nutrition, sports performance

[1] ivvs@live.com

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INCIDENCIJA POVREĐIVANJA U KONJIČKOM SPORTU

Predrag Ilić[1], Bojan Ugrinić[1,2], Borko Katanić[1], Miljan Hadžović[1], Mima Stanković[1], Manja Vitasović[3]

[1]Univerzitet u Nišu, Fakultet sporta i fizičkog vaspitanja
[2]Visoka sportska i zdravstvena škola, Beograd
[3]Equestrian Club „Gorska Team“, Belgrade

Sažetak: Iako je rizik u konjičkom sportu permanentno prisutan, bilo bi nepravedno tumačiti ga kao neprihvatljiv rizik obzirom na popularnost konjičkog sporta u svetu. Cilj ovog rada je utvrđivanje rizika od povreda u konjičkom sportu, pri čemu su korišćene sistematizacija, analiza i deskriptivna metode. Pretraživanje literature obavljeno je pomoću pretrage elektronske baze podataka Google Schollar, Pub Med i Kobson. Za potrebe ove studije korišćena su naučna longitudinalna i trasverzalna, randomizirana i nerandomizirana istraživanja, koja su obuhvatila učesnike oba pola i svih uzrasta, pisana na engleskom i objavljivana u celosti u periodu od 1984 do 2018.godine. Dobijeni rezultati ukazuju da se konjički sport smatra rizičnim sportom, dok je „Three day Event“ disciplina sa najvećom prevalencijom povreda. Zaključak sugeriše da sigurnošću u Eventingu treba da se posveti pažnja u daljnjim istraživanjima i da se preduzmu postupanja usmerena na povećanje sigurnosti jahača i konja.

Ključne reči: konjički sport, pad, povreda, konj, jahač.

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[1] 1961predragilic@gmail.com

INJURY INCIDENCE IN THE EQUESTRIAN SPORT

Predrag Ilić[1], Bojan Ugrinić[1,2], Borko Katanić[1], Miljan Hadžović[1], Mima Stanković[1], Manja Vitasović[3]

[1]University of Niš, Faculty of Sports and Physical Education
[2]College of Sports and Health, Belgrade
[3]Equestrian Club „Gorska Team“, Belgrade

Abstract: Eventhough the risk in the equestrain sports in permanently present, it would be unfair to interpret it as the unacceptable, bearing in mind the popularity of the equestrian sport in the world. The aim of this paper is to determine the risk of injury in the equestrian sport using sistematization, analysis and descriptive method. Liretature review has been conducted through the electronic data bases Google Schollar, Pub Med and Cobson. For the purpose of this study, longitudinal and transversal methods were used, as well as randomized and non-randomized research, which included participants of both sexes and of all ages, written in English and published between the years of 1984 and 2018. Extracted results indicate that equestrian sport is considered to be a risky sport, with the Three-day-event being the discipline most prevalent to injuries. Conclusion suggests that further research should be conducted for the Three-day-eventing in order to take steps to ensure higher safety of both riders and horses.

Keywords: equestrian sport, fall, injury, horse, rider.

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[1] 1961predragilic@gmail.com

PREVALENCIJA POVREDA U KONJIČKOM SPORTU U ODNOSU NA ANATOMSKU TOPOGRAFIJUM POL I GODINE JAHAČA

Predrag Ilić[1], Bojan Ugrinić[1,2], Borko Katanić[1], Miljan Hadžović[1], Manja Vitasović[3]

[1]Univerzitet u Nišu, Fakultet sporta i fizičkog vaspitanja
[2]Visoka sportska i zdravstvena škola, Beograd
[3]Equestrian Club „Gorska Team“, Belgrade

Sažetak: Sportisti u konjičkom sportu su veoma raznolika grupacija sa rasponom godina jahača, gde su izloženi riziku od povreda pri padu sa konja. Cilj ovog rada je utvrđivanje prevalencije povreda u konjičkom sportu u odnosu na anatomsku topografiju, pol i starosnu dob jahača. Pregled literature obavljen je pretragom elektronske baze podataka Google Schollar, Pub Med i Kobson izdatim u periodu od 1994 do 2018.godin. Za potrebe ove studije korišćena su naučna longitudinalna i trasverzalna, randomizirana i nerandomizirana istraživanja, koja su obuhvatila učesnike oba pola i svih uzrasta, pisana na engleskom, dok su korišćene deskriptivna metoda, sistematizacija i analiza. Dobijeni rezultati ukazuju da je najveći procenat povrede glave i gornjeg dela trupa i ekstremiteta, da su žene i mlađi jahači izloženiji povredama. Zaključak sugeriše na neophodnost svesti o rizicima i faktorima koji ih proizvode, da treba podići standard zaštitne opreme i unaprediti pravila konjičkog sporta. Uobičajena ograničenja su nemogućnost definitivne izolacija uticaja odabranih faktora od drugih faktora kada se analizira procena rizika od povređivanja obzirom na kompleksnsot konjičkog sporta. Radi dobijanja potrebnih nalaza potrebno je nastaviti sa istraživanjem.

Ključne reči: konjički sport, povreda, telo, pol, starost.

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[1] 1961predragilic@gmail.com

INJURY PREVALENCE IN REGARD TO THE ANATOMICAL TOPOGRAPHY, SEX AND AGE OF THE RIDER IN THE EQEUSTRIAN SPORT

Predrag Ilić[1], Bojan Ugrinić[1,2], Borko Katanić[1], Miljan Hadžović[1], Manja Vitasović[3]

[1]University of Niš, Faculty of Sports and Physical Education
[2] College of Sports and Health, Belgrade
[3]Equestrian Club „Gorska Team“, Belgrade

Abstract: Equestrian athletes are a very diverse group with a range of age riders, where they are at risk of injury when falling from a horse. The aim of this paper is to determine the injury prevalence in regard to the anatomical topography, sex and age of the rider in the equestrian sport. Literature review was conducted using the electronic databases Google Schollar, Pub Med and Cobson, reviewing the documents published between 1994 and 2018. For the purpose of this study, longitudinal and transversal, and randomize and non-randomized methods were used, which included participants of both sexes and of all ages, written in English, while using descriptive methods, sistematyzation and analysis. Extracted results show the highest rate of head injuries and upper body and upper extremities, and that women and younger riders are more prone to injuries. Conclusion suggests that it is necessary to raise awareness of the risks and factors that produce them, that it is necessary to raise the standard of the safety equipment and to imrpove the safery regulations in equestrian sport. The usual constraints are related to the inability to isolate the impact of certain factors from the others when conducting risk analysis, bearing in mind the complexity of the equestrian sport. It is necessary to continue the research in order to obtain necessary results.

Keywords: equestrian sport, injury, body, sex, age.

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[1] 1961predragilic@gmail.com

SERUM VEGF LEVELS IN THE ELDERLY: THE EFFECT OF CONCENTRIC-CONCENTRIC ISOKINETIC ACTIVITY AND RESTRICTED BLOOD FLOW

Fatemeh Imani[1], Maryam Nourshahi[1], Sajad Ahmadizad[1]

[1]Department of Biological Sciences in Sport, Faculty of Sport Sciences and Health, Shahid Beheshti University, Tehran, Iran

Abstract

Introduction: Aged people experience considerable physical changes in their body such as decrease of physical activity, muscular atrophy and decrease of physiological factors. These changes result in decrease of physical performance and sarchopina. In addition, given the decrease of body mass and muscular power, blood flow restriction may prevent sachropina. The effects of concentric isokenetic activity with blood flow restication on VEDF serum on aged men were examined. **Methods**: For this purpose, 10 healthy men at age range 60-80 year were selected through convenience sampling in a Tehran-based park (average age: 65/2±3/73.year, height: 175.9±2.92.cm ,BMI: 25.15±2.85kg/m2). Medical record of the participants was checked to ensure no cardiovascular diseases, smoking habits and or any other medicine through a general information questionnaire. The participants filled out the questionnaire after a brief introduction to the test procedure and probable risks of the study. The participants performed concentric isokinetic (knee extension and flexion) without blood flow restriction. The second practice session was held one week later and this time with blood flow restriction. Study protocol consisted of 3 sets of 30 repetitions and 3 sets of 15 repetition of con/con contraction (60s rest time, 60̊/s; 20%1RM). Blood samples were collected before initiation of the protocol, immediately after, and 2hrs after the protocol; and VEGF serum was measured through ELAISA kit. **Results**: The results indicated that VEGF serum level significantly increased in response to concentric isokinetic practice with blood flow restriction (P = 0.014). **Discussion**: Thereby, acute of concentric isokinetic, even mildly (20%1RM) with blood flow restriction was effective on enhancement of angiogenesis factor in aged men

Keywords: isokinetic activity, restricted blood flow, men elderly, VEGF

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[1] fa.imani68@gmail.com

ZDRAVSTVENI TURIZAM I SPORTSKO REKREATIVNI PROGRAMI ZA DECU

Aleksandar Ivanovski[1], Bojan Ugrinić, Sreten Srećković, Radomir Zrnić

Visoka Sportska i zdravstvena škola, Beograd

Sažetak: Sport i rekreativna aktivnost imaju važnu ulogu u svim područjima ljudskog života. Fizička aktivnost pozitivno utiče na usvajanje zdravog načina života, unapređuje zdravlje i kvalitet života. Redovna fizička aktivnost jedan je od ključnih faktora za zdrav život. Neke od pozitivnih uticaja fizičke aktivnosti su unapređenje zdravlja i kvaliteta života. Ona produžuje očekivano trajanje života i smanjuje rizik od hronično nezaraznih bolesti kao što su bolesti srca i krvnih sudova, šećerna bolest, maligne bolesti, poboljšavanje fizičkog i mentalnog zdravlja i sl. Nikada nije prerano da se započne s usvajanjem zdravih navika i edukacijom o važnosti sporta i fizičke aktivnosti. Studije pokazuju da većina dece koja se bave sportom i fizički su aktivna u detinjstvu, zadrže takve navike i kasnije kad odrastu. Deca koja se od malena bave nekom sportskom aktivnošću, već u ranoj životnoj dobi razvijaju radne navike i samodisciplinu. Sport sa druge strane ima pozitivnu ulogu i u emocionalnom razvoju dece budući da olakšava i proces njihove socijalizacije. Predmet rada je da se na što bolji način približi važnost sportsko rekreativnih programa i ukaže na povezanost sa zdravstvenim turizmom. Sportsko rekreativni programi u prirodi mogu biti iskazani kroz različite forme poput škola u prirodi, rekreativnih nastava, sportsko rekreativnih kampova ili dečijih festivala rekreacije. Bibliografskom metodom prikupljana podataka izvršiće teorijska analiza pomenutih aktivnosti i njihov značaj za zdravstveni turizam. Sport i rekreativna aktivnost razvijaju kod pojedinca svest o sebi i smanjuju anksioznost i stres. Uči dete kako pobeđivati ali i prihvatati poraz, uči ga fair-play-u u igri i životu, razvija prijateljstvo. Deca koja se bave sportom imaju zdravije navike hranjenja, manje puše, manje konzumiraju alkohol, manje se razboljevaju. Program koji se sprovodi kroz sportsko-rekreativne aktivnosti kod dece takođe razvija i različite veštine, pokazuje kako izgleda timski rad, razvija samodisciplinu i socijalizaciju u društvu. Navike stečene od ranog detinjstva ostaju za čitav život i teško se menjaju. U zaključku se nameće činjenica da sportsko rekreativni programi koji se plasiraju kroz pomenute programe imaju pozitivan efekat na jačanje zdravstvenog turizma. Pored svih pozitivnih efekata na fizičko zdravlje kao i na pravilan rast i razvoj deteta, važno je istaći da se poboljšava kondicija, brzina, fleksibilnost, koordinacija i na kraju snaga i izdržljivost. Prijatan umor nakon fizičke aktivnosti obezbeđuje detetu brz i lak san koji uz poboljšanje cirkulacije krvi u mozgu i većeg dotoka kiseonika omogućuje bolju i dužu koncentraciju, lakše savlađivanje nametnutih zadataka, ubrzaniji proces razmišljanja i kombinatorike, te lakše prihvatanje svake vrste izazova. Upravo je boravak u prirodi i sve prethodno navedeno jedan je od važnih komponenata zdravstvenog turizma.

Ključne reči: zdravlje, turizam, sportsko rekreativni program, deca

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[1] ivanovski@vss.edu.rs

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HEALTH TOURISM AND SPORTS AND RECREATIONAL PROGRAMS FOR CHILDREN

Aleksandar Ivanovski[1], Bojan Ugrinić, Sreten Srećković, Radomir Zrnić

College of Sports and Health, Belgrade

Abstract: Sport and recreational activity play an important role in all areas of human life. Physical activity has a positive effect on the adoption of a healthy lifestyle, improves health and quality of life. Regular physical activity is one of the key factors for a healthy life. Some of the positive effects of physical activity are the improvement of health and quality of life. It prolongs life expectancy and reduces the risk of chronically non-communicable diseases such as heart and blood vessel diseases, diabetes, malignant diseases, improving physical and mental health and the like. It is never too early to start adopting healthy habits and educating about the importance of sports and physical activity. Studies show that most children who play sports and are physically active in childhood, maintain such habits even later when they grow up. Children, who have been involved in some sport activity since they are young, develop work habits and self-discipline at an early age. Sport, on the other hand, has a positive role in the emotional development of children, since it also facilitates the process of their socialization. The subject of the paper is to get as close as possible to the importance of sports and recreational programs and point out the connection with health tourism. Sports and recreational programs in nature can be expressed through various forms such as schools in nature, recreational classes, sports and recreational camps or children's recreation festivals. The theoretical analysis of the mentioned activities and their significance for health tourism will be performed using the bibliographic method of data collection. Sport and recreational activity develop self-awareness in individuals and reduce anxiety and stress. It teaches the child how to win but also to accept defeat, teaches him fair play in play and life, develops friendship. Children who play sports have healthier eating habits, smoke less as adults, consume less alcohol, and get less sick. The program, which is implemented through sports and recreational activities for children, also develops various skills, shows what teamwork looks like, develops self-discipline and socialization in society. Habits acquired from early childhood remain for a lifetime and are difficult to change. In conclusion, the fact is that sports and recreational programs that are placed through the mentioned programs have a positive effect on strengthening health tourism. In addition to all the positive effects on the physical health as well as on the proper growth and development of the child, it is important to point out that fitness, speed, flexibility, coordination and finally strength and endurance are improved. Pleasant fatigue after physical activity provides the child with fast and easy sleep, which, along with improving blood circulation in the brain and greater oxygen supply, enables better and longer concentration, easier overcoming of imposed tasks, faster process of thinking and combinatory moves, and easier acceptance of any challenge. Staying in nature and all of the above is one of the important components of health tourism.

Keywords: health, tourism, sports and recreation program, children

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[1] ivanovski@vss.edu.rs

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WELLNESS KONCEPT

Aleksandar Ivanovski[1], Tanja Pajčin, Bujar Saiti

Visoka Sportska i Zdravstvena Škola Beograd

Pedagoški fakultet, Skoplje

Sažetak: Kroz istoriju vidimo da velnes kao medicinska praksa datira iz Indije i to 5000 god.pre nove ere. Žene u egiptu su koristile kozmetičke preparate još 3000 god.pre nove ere (mirišljave kupke, kupanje u kozijem mleku...). Homer i drugi klasični pisci navode da su Grci podsticali različita socijalna kupanja 500 godina pre Hrista, uključujući vruće vazdušne kupke poznate kao Lakonijum. Dvadest pet godina pre Hrista Car Agripa izgradio je jedne od prvih rimskih Termi i svaki sledeći rimski car nadvisio je svog prethodnika gradeći sve veće i ekstravagantnije Terme. Kroz svo vreme terme su se gradile u celom rimskom carstvu, od Afrike do Engleske, postepeno izrastajući u komplekse koje nude sport, restorane, i različite tipove kupališta. Kako je raslo Rimsko carstvo, tako je rastao i broj kupatila. Oko 300 g.n.e. bilo je preko 900 kupatila u celom carstvu. One su istovremeno služile i za održavanje higijene i za očuvanje zdravlja zatim za opuštanje, ali i za druženje. Predmet rada je da se predstavi koncepcija velnesa kao načina života. Cilj rada je da se takva koncepciji približi današnjoj publici. Bibliografskom metodom prikupljanja podataka i teroijskom analizom biće prikazani rezultati radi. U zaključku vidimo da se Wellness može da se predstaviti kao preklapanje sedam različitih dimenzija života. Fizička dimenzija (redovna fizička aktivnost, pravilna ishrana...) Intelektualna dimenzija (razvoj sopstvene ličnosti u intelektualnom pogledu) Emocionalna dimenzija (suočavanje sa sopstvenim problemima i rešavanje....) Socijalna dimenzija (održavanje dobrih porodičnih odnosa, komunikacija sa spoljnim svetom) Profesionalna dimenzija (znači da je potrebno probuditi već postojeće talenate za bavljenje određenim aktivnostima ili hobijem.) Duhovna dimenzija (naći svoj put, dostići sopstveno zadovoljstvo i mir.) Dimenzija okruženja (ekološka dimenzija)

Ključne reči: velnes, spa, rekreacija

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[1] ivanovski@vss.edu.rs

WELLNESS CONCEPT

Aleksandar Ivanovski[1], Tanja Pajčin, Bujar Saiti

College of Sports and Health Belgrade, Serbia

Faculty of Pedagogy, Skopje, North Macedonia

Abstract: Throughout history, we see that wellness as a medical practice dates back to India, 5000 BC. Women in Egypt used cosmetics as far back as 3000 BC (fragrant baths, bathing in goat's milk ...). Homer and other classical writers state that the Greeks encouraged various social baths 500 BC, including hot air baths known as Laconium. Twenty-five years before Christ, Emperor Agrippa built one of the first Roman Baths and each subsequent Roman emperor surpassed his predecessor by building larger and more extravagant Baths. Throughout the time, spas were built throughout the Roman Empire, from Africa to England, gradually growing into complexes offering sports, restaurants, and various types of baths. As the Roman Empire grew, so did the number of bathrooms. About 300 AD there were over 900 bathrooms throughout the kingdom. At the same time, they served to maintain hygiene and to preserve health, then to relax, but also to socialize. The subject of the paper is to present the concept of wellness as a way of life. The aim of the paper is to bring such a concept closer to today's audience. The bibliographic method of data collection and theoretical analysis will show the results. In conclusion, we see that Wellness can be presented as an overlap of seven different dimensions of life. Physical dimension (regular physical activity, proper nutrition ...) Intellectual dimension (intellectual development of one's own personality) Emotional dimension (coping with one's own problems and solving ....) Social dimension (maintaining good family relations, communication with the outside world) Professional dimension (means that it is necessary to awaken existing talents to engage in certain activities or a hobby.) Spiritual dimension (find your way, achieve your own satisfaction and peace.) Environmental dimension (ecological dimension)

Keywords: Wellness, spa, recreation

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[1] ivanovski@vss.edu.rs

RELATIONSHIP BETWEEN BENCH PRESS STRENGTH AND PUNCH PERFORMANCE IN MALE PROFESSIONAL BOXERS

Isaac López Laval[1], Rafel Cirer Sastre, Sebastian Sitko

University of Zaragoza

Abstract: This study investigated the relationship between punching performance and the velocity at which different loads were lifted during the bench press (BP) exercise. Methods: 12 professional boxers (age 5 22.6 6 4 years; height 5 177.7 6 5 cm; body mass 70.6 6 6.43 kg; years of boxing experience 5 6.5 6 3.5 years; weight class 5 from light to super welterweight) took part in the study. To determine the maximal punching velocity (PVmax) during both rear arm (RA) and lead arm (LA) punching, an accelerometer (Crossbow; Willow Technologies, Sussex, United Kingdom) was placed inside the boxing glove while executing 3 jaws at a maximal velocity with each arm. Upper-body strength was assessed through the direct 1-repetition maximum (1RM) BP test, and the maximum velocity at different percentages of 1RM was obtained with a linear encoder. The main finding was that RA PVmax was correlated with the BP velocity at all submaximal intensities (p , 0.05). Nevertheless, LA PVmax did not correlate with BP velocity at any intensity. When the correlated BP submaximal intensities were introduced in linear regression models, the velocity at 80% 1RM was the only predictor of RA PVmax (r 2 5 0.75; p , 0.01) in professional boxers. Additional body mass adjustment to the regression model significantly affected the predictive value (r 2 5 0.65; p , 0.005). Results encourage coaches and trainers to use BP exercise with high loads (i.e., 80% of 1RM) because this could be a reliable predictor of performance during the specific boxing action. Future research is needed to determine exercises and intensities that could explain LA PVmax because significant associations were not found.

Keywords: Boxing, training, velocity, combat sports

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[1] isaac@unizar.es

VIDLJIVOST PARAOLIMPIJSKIH SPORTISTA U MEDIJIMA

Kristina Ivanović[1], Jovana Pavlović

Univerzitet u Beogradu, Fakultet za specijalnu edukaciju i rehabilitaciju

Sažetak: Kada se izveštava o sportu osoba tipične populacije, takve vesti dobijaju daleko više medijskog prostora nego što je slučaj sa sportom osoba sa invaliditetom, a to društvu šalje poruku da drugopomenuti nisu dovoljno važni niti zanimljivi, i da njihova sportska postignuća nisu toliko vredna. Cilj ovog preglednog rada bio je da se analizom relevantne literature ukaže na načine na koji svetski mediji tretiraju sport osoba, ali i same osobe sa invaliditetom na njihovom najvećem takmičenju, Paraolimpijskim igrama. Pregled literature izvršen je pretragom elektronskih časopisa i knjiga preko pretraživača GoogleScholar. Nakon inicijalne pretrage pronađeno je preko 50 naučnih radova koji odgovaraju temi, a nakon čitanja apstrakata izdvojeno je 15 radova i jedna knjiga koji ispunjavaju kriterijume. Kriterijumi za uključivanje su sledeći: dostupnost radova u celini, da se radovi bave kvantitativnom i/ili kvalitativnom analizom članaka objavljenih u svetskim medijima za vreme trajanja Paraolimpijskih igara, da se radovi bave analizom fotografija objavljenih za vreme trajanja Paraolimpijskih igara, da radovi sadrže kvalitativne intervjue sa novinarima koji su izveštavali sa Paraolimpijskih igara, da se radovi odnose na Paraolimpijske igre održane u periodu od 2000. do 2016. godine, da su radovi publikovani na engleskom jeziku. Analiza radova pokazala je da novinari paraolimpijske sportiste predstavljaju kao „pasivne žrtve“, „superinvalide“ ili „ostale“, a fotografije potenciraju sakrivanje invaliditeta, pasivne poze na slikama, fokus na invaliditetu ili prezastupljenost sportista u kolicima. Još uvek nisu rađena istraživanja koja bi na ovaj način analizirala stav srpskih medija prema paraolimpijskom sportu, pa se ističe potreba za takvim poduhvatom.

Ključne reči : paraolimpijske igre, mediji, izveštavanje, invaliditet

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[1] ivanovic.kristinaa@gmail.com

VISIBILITY OF PARALYMPIC ATHLETES IN THE MEDIA

Kristina Ivanović[1], Jovana Pavlović

University of Belgrade – Faculty of Special Education and Rehabilitation

Abstract: When reporting about non-disabled sport, such news gets far more media space than disability sport, and that sends a message to society that the latter are not important or interesting enough, and that their sports achievements are not so valuable. The aim of this review was to analyze the relevant literature in order to point out the ways in which the world media treat the disability sport and people with disabilities in their biggest competition - the Paralympic Games. The literature review was performed by searching books and electronic journals through the GoogleScholar search engine. After the initial search, over 50 scientific papers corresponding to the topic were found, and after reading the abstracts, 15 papers and one book that met the criteria were selected. Criteria for inclusion are the following: papers fully available, papers containing quantitative and/or qualitative analysis of articles published in world media during the Paralympic Games, papers containing analysis of photographs published during the Paralympic Games, papers containing qualitative interviews with journalists who reported about the Paralympic Games, papers referring to the Paralympic Games held from 2000 to 2016, papers published in English. The analysis of papers showed that journalists present paralympic athletes as "passive victims", "super-disabled" or "others", and that the photos emphasize hiding disability, passive poses in pictures, focus on disability or overrepresentation of athletes in wheelchairs. No research has been done yet that would analyze the way Serbian media treat paralympic sports, so the need for such a project is highlighted.

Keywords: paralympic games, media coverage, disability

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[1] ivanovic.kristinaa@gmail.com

STAVOVI SREDNJOŠKOLACA O ZDRAVSTVENOJ I SPORTSKOJ KULTURI U VREME COVID-19

Nebojša Jotov[1], Nebojša Ilić[2]

[1]Gimnazija "Sveti Kirilo i Metodije", Dimitrovgrad, Srbija
[2]Visoka sportska i zdravstvena škola, Beograd

Sažetak: Zdravstvena i sportska kultura učenika srednjih škola kao jedna od značajnih dimenzija življenja se može sagledati i optimizovati na različite načine. Iz korpusa multidimenzionalnog pristupa mi smo se u ovom radu opredelili za zdravstvenu i sportsku kulturu srednjoškolaca i njihovih stavova u vezi sportsko-rekreativnih aktivnosti u vreme COVID-19. Problem ovog rada odnosi se na sagledavanje, da li i u kojoj meri je razvijena zdravstvena i sportska kultura kod srednjoškolaca, kao i procena stavova u vezi sportsko-rekreativnih aktivnosti i COVID-19. Shodno problemu cilj ovog istraživanja je utvrđivanje nivoa zdravstvene i sportske kulture i otkrivanje i utvrđivanje stavova srednjoškolaca u vezi COVOD-19. Uzorak je činilo 102 učenika Gimnazije „ Sv. Kirilo i Metodije“ u Dimitrovgradu. U ovom empirijsko neeksperimentalnom istraživanju koristili smo sledeće metode: servej metoda, metoda teorijske analize. U istraživanju primenili smo sledeće tehnike: tehnika anketiranja, tehnika skaliranja .Prosečna vrednost ajtema zdravstvenog i sportskog stava posmatrani na nivou celokupne populacije iznosi PVzss=3,57. Takva vrednost je iznad srednjeg skora Likertove skale. Ovakva iskazana mera proseka je izračunata kao totalna aritmetička sredina. To nam govori da stavovi o zdravlju i sportu ispitivanih učenika uglavnom imaju pozitivne valencije, ali da nemaju značajne intenzitete, što ukazuje na činjenicu da treba raditi i ulagati napore u cilju poboljšanja zdravstvene i sportske kulture srednjoškolaca.

Ključne reči: zdravstvena kultura, sportska kultura, COVID-19, procena stavova, očuvanje zdravlja

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[1] nebojsajotov@gmail.com

ATTITUDES OF SECONDARY SCHOOL STUDENTS REGARDING HEALTH AND SPORTS CULTURE DURING COVID-19

Nebojša Jotov[1], Nebojša Ilić[2]

[1]"St. Cyril and Methodius" Gammar School, Dimitrovgrad, Serbia

[2]College of Sports and Health, Belgrade

Abstract: Being one of the important dimensions of life, health and sports culture of secondary school students can be viewed and optimized in different ways. From the corpus of multidimensional approach, in this paper we have decided to focus on the health and sports culture of high school students and their attitudes regarding sports and recreational activities during COVID-19. The problem of this paper refers to the observation of whether and to what extent the health and sports culture is developed among high school students, as well as the assessment of their attitudes regarding sports and recreational activities and COVID-19. Aligned to the problem, the goal of this research is to determine the level of health and sports culture and to discover and determine the attitudes of secondary school students regarding COVID-19 . The sample of the research consisted of 102 students from the "St. Cyril and Methodius" Grammar School in Dimitrovgrad. In this empirically non-experimental research we used the following methods: the survey method and the method of theoretical analysis. In the research we applied the following techniques: the survey technique and the scaling technique. The average value of the items of health and sports attitude observed at the level of the entire population is PVzss = 3.57. Such a value is above the mean score of the Likert scale. This expressed measure of the average was calculated as the total arithmetic mean. This tells us that the attitudes about the health and sports of the surveyed students generally have positive valences, but that they lack significant intensities, which indicates the fact that work should be done and efforts should be made to improve the health and sports culture of secondary school students.

Keywords: healt culture, sports culture, COVID-19, attitude assessment, healt preservation

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[1] nebojsajotov@gmail.com

EMOCIONALNA REGULACIJA KAO MEDIJATOR U ODNOSU IZMEĐU MOTIVACIJE ZA TRČANJEM MARATONA I AFEKTIVITETA

Tijana Kabić[1], Stanislava Popov, Jelena Sokić

Fakultet za sport i turizam, Novi sad, Srbija

Sažetak: O evidentnom globalnom rastu popularnosti trčanja maratona najbolje nam svedoči činjenica da je broj maratonaca za poslednjih pedesetak godina u SAD porastao najmanje 10 puta. I naša zemlja prati taj trend, a uporedo raste i zainteresovanost za istraživanje motivacije ljudi da se oprobaju u ovoj zahtevnoj atletskoj disciplini. U našem istraživanju izvršili smo ispitivanje povezanosti različitih faktora motivacije, afektiviteta i kognitivnih strategija regulacije emocija, na uzorku koji je činilo 145 maratonaca (101 muškarac, 44 žene). Uslov je bio istrčan maker jedan maraton, a taj broj je varirao od 1 do maksimalnih 208. Korišćeni su upitnici MOMS (Motivation of Marathoners Scale), CERQ, (Cognitive Emotion Regulation Questionnaire), SIAB-PANAS (Srpski Inventar Afekta baziran na Positive and Negative Affect Schedule-X). Analiza medijacije je urađena u makrou PROCESS (Hayes, 2018). Primenjen je model multiple medijacije, pri čemu su medijatori bile strategije emocionalne regulacije, prediktori pojedinačno faktori motivacije za trčanjem, a kriterijumi sklonost ka pozitivnom, odnosno negativnom afektu. Značajna medijatorska uloga je dobijena samo u slučaju planiranja I pozitivne reformulacije, i to u predikciji negativnog afekta. Za predikciju pozitivnog afekta nijedna strategija emocionalne regulacije se nije pokazala kao značajan medijator. Mogli bismo da zaključimo da će osobe koje su na trčanje motivisane fizičkim zdravljem, a sklone su planiranju – imati manji negativan afekat, dok će afilijacija kao motiv za trčanjem tek uz razvoj strategija pozitivne preformulacije doprineti smanjenju sklonosti ka negativnim emocijama. Ovo saznanje možemo direktno iskoristiti u našem savetodavnom radu, korišćenjem strategija postavljanja ciljeva i korekcije iracionalnih uverenja.

Ključne reči: motivacija, maraton, emocionalna regulacija, afektivitet

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[1] tijanakabic@gmail.com

EMOTIONAL REGULATION AS A MEDIATOR IN THE RELATIONSHIP BETWEEN MOTIVATION FOR RUNNING MARATHONS AND AFFECTIVITY

Tijana Kabić[1], Stanislava Popov, Jelena Sokić

Faculty of sport and tourism, Novi Sad, Serbia

Abstract: The popularity of running marathoners is in constant growth worldwide. The greatest testament to this is the increase in the number of marathoners in the USA by at least ten times in the last fifty years. It should not come as a surprise that Serbia also participates in this trend. Therefore, there is a growing interest in researching people's motivation for this demanding athletic discipline in Serbia. This study examines the association of different factors of motivation, affectivity, and cognitive strategies of emotion regulation. We used a sample of 145 marathoners (101 men and 44 women). The condition was that they ran at least one marathon and that the number varied from 1 to a maximum of 208. For methodology, we used questionnaires MOMS (Motivation of Marathoners Scale), CERQ (Cognitive Emotion Regulation Questionnaire), SIAB-PANAS (Serbian Inventory of Affect based on Positive and Negative Affect Schedule-X). Additionally, we performed the mediation analysis in PROCESS macro (Hayes, 2018). More precisely, we applied the model of multiple mediations. In this model, the strategies of emotional regulation are the mediators, the individual factors of motivation for running are the predicators, and the criteria are the tendency towards positive or negative affect. A significant mediating role was achieved only in the planning and positive reformulation, as predicting the negative affect. For predicting the positive affect, no emotional regulation strategy has proven to be an important mediator. We could conclude that people who are motivated to run for their physical health and are inclined to plan will have a fewer negative affect. Differently, affiliation as the motive for running will only reduce the tendency to negative emotions with positive reformulation strategies. This knowledge could be used directly in our advisory work by using strategies to set goals and disputing irrational beliefs.

Keywords: motivation, marathon, emotional regulation, affectivity

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[1] tijanakabic@gmail.com

ULOGA MEDIJA U OČUVANJU ZDRAVLJA, PREVENCIJI I PROMOCIJI FIZIČKE AKTIVNOSTI I ZDRAVIH ŽIVOTNIH STILOVA

Marina Kostić[1]

Uprava za društvene delatnosti, Grad Niš

Sažetak: Periodi izolacije i takozvanog "socijalnog i fizičkog distanciranja" kao „proizvod" pandemije korona virusa u zemlji i svetu doveli su nas do novih uvida o značaju kretanja, bavljenja fizičkom aktivnošću i izbalansirane kvalitetne ishrane. U situaciji u kojoj smo bili upućeni samo na medijske i internet sadržaje, iznova je potvrđena činjenica o ulozi medija u svakodnevnom životu, procesu donošenja odluka ali i važnim pitanjima vezanim za zdrav stil života, psihološko blagostanje i zdravstveni status pojedinca i društva u celini. Društvene okolnosti koje su dodatno podstakle gojaznost i neaktivnost, strah i emocionalnu i svaku drugu nesigurnost pred nepoznatom, neistraženom bolešću - trasirale su nam put kojim značajno možemo unaprediti kvalitet života kroz aktivnije bavljenje sportom i fizičkim aktivnostima. Na primer, prekomerna telesna težina pojedinaca poslednjih decenija postala je globalni društveni problem, a u takvom društvenom kontekstu gojaznost sve češća tema i predmet istraživanja o značaju faktora koji mogu preventivno i funkcionalno uticati na poboljšanje zdravstvenog statusa nacije. U uzročno-posledičnoj konstelaciji karika koje modeliraju psiho-fizički aparat čoveka najvažnija je pravovremena i tačna informisanost pojedinca, najpre u preventivne svrhe, i u tom kontekstu je uloga medija suverena – što je decenijama unazad i dokazano; menja se samo aktuelnost medijuma koji je u datom trenutku najzastupljeniji kanal informisanja – televizija, internet ili novine. Po definiciji svetske zdravstvene organizacije (SZO) zdravlje podrazumeva "stanje potpunog fizičkog, mentalnog i socijalnog blagostanja, a ne samo odsustvo bolesti i onesposobljenosti". Tako definisana „sposobnost za vođenje ekonomski i socijalno produktivnog života" uključuje fizičko, mentalno, emocionalno i socijalno zdravlje pojedinca odnosno zajednice; da bi se idealan teorijski konstrukt implementirao kao osnov svakodnevnog zdravog života i ljudskog funkcionisanja, neophodna je stručna i naučna podrška pojedincu, i pravovremena kvalitetna informisanost o mogućnostima i potencijalima prirodnog i društvenog okruženja u cilju očuvanja zdravlja psiho-fizičkog aparata. Teorije masovne komunikacije daju odgovore na važna pitanja u tom kontekstu. Paradoks situacije u kojoj je pravilna, zdrava ishrana jedna od najvažnijih karika zdravog života, ali su prekomerna telesna težina i nedostatak fizičke aktivnosti česti faktori smrtnosti poslednjih decenija - navodi nas na analizu dostupnih podataka o uticaju medija na životni stil ljudi. Rezultati savremenih istraživanja pokazuju da prijem važnih informacija o zdravlju direktno i indirektno utiče na modifikovanje ličnog sistema vrednosti i formiranje stavova prema zdravim životnim stilovima i navikama, ali i prevenciji bolesti, generalno. Razvijanje odgovarajućih životnih veština i navika - u fizičkom ali i psihološkom smislu, u budućnosti bi rezultiralo odgovornim ponašanjem pojedinca koje je značajna predispozicija za zdrav život, ali je i njegov značajan činilac. Očuvanje zdravlja i zdravih životnih stilova i kontinuirana prevencija kao obrasci ponašanja, zavise od nivoa obrazovanja, edukovanosti i informacija dostupnih društvu kao celini. Ideal lepote je promenljiv kroz epohe, često i uslovljen društveno-ekonomskim faktorima, ali su osnovne premise zdravlja konstanta – zbog čega je važno da su bazirane na znanju, obrazovanju i pravovremenoj, tačnoj informaciji. U tome je važnost medija nedvosmislena i egzaktna.

[1] markost79.mk@gmail.com

Ključne reči: fizička aktivnost, zdravlje, mediji, prevencija, životni stil

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THE ROLE OF THE MEDIA IN HEALTH CONSERVATION, PREVENTION AND PROMOTION OF PHYSICAL ACTIVITY AND HEALTHY LIFESTYLES

Marina Kostić[1]

City Administration for Social Activities, City of Nis

Abstract: Periods of isolation and so-called "social and physical distancing" as a "product" of the corona virus pandemic both in our country and throughout the world have given us new insights into the importance of movement, physical activity and a balanced diet. In a situation in which we were referred only to media and internet content, the fact of the role of the media in everyday life, the decision-making process as well as important issues related to a healthy lifestyle, psychological well-being and health status of individuals and society as a whole, was reaffirmed. Social circumstances which further encouraged obesity and inactivity, fear, together with emotional and other insecurities confronting an unknown, unexplored disease - paved the way for us to significantly improve the quality of life through more active sports and physical activities. For example, overweight individuals have become a global social problem in recent decades, and in such social context, obesity is an increasingly common topic and subject matter of the studies on the importance of factors that can prevent and functionally improve the health status of a nation. In the cause-and-effect constellation of links that shape human psycho-physical apparatus, the most important thing is to timely and accurately inform the individual, primarily for preventive purposes, and in that context the role of the media is of utmost importance - which has been proven in the last decades; the only thing that changes is the presence of the media that is at that moment the most represented information channel - television, internet or newspapers. According to the World Health Organization (WHO), health means "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." The definition of "ability to lead an economically and socially productive life" includes physical, mental, emotional and social health of an individual or community; in order to implement the ideal theoretical construct as the basis of everyday healthy life and human functioning, the individual needs professional and scientific support, as well as timely quality update about the possibilities and potentials of the natural and social environment in order to preserve the healthy psycho-physical apparatus. Mass communication theories provide answers to important questions in this context. The paradox of a situation in which a proper, healthy diet is one of the most important links in a healthy life, although being overweight and the lack of physical activity are more and more seen as mortality factors in recent decades - leads us to analyze the available data on the impact of the media on people's lifestyles. The results of modern studies show that the input of important health information directly and indirectly affects not only the change of the personal value system and the formation of attitudes towards healthy lifestyles and habits, but also disease prevention, in general. Mastering appropriate life skills and habits – both in physical and psychological sense, would, in the future, result in responsible behaviour of the individual, which is an important requirement and a significant factor of a healthy life. Conservation of health and healthy lifestyles with continuous prevention as patterns of behaviour depend on the level of education and information available to society as a whole. The ideal of beauty is changeable through epochs, often conditioned by socio-economic factors, but the basic premises of health are a constant - which is why it is important that they are based on knowledge, education and timely, accurate information. In this, the importance of the media is unequivocal and exact.

[1] markost79.mk@gmail.com

Keywords: physical activity, health, media, prevention, lifestyle

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THE EFFECT OF OF PHYSICAL ACTIVITY ON MENTAL HEALTH IN MEDICAL STUDENTS

Sanja Mancevska[1], Jasmina Pluncevic Gligoroska

University “Ss. Cyril and Methodius”, Faculty of Medicine, Institute of Physiology and Anthropology, Student Counseling Service, Skopje, North Macedonia

Abstract: Regular moderate physical activity is well known as a beneficial factor for maintaining and improving individual general health including mental health, especially in adolescents during crisis. The aim of the study was to assess the levels of anxiety, depression and perceived stress and their connection with the weekly amount of physical activity in junior medical students during December 2020 COVID 19 restrictive public health measures. The investigation was carried out on 73 medical students (57 females and 16 males) aged 20-22 years, from Medical Faculty, University "Ss. Cyril and Methodius", in Skopje. They answered questionnaires containing biographic data, Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), Perceived Stress Scale (PSS) and International physical activity questionnaire (IPAQ) by e-mail. Female medical students showed significantly higher levels of anxiety and depression compared to males (p0.05). Pearson correlation between levels of depression and the amount of vigorous physical activity in males was r = - 0.898 while in females it was r= - 0.3251. There was moderate to strong negative correlation between levels of anxiety, depression and perceived stress and the amount of performed moderate physical activity in male medical students. Physical activity could have beneficial effects in male medical students.

Keywords: IPAQ anxiety depression stress

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[1] sanjamancevska@gmail.com

CONNECTION BETWEEN PHYSICAL ACTIVITY AND DIABETES MELLITUS TYPE 2

Miloš Maksimović[1], Miloš Purković[2], Jadranka Maksimović[3]

[1]Institute of Hygiene and Medical Ecology, Faculty of Medicine, University of Belgrade
[2]Individual training studio "PAMP"
[3]Institute of Epidemiology, Faculty of Medicine, University of Belgrade

Abstract: Obesity is becoming a global pressing issue (Yumuk et al, 2015) considered to be health issue in both developed countries and developing ones (Gallagher et al, 2000). Obesity is a major risk factor for many non-communicable diseases such as cardiovascular disease, type 2 diabetes mellitus (DM2), hypertension, coronary heart disease or certain types of cancer. Physial activity is crucial for healthy lifestyle. Increase in physical activity shrinks visceral mass, elevates fat free mass, help depression, not to mention that it improves glucose tolerance, insulin sensitivity and physical fitness. The aim of this study was determination whether there is a difference in the physical activity of obese individuals with DM2 and obese individuals without DM2. Methods: Cross-section study included 50 obese patients with DM2 and 57 obese patients without DM2. All the patients went through a questionnaire along with anthopometric measurements and laboratory tests. The WHO (WHO, 1998) recommandation was used to determine nutritional status. Diagnosis criteria for DM are glycemia ≥ 7mmol/l or plasma glucose value ≥ 11.1 mmol/1, reached 120min after the Oral Glucose Test (OGTT) (American Diabetes Association, 2012). Physical activity data were collected using the IPAQ (International Physical Activity Questionnaire), which was composed of questions about various physical activities in the previous 7 days. The questionnaire numbered 27 questions grouped in 5 sections. Results: In this study we included 107 patients, with three quarters being women (80 women overall). Out of 50 diabetes-diagnosed subjects 80% of them were women, whilst out of 57 non-diabetes subjects 70% were females. The average age of non-diebetes patients is 47 ± 13 years, whereas the diabetes population is somewhat older and their average age adds up to 54 ± 10 years. Both activities at work and during commute in diabetics were significantly lower in comparison with the activity of the non-diabetics ($p < 0.001$). In the same manner, leisure activity was lessened ($p = 0.001$). Only in the case of house chores did the diabetic patients meet the higher rate of MET minutes: their rate valued 1700 MET minutes approximately when compared to the subjects without diabetes diagnosis (1500 MET minutes approximately). Conclusion: The results of our study confim that obese individuals with diabetes are physically less active than obese individuals without diabetes. Decreased physical activity is thought to have led to the onset of DM, however, since the research results were obtained by a cross-sectional study, it is not possible to discuss with certainty the cause and effect relationship of decreased physical activity and DM2 occurrence. In addition to medication therapy, regular exercise would be of great importance, leading to weight loss and better regulation of glycemia, as well as to reducing complications of diabetes.

Keywords: obesity, physical activity, diabetes mellitus type 2

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[1] milosmaksimovic71@gmail.com

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STANJE UHRANJENOSTI OSOBA STARIJE DOBI

Adem Mavrić[1], Raid Mekić, Ilma Čaprić

Fakulutet sporta i fizičkog vaspitanja, Univerzitet u Nišu

Sažetak: Istraživanje je obuhvatilo jedanaest originalnih radova. Svi radovi su zadovoljili kriterijume za dalju analizu. Cilj rada je da utvrdi stanje uhranjenosti osoba starije dobi iznad 60 godina. Kao metod uzeta je selekcija naučnih radova u vremenskom periodu od 2000. do 2020. godine. Analizom radova utvrdili smo veoma visok procenat prekomerno uhranjenih i gojaznih osoba. Sama ta činjenica ukazuje na dosta veliki broj osoba koje su sklone raznim bolestima, čiji i sam prediktor može biti gojaznost. Na osnovu dobijenih rezultata u odabranim radovima, 44% je prekomerno uhranjena, dok je 17% gojazno. Svaka peta osoba je gojazna dok je svaka druga osoba prekomerno uhranjena. Uhranjenost i prekomerna telesna masa mogu značajno uticati na ishod, oporavak od bolesti, dužinu boravka u bolnici. Bolesnike s poremećajem uhranjenosti treba na vrijeme prepoznati i lečiti.

Ključne reči: uhranjenost, gojaznost, starije osobe,

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[1] adi.mavric90@gmail.com

NUTRITIONAL STATUS OF THE ELDERLY

Adem Mavrić[1], Raid Mekić, Ilma Čaprić

Faculty of sport and physical education University in Nis

Abstract: Summary The research included eleven original papers. All works satisfied the criterion for further analyze. The goal of this study is to determine the nutritional status of the elderly over 60 years. The selection of scientific papers in the period from 2000 to 2020 was taken as a method. By analyzing the works, we found a very high percentage of overweight and obese people. This fact indicates a large number of people who are prone to various diseases, whose predictor can be obesity itself. Based on the results of the selected works, 44% were overweight, and 17% obese. Every fifth person is obese while every second person is overweight. Nutrition and overweight can significantly affect the outcome, recovery from illness, length of hospital stay. Patients with an eating disorder should be identified and treated in a timely manner.

Keywords: nutritional status, elderly

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[1] adi.mavric90@gmail.com

MEDICINSKA ETIKA I JAVNI DISKURS ZA VREME COVID -19

Ivana Markov Čikić[1], Aleksandar Ivanovski

Visoka sportska i zdravstvena, Beograd

Sažetak: Zarazne bolesti koje su vekovima desetkovale stanovništvo naše planete uvek su imale niz medicinskih specifičnosti i zahtevale su psihološko - etičku analizu i moralno ponašanje zdravstvenih radnika. Hipokratova zakletva se održala vekovima do današnjih dana kao ključni dokument podsećanja na obaveznosti i dužnosti onih koji se posvećuju lekarskoj veštini. Od Hipokrata, preko Seneke i Largusa, Florens Najtingejl, Ženevske revizije hipokratove zakletve sve do internacionalnog kodeksa lekarske etike nije bio razmatran aspekt reklamiranja ili publiciteta u medicinskom moralu. Danas u savremenoj civilizaciji kao njegovu osnovnu karakterizaciju imamo eksploziju sredstava masovne komunikacije.U kriznim vremenima poput pandemije izazvanje virusom COVID 19 – posebno raste značaj medija u oblikovanju i doživljaju stvarnosti. Prvi princip aktuelnog kodeksa novinara Srbije kaže da je obaveza novinara da tačno, objektivno, potpuno i blagovremeno izvesti o događajima od interesa za javnost, poštujući pravo javnosti da sazna istinu i držeći se osnovnih standarda novinarske profesije. Aktuelna pandemija bila je, i dalje je pravi test moralnosti, medicinske struke koja je može se reći položila test, proglasivši se od strane javnosti za heroje nacije. Međutim kada je u pitanju novinarska profesija može se reći da je javnost polarizovana u oceni iste, na one koji veruju da su sveobuhvatno, pravovremeno i tačno informisani, što jeste ključ informisanja javnosti naročito u vreme zdravstvena krize i na one koji smatraju da su žrtve "infodemije" koja predstavlja novi nivo krize u okolnostima tehnološki zasnovanog brzog i neograničenog širenja informacija sa nizom negativnih efekata kao što su širenje panike, dezinformacije i špekulacije.

Ključne reči: medicinska etika, javnost, infodemija, COVID -19, društvene vrednosti

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[1] ivana.markov-cikic@vss.edu.rs

MEDICAL ETHICS AND PUBLIC DISCOURSE DURING COVID-19

Ivana Markov Čikić[1], Aleksandar Ivanovski

College of Sports and Health, Belgrade

Abstract: Infectious diseases that have decimated the population of our planet for centuries have always had medical specificities and required psychological and ethical analysis and demanded moral behaviour of healthcare professionals. The Hippocratic Oath has been maintained for centuries to this day as a key document reminding us of the obligations and duties of those who dedicate themselves to the medical profession. From Hippocrates, through Seneca and Largus, Florence Nightingale, the Geneva Revision of the Hippocratic Oath to the International Code of Medical Ethics, the aspect of advertising or publicity in medical morality has not been considered. The explosion of mass media is the principal feature of the modern civilisation. In times of crisis, such as the pandemic caused by the COVID-19 virus, the importance of the media in shaping and experiencing reality is especially growing. The first principle of the current code of journalists of Serbia says that the obligation of journalists is to report on events of interest to the public accurately, objectively, completely and timely, observing the right of the public to know the truth and adhering to the principal standards of the journalist profession. The current pandemic was, and still is, a real test of morality of the medical profession that can be said to have passed the test, acquiring the status of national heroes among the public. However, when it comes to the journalist profession, it can be said that the public is polarized in its assessment, to those who believe that they are comprehensively, timely and accurately informed – which is the key to informing the public especially during the health crisis, and to those who believe they are victims of "infodemic", which represents a new level of crisis in the circumstances of technologically based rapid and unlimited dissemination of information with a number of negative effects such as the spread of panic, misinformation and speculation.

Keywords: medical ethics, public, infodemic, COVID-19, social values

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[1] ivana.markov-cikic@vss.edu.rs

INOVATIVNA REŠENJA KONCENTRISANE NASTAVE AKTIVNOSTI NA VODI FSFV U LEPOSAVIĆU

Vladimir Miletić[1], Željko Rajković, Jovan Rajković, Nebojša Jotov

Fakultet sporta i fizičkog vaspitanja Univerzitet u Beogradu

Sažetak: Nastava predmeta aktivnosti u prirodi FSFV iz Leposavića do nedavno je održavana u Grčkoj u hotelima. Zbog političke situacije, smanjenja troškova studenata i iskorišćenja lokalne infrastrukture, da bi nastava uopšte bila ofržana podeljena je na segmente, od kojih su aktivnosti na vodi koncipirane na jezeru Gazivode. Ova promena izazvala je probleme u nedostatku opreme, ali i specijalno obučenih kadrova. U radu je od metoda koriščena teorijska analiza sadržaja naučne i stručne literature i kauzalna metoda sa sistematizacijom profesionalnog iskustva autora iz oblasti fizičke kulture, primenom logičkog induktivnog i deduktivnog načina zaključivanja. Predmet rada je održavanje nastave u složenoj političkoj situaciji u koncentrisanom obliku, sa ustanovljenom hijerarhijom, redosledom i balansom između sadržaja. Cilj rada je bio prilagođavanje udaljenosti akvatorije od smeštaja, ritmu rada fakulteta, studentima koji rade i profesionalno treniraju u klubovima, neiskustvu studenata (nastava predmeta je na prvoj godini), situaciji da su neki studenti neplivači, nehomogenoj grupi, nedostatku infrastrukture. Rezultati rada obuhvataju saradnju dva Univerziteta. FSFV u Beogradu je pritekao u pomoć kako sa kadrovima tako i sa opremom. Na ovaj način nastava je organizovana 4 godine i to svaki put na drugačiji način, zbog promenljivih uslova. Prvi dan je organizovana teorijska nastava, dok je drugi i treći dan sadržao: test plivanja, organizaciju nastave na vodi, skokove u vodu, bezbednosne procedure, samospašavanje i spašavanje, veslanje u rafting čamcima, kajacima, kanuima, vožnju skutera, upravljanje motornim čamcima, jedrenje na dasci, takmičenja na vodi, manipulaciju užadima, osnove preživljavanja. Može se zaključiti da sadržaji aktivnosti na vodi predstavljaju veoma značajan deo veština koju budući sportski stručnjaci treba da usvoje. I u najtežim uslovima uz maksimalno angažovanje profesionalnih kadrova moguće je realizovati nastavu na visokom nivou. Saradnja srodnih institucija je preporučljiva u smislu zajedničkog angažmana ljudskih i materijalnih resursa.

Ključne reči: akvatorija, plivanje, veslanje, nautika, međuinstitucionalna saradnja

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[1] vladaprof@gmail.com

INNOVATIVE SOLUTIONS FOR CONCENTRATED TEACHING OF ACTIVITIES ON THE WATER FSPE IN LEPOSAVIĆ

Vladimir Miletić[1], Željko Rajković, Jovan Rajković, Nebojša Jotov

Faculty of sport and physical education University in Belgrade

Abstract: Until recently, the teaching of the subject of outdoor activities in FSPE from Leposavić was held in hotels in Greece. Due to the political situation, the reduction of student costs and the use of local infrastructure, in order for classes to be organized in general, it is divided into segments, of which water activities are conceived on Lake Gazivode. This change caused problems in the lack of equipment, but also specially trained staff. The paper uses the theoretical analysis of the content of scientific and professional literature and the causal method with the systematization of the professional experience of the author in the field of physical culture, applying the logical inductive and deductive way of reasoning. The subject of the paper is teaching in a complex political situation in a concentrated form, with an established hierarchy, order and balance between content. The aim of the paper was to adjust the distance of the water area from the accommodation, the rhythm of the work of the faculty, students who work and train professionally in clubs, inexperience of students (subject teaching is in the first year), the situation that some students are non-swimmers, inhomogeneous group, lack of infrastructure. The results of the work include the cooperation of two universities. The FSPE in Belgrade came to the rescue with both personnel and equipment. In this way, the classes were organized for 4 years, each time in a different way, due to changing conditions. The first day organized theoretical classes, while the second and third day included: swimming test, organization of classes on the water, diving, safety procedures, self-rescue and rescue, paddling in rafts, kayaks, canoes, scooter rides, motor boat management, windsurfing, water competitions, rope manipulation, basics of survival on water. It can be concluded that the contents of water activities represent a very important part of the skills that future sports experts need to acquire. Even in the most difficult conditions, with the maximum engagement of professional staff, it is possible to realize teaching at a high level. Cooperation of related institutions is recommended in terms of joint engagement of human and material resources.

Keyword: aquatory, swimming, paddling, nautica, inter-institutional cooperation

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[1] vladaprof@gmail.com

ULOGA I ZNAČAJ ZDRAVSTVENOG FITNESA U PREVENCIJI GOJAZNOSTI TOKOM PANDEMIJE VIRUSA COVID 19

Srđan Milosavljević[1], Miodrag Jevtić, Predrag Lazarević

Visoka sportska i zdravstvena škola, Beograd

Sažetak: Zdravstveni fitnes kao relativno mlada oblast koja predstavlja sintezu savremenih naučnih saznanja i dostignuća iz oblasti medicine sa jedne strane i fizičke kulture sa druge strane pronašla je svoje mesto tokom pandemije virusa Covid 19. Uvažavajući činjenicu da je tokom pandemije, a pogotovu za vreme trajanja policijskog časa kod najvećeg broja osoba količina kretanja svedena na minimum ne iznenađuje povećanje broja gojaznih osoba. Kao jedan od modaliteta fizičke aktivnosti koji je uspešno primenjen i tokom trajanja policijskog časa sa ciljem prevencije od gojaznosti je primena kružnog metoda treninga u kućnim uslovima bez sprava i rekvizita izuzev prostirke za vežbanje. Navedeni model fizičke aktivnosti realizovan je putem aplikacije Cisko Webex. U programu je učestvolao 40 ispitanika podeljenih u 2 grupe po 20 ispitanika starosti od 30 do 45 godina, oba pola, koji su zdravi i koji su se pre pandemije redovno bavili različitim oblicima fizičke aktivnosti, pa su se za ovaj program odlučili kako im se zbog odsustva treninga ne bi uvećala telesna masa. Program je realizovan 3 puta nedeljno, ponedeljkom, sredom i petkom u periodu od 19.00 do 20.30h. Program je podrazumevao sprovođenje kružnog treninga, pri čemu su vežbači set od 10 do 12 vežbi izvodili u 3 do 4 kruga. Naizmenično su bile realizovane vežbe koje angažuju agonoste i antagoniste. U pogledu doziranja opterećenja osoba koja je vodila program u obzir je uzimala i subjektivnu procenu vežbača. Poseban pokazatelj fiziološkog odgovora vežbača na zadata trenažna opterećenja je i srčana frekvencija koju su vežbači kontrolisali palpatornom metodom. Nakon sprovedenog kružnog metoda realizovane su ciklične aktivnosti u nižim trenažnim zonama tj. na srčanoj frekvenciji oko 60% od maksimalne srčane frekvencije. Svaki trening počinjao je zagrevanjem, a završavao se rastezanjem. Svi vežbači nakon završetka programa od 3 meseca dobro su se osećali, nisu imali povrede izazvane treningom i zadovoljni su bili zbog očuvanja telesne mase što se može pripisati navedenoj fizičkoj aktivnosti, a koja je koncipirana tako da se može sprovoditi u kućnim uslovima bez materijalnih ulaganja u sprave i rekvizite. Sve navedeno ukazuje da je ponuđeni trenažni koncept bio dobro rešenje u pogledu očuvanja telesne mase i da je dobijenim rezultatima opravdao svoju svrhu. Iz navedenih razloga zdravstveni fitnes treba da zauzme još značajnije mesto kada je u pitanju njegova uloga kako u redovnim, tako i u vanrednim životnim okolnostima kao što je bio slučaj tokom pandemije virusa Covid 19.

Ključne reči: pandemija, fizička aktivnost, gojaznost, kružni trening, doziranje

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4. Vasović R. (2016) Kondiciona priprema sportista, Beograd: Visoka sportska i zdravstvena škola

[1] srdjan.milosavljevic@vss.edu.rs

ROLE AND IMPORTANCE OF HEALTH FITNESS IN PREVENTION OF OBESITY DURING COVID-19 PANDEMIC

Srđan Milosavljević[1], Miodrag Jevtić, Predrag Lazarević

College of Sports and Health, Belgrade

Abstract: As a relatively young area that represents a synthesis of modern scientific knowledge and achievements in the field of medicine on the one hand and physical culture on the other, health fitness found its place during the COVID19 pandemic. Bearing in mind that during the pandemic, and especially during curfew, most people were forced to reduce the amount of movement to a minimum, the fact that the number of obese people increased is not surprising. One of the modalities of physical activity that has been successfully applied during the curfew with the aim of preventing obesity is the application of circuit training at home without devices and props, except for the exercise mat. The mentioned model of physical activity was realized through the Cisko Webex application. The program involved 40 respondents divided into 2 groups of 20 respondents aged 30 to 45, including people of both sexes, who are healthy and who regularly engaged in various forms of physical activity before the pandemic, so they chose this program to avoid gaining body weight due to absence of exercising. The program was realized 3 times a week, on Mondays, Wednesdays and Fridays in the period from 19.00 to 20.30. The program included conducting a circuit training, where the practitioners performed a set of 10 to 12 exercises in 3 to 4 rounds. Exercises involving agonists and antagonists were performed alternately. In terms of dosing the load, the person who led the program also took into account the subjective assessment of the practitioners. A special indicator of the physiological response of the trainees to the given training loads is the heart rate, which the practitioners controlled by the palpation method. After the circuit training, circuit activities were realized in the lower training zones, i.e. at a heart rate of about 60% of the maximum heart rate. Each workout began with a warm-up and ended with a stretch. After the end of the 3-month program, all the practitioners felt well, had no injuries caused by training and were satisfied with the maintained body weight, which can be attributed to this physical activity, which is designed so that it can be carried out at home without investing money into devices and props. All of the above indicates that the offered training concept was a good solution in terms of maintaining body weight and that the results obtained justified its purpose. For these reasons, health fitness should play an even more important role in both regular and extraordinary life circumstances, as was the case during the COVID-19 pandemic.

Keywords: pandemic, physical activity, obesity, circuit training, dosage

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[1] srdjan.milosavljevic@vss.edu.rs

ZNAČAJ VEŽBANJA NAKON PORODAJA TOKOM COVID-19 PANDEMIJE

Dragana Mosurović[1], Aleksandra Vranešević[2]

[1]Visoka sportska i zdravstvena škola, Beograd
[2]Fitnes centar Funfit, Beograd

Sažetak: Kontinuirana fizička aktivnost nakon porođaja često izostaje, zbog novonastalih uslova života majke, međutim upražnjavanje fizičke aktivnosti tokom tog perioda ima značajne zdravstvene benefite kako za majku tako i za novorođenče. Kao rezultat COVID-19 pandemije uz nametnute mere i ograničenja koja proizašla iz toga za smanjenje stope zaraze virusom, porodilje su iskusile remećenje ne samo u svakodnevnom životu već i u svom iskustvu po pitanju svog zdravlja i zdravlja svog novorođenčeta što je uticalo na to da kada, kako i zašto mogu da se bave fizičkom aktivnošću. Iz ovih činjenica proizilazi i predmet ovog rada koji se bavi značajem fizičke aktivnosti nakon porođaja tokom COVID-19 pandemije. Metoda analize sadržaja korišćena je za proučavanje literature i radova koja se sa različitog aspekta bavi aktivnostima žena u postporođajnom periodu pre i tokom COVID-19 pandemije, dok je deskriptivom metodom omogućen konkretan činjenički prikaz o najznačajnijim efektima fizičkih aktivnosti na zdravlje žena nakon porođaja. Cilj ovog rada je da ukaže na potrebe sprovođenja fizičke aktivnosti nakon porođaja u uslovima života tokom COVID-19 pandemije, kao i na načine svladavanja izazova i prepreka koje onemogućavaju u takvim uslovima porodiljama da budu fizički aktivne onoliko koliko bi to bilo potrebno i koliko bi želele. Samo rođenje deteta je događaj koji utiče značajno na život majke i cele porodice i mnoge žene govore o tome kako im je bilo teško da se prilagode svim promenama nastalim nakon porođaja. (Saligheh et al., 2016.). Dani i nedelje koji slede nakon porođaja žene - postporođajni period, jesu kritična faza u životu majki i novorođenčadi. Tokom ovog perioda neophodna je adekvatna nega i briga za zdravlje porodilje. U jednom o novijih istraživanja, Evenson i saradnici pokazali da su glavni efekti vežbanja žena nakon porođaja ogledaju u poboljšanju mentalnog zdravlja i raspoloženja, emocionalnom blagostanju te smanjenju depresije i anksioznosti (Evenson et al., 2014). Usled COVID-19 pandemije svi uslovi života su se promenili. Ono što se pokazalo kao prednost u ovakvim situacijama, jeste brzi prelazak fitnes industrije na onlajn načine treniranja, što je učinilo da porodilje imaju veći izbor programa koji su specifični za taj period, bez da napuste kuću ili porodicu. Rad od kuće omogućio je pojedinim majkama i bolju fleksibilnost u svom dnevnom rasporedu za vežbanje. Neka od istraživanja na temu vežbanja kod kuće pokazala su da porodilje ovo smatraju korisnim kako za svoje psihičko zdravlje tako i za ograničenja u nalaženju vremena za vežbanje (Teychenne et la., 2018). Kao zaključak se nameće da promene koje nastupaju u ovakvim uslovima kria u životima ljudi, mogu otvoriti prilike za nove načine pravazilaženja prepreka kroz veće prihvatanje i upotrebu internet sadržaja i olakšavanje života u kući sa ciljem što većeg upražnjavanja fizičke aktivnosti cele porodice. Tako da je u ovakvim životnim situacijama veoma važno iskoristiti ove kratkoročne promene u dugoročne benefite, posebno među ovakvim specifičnim populacijama kakve su porodilje, koje od takvog pristupa mogu najviše imati koristi.

Ključne reči: vežbanje, fizička aktivnost, postporođajni period, covid-19 pandemija

[1] mosurovicdragana@gmail.com

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THE IMPORTANCE OF EXCERCISE AFTER BIRTH DURING THE COVID-19 PANDEMIC

Dragana Mosurović[1], Aleksandra Vranešević[2]

[1]College of sports and health, Belgrade, Serbia
[2]Sports and fitnes club Funfit, Belgrade, Serbia

Abstract: Continuous physical activity after childbirth is often absent, due to the new living conditions of the mother, however, exercising and physical activity during this period has significant health benefits for both mother and her newborn. As a result of the COVID-19 pandemic, with the imposed measures and restrictions that resulted from reducing the rate of virus infection, mothers experienced disturbances not only in everyday life but also in their experience regarding their health and the health of their newborn, which affected that when how and why they can engage in physical activity. From these facts arises the subject of this paper which deals with the importance of physical activity after childbirth during the COVID-19 pandemic. The content analysis method was used to study the literature and papers which deals from the differnt aspects with the activities of women in the postpartum period before and during the COVID-19 pandemic, while the descriptive method provided a concrete factual presentation of the most significant effects of physical activity on women's health after childbirth. The aim of this paper is to point out the needs of conducting physical activity after childbirth in living conditions during the COVID-19 pandemic, as well as ways to overcome the challenges and obstacles that prevent mothers in such conditions to be physically active as much as they need and want. The birth of a child is an event that significantly affects the life of the mother and the whole family, and many women talks about how difficult it was for them to adapt to all the changes that occurred after the birth. (Saligheh et al., 2016). The days and weeks that follow the birth of a woman - the postpartum period, are a critical phase in the life of mothers and newborns. During this period, adequate care and worry for mothers health is necessary. In one recent study, Evenson et al showed that the main effects of exercise after childbirth are reflected in improved mental health and mood, emotional well-being, and a reduction in depression and anxiety (Evenson et al., 2014). Due to the COVID-19 pandemic, all living conditions have changed. What has proven to be an advantage in such situations is the rapid transition of the fitness industry to online ways of training, which has made for mothers to have a greater choice of programs that are specific to that period, without leaving home or family. Working from home also allowed some mothers better flexibility in their daily exercise schedule. Some research on the topic of exercising at home has shown that mothers find this useful both for their mental health and for the limitations in finding time to exercise (Teychenne et al., 2018). In conclusion, the changes that occur in such conditions of crisis in people's lives can open opportunities for new ways of overcoming obstacles through greater acceptance and use of internet content and facilitating life at home with the aim for the physical activity of the whole family as much as possible. So in such life situations it is very important to take advantage of these short-term changes in long-term benefits, especially among such specific populations as mothers, who can benefit most from such an approach.

Keywords: exercise, physical activity, postpartum period, covid-19 pandemic

[1] mosurovicdragana@gmail.com

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RELATIONSHIP BETWEEN THE PERCEIVED QUALITY AND THE USERS' AGE OF ANDALUCIAN SPORTS CENTRES

Nuviala, R.[1,2], Falcón, D.[2], Morán, G. [3]

[1]Facultad de Ciencias de la Educación, Universidad de Cádiz.
[2]Facultad de Ciencias de la Salud y del Deporte, Universidad de Zaragoza.
[3]Facultad de Ciencias de la Educación, Universidad de Cádiz

Abstract: Perceived quality is understood as the satisfaction of users' demands. This is dependent on the comparison of the service expected with the perceived one in a continuous process of evaluation. The aim of the study was to analyse the incidence or relationship of the age of users of Andalusian sports organisations in the evaluation of the perceived quality of sports services. Method: 2.707 users of 78 Andalusian sports organisations with a mean age of 25.29±12.83 years participated in the study. 66.10% were men and 33.90% were women. The rating scale sports organizations, EPOD2, was used to obtain the results and a Cronbach's Alpha of 0.895 was obtained for the perceived quality scale. In the study, age has been grouped according to 5 age groups. Results: Significant differences were found in all the quality factors except for Service staff and Material, the most highly rated elements being Technicians and Activities. Discussion: It is the younger and older age groups that shows a better perceived quality. The younger ones are influenced by their lack of sports services knowledge and the adults because they have already selected the sports centre where they want to receive activities after several experiences. Conclusion: Quality is essential in the assessment of service, as it is an antecedent to future intentions. An attempt should be made to focus on optimal management of the Technical, Activities, Communication and Space factors, to increase the adherence or loyalty of the users of sports organizations.

Keywords: Management, Perceived Quality, Age.

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[1] guille101097@gmail.com

MORPHOLOGICAL CHARACTERISTICS AND MOTOR ABILITIES OF UNTRAINED AND PUPILS WHO TRAIN TAEKWONDO

Slobodan Petrović[1], Zoran Pajić[1], Dragana Drljačić[4], Slobodan Simović[3], Boris Brkić[1], Vladimir Živanović[1]

[1] Faculty of Sport and Physical Education, University of Belgrade
[2] Serbian Institute of Sport and Sports Medicine, Belgrade
[3] Faculty of Sport and Physical Education, University of Banjaluka, BiH
[4] College of sports and health, University of Belgrade

Abstract: The aim of this study was to compare the morphological characteristics and motor abilities of untrained pupils with pupils that train taekwondo. On a sample of 60 subjects, divided into two groups: (1) untrained pupils aged 13 (n = 40), and (2) pupils practicing taekwondo at the age of 13 (n = 20), examination and comparison of morphological characteristics and motor abilities was performed. The following variables of morphological characteristics were measured: body height *(BH)*, body mass *(BM)*, body mass index *(BMI)* and fat percentage *(F%)*. To assess the variables of motor abilities, the following tests were performed: flexibility – sit and reach *(SNR)*, movement frequency - hand tapping *(HT)*, balance - flamingo test *(FLA)*, speed strength of arm and shoulder muscles - throwing medicine ball - 3 kg *(MED)*, explosive leg extensor strength - long jump *(LJ)*, torso repetitive strength - crunches for 30 seconds *(CRN)*, speed – flying run for 30m *(R30m)*, agility - t-test *(TT)* , aerobic endurance - shuttle run test *(SHRAN)*. To compare the results, the methods of descriptive and comparative statistics were used - "t-test" for independent samples with a level of statistical significance $p \leq 0.05$. The results showed that in the measured morphological characteristics between the examined groups of pupils there are no statistically significant differences only in height ($t = -2{,}55$; $p < .069$). In motor abilities, there are no statistically significant differences only in the speed strength of the arm and shoulder muscles ($t = 3{,}22$; $p < .095$). The capacity of regular physical education classes is not sufficient for the development of the necessary morpho-motor characteristics and abilities, so it is necessary to affirm additional sports activities among young people.

Keywords: anthropometry / motor abilities / pupils / taekwondo /

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[1] dragana.drljacic@vss.edu.rs

PREVALENCE OF OBESITY AMONG HIGH SCHOOL CHILDREN

Zoran Pajić[1], Dragana Drljačić[4], Slobodan Simović[3], Boris Brkić[2], Vladimir Živanović[1]

[1] Faculty of Sport and Physical Education, University of Belgrade
[2] Serbian Institute of Sport and Sports Medicine, Belgrade
[3] Faculty of Sport and Physical Education, University of Banjaluka, BiH
[4] College of sports and health, University of Belgrade

Abstract: The aim of this study was to determine the prevalence of obesity in children of secondary school ages in several randomly selected High schools in Belgrade. The data presented in this paper were gathered using anthropometric measurement of 341 pupils (178 boys and 163 girls) attending all four grades of High schools in Belgrade area. Measuring of morphological characteristics was conducted by standard procedures of anthropomorphic measuring and body composition analysis. During these procedures laser anthropometer of high precision and "Body composition" monitor with accompanying software were used in order to assess variables from the age of six up. Software analysis of the gathered data was realized by standard statistical methods with the aid of statistical program SPSS/20 and application software ***"Morfo-2"*.** Results achieved in this study are slightly different in certain variables, while in other variables they are in accordance with the results achieved in other studies. The results show that 22% of children were in the state of before-obesity, while 8% were obese. Data analysis according to the subjects sex showed that 31% of boys and 11% of girls had increased body mass (before-obesity – BMI ≥ 85th% percentile), while 13% of boys and 2% of girls were obese (BMI ≥ 95th % percentile). Since this is connected with numerous risk factors for the development of wide-spread non-contagious diseases, it is essential that the trend of obesity among children should be carefully and continuously monitored. Attention should be paid to prevention of obesity, through educational programs on nutrition and good quality physical education.

Keywords: BMI / obesity / monitoring /

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[1] dragana.drljacic@vss.edu.rs

THE EFFECTS OF TWO SWIMMING LEARNING PROGRAMS ON CHILDREN'S AQUATICITY AND PERFORMANCE

Konstantinos Papadimitriou[1], Dimitrios Loupos

Laboratory of Biological Evaluation of Human Performance, School of Physical Education and Sports Science at Thessaloniki, Aristotle University of Thessaloniki

Abstract: Water is an element in which the learning process of swimming skills differentiates because of the resistance forces that develop in it. Consequently, to safer participation in water activities and specifically in swimming, it is important to improve both aquaticity and technique. Aquaticity is the ability of a terrestrial mammalian organism to move and habitualise in the aquatic environment. Aquaticity level can be improved by frequent exposure to the water element and can be trained by various methods. The most common learning methods are through standardized exercises which often contain multiple repetitions or playful forms that stimulate children's interest and include exercises that increase imagination and fun. The aim of the present study was to compare the effect between a standardized and an alternative swimming training program, in aquaticity and swimming performance. Participants were 40 young rookie swimmers, aged 9.0 ± 0.9 years old. The children were divided into two groups, standardized (SG, n = 21) and alternative (AG, n = 19) training program. Intervention duration was 8 weeks, and the training took part 3 times per week. The aquaticity skills that were studied were the swimming start, the sinking down, and the floating ability. The swimming performance was examined through the recorded time of the aquaticity skills and flutter kicks with a kickboard. The measurements were conducted at the beginning, in the middle and at the end of intervention. For the statistical analysis, the discrete variables analyzed through cross - tab analysis calculating chi – square (χ^2) and a comparison of successful measurements was performed. The variables of aquaticity skills and flutter kick performance analyzed with non-parametric and parametric analysis, respectively. The level of statistical significance set at a = 0.05. The first measurement of all skills excluded because of the fear which the children felt to accomplish the in-water tests. Thus, according to the second and third measurements, swimming start in AG had a greater percentage in the 2nd measurement (p = 0.33), whereas statistically significant difference was observed at the 3rd measurement between groups (p = 0.03). In the first sink down skill in both groups and measurements similar improvements were observed (p = 0.91). In the second sink down almost the same improvement was observed between groups, with no statistically significant difference in both the 2nd (p = 0.19), and 3rd measurements (p = 0.60). In skills performance, both groups improved between measurements (p = 0.01), whereas no difference was observed between groups (p = 0.16). In flutter kick performance both groups improved between measurements (p = 0.01), whereas no difference was observed between groups in the 1st (p = 0.56), the 2nd (p = 0.55) and 3rd measurements (p = 0.55). The alternative swimming learning program is effective and improves the aquaticity skills and performance of novice swimmers. Also, swimming instructors can use it to improve the quality and the quickness of their work. Further studies should further investigate the effectiveness of this new swimming learning approach.

Keywords: Start, sink, float, learning, swimming pool, swimmers

[1] kostakispapadim@gmail.com

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PROFESIONALNI SPORTISTI I POVRATAK U TRENAŽNI PROCES U COVID-U

Deniel Pešić[2], Branko Bošković [1]

[2]Ministarstvo odbrane Republike Srbije, Vojnomedicinska akademija
[1]Visoka sportska i zdravstvena škola, Beograd

Sažetak: Činjenica je da su sve životne sfere pogođene pandemijom covid-19, pa i sport, kao jedna od najrasprostranjenijih i najpopularnijih delatnosti, trpi posledice posledice pomenutog stanja. Rekreativci imaju neki svoj prostor i priliku da nastave sa većinom aktivnosti, približno kao i pre pandemije. Međutim, profesionalni sport je uvek bio posebna kategorija, kada se govori o kontinuitetu treninga, intenzitetu fizičkog napora, organizaciji trenažnog procesa, ali zdravstvenim rizicima. Redovni pregledi za profesionalne sportiste su ciklični, na svakih 6 meseci se vrše laboratorijske analize, testovi u maksimalnom naporu i drugi pregledi po sistemima. Zbog velikih napora kojima su izloženi, profesionalci su u obavezi da imaju pomenute preglede, ali i da sami prijavljuju svaku promenu u smislu novonastalih tegoba, bilo da se radi o lokomotornom sistemu, kardiovaskularnom, respiratornom itd.
Danas se suočavamo sa novim izazovom, pandemijom koja je odložila i olimpijske igre u Japanu 2020g., (prvi put u istoriji za vreme drugog svetskog rata, a sada zbog pandemije covid19), što dovoljno govori o ozbiljnosti ovog problema.
Infekcija corona virusom, za većinu osoba pa tako i profesionalne sportiste, može da prođe sa blagom kliničkom slikom i bez sekvela (posledica nakon preležane bolesti). Do sada se u svetu više od 120 miliona ljudi suočilo sa coronom, i većina se izlečila. Međutim, ono što je vrlo značajno je da se kliničke slike mogu izuzetno razlikovati, pa tako i ostaviti značajne posledice nakon ozdravljenja. Ove posledice najviše pogađaju srce i pluća, ali i druge organe kao što su jetra, bubrezi, pankreas, krvni sudovi, mišići itd. Prilikom infekcije corona virusom, nakon par dana mogu da se pojave blagi simptomi kao što su: temperatura, kašalj, malaksalost, zatim mogu da se jave bolovi u grlu, gubitak mirisa i ukusa, ospe po koži itd. Teži simptomi su: otežano disanje, brzo zamaranje, pad saturacije krvi kiseonikom, upala pluća (i to često obostrana), pa i smrt. Nakon dijagnostike i ordinirane terapije, kućnog ili bolničkog lečenja, sledi period rekovalescencije (oporavka).
Po najnovijim preporukama, sportisti imaju paletu pregleda koje bi trebalo da se urade pre nego što se sportista ponovo vrati u trenažni proces, u zavisnosti od težine kliničke slike, da li je lečen u kućnim uslovima ili na bolničkom lečenju. U zavisnosti od toka bolesti, kliničke slike, urađene dijagnostike, sačinjava se plan povratka.
Bitno je da svaki profesionalni sportista bude ispraćen do bezbednog povratka u takmičarsku formu.

Ključne reči: profesionalni sportista; Covid-19; trenažni proces; oporavak sportiste; povratak u trenažni proces.

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[1] branko.boskovic@vss.edu.rs

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Affiliations expand
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PROFESSIONAL ATHLETES AND RETURN TO TRAINING PROCESS IN COVID-19

Deniel Pešić[2], Branko Bošković[1]

[1]College of Sports and Health, Belgrade
[2]Ministry of Defense of the Republic of Serbia, Military Medical Academy

Abstract: The fact is that all aspects of life have been affected by the COVID-19 pandemic, and even sport, as one of the most widespread and most popular activities, has suffered the consequences of the mentioned condition. Recreational athletes have found a space of their own and the opportunity to continue with most activities, approximately at the same level as before the pandemic. However, professional sport has always been a special category, when it comes to the continuity of training, the intensity of physical effort, the organization of the training process, but also health risks. Regular examinations for professional athletes are cyclical, laboratory analyzes, maximum effort tests and other systemic examinations are performed every 6 months. Due to the great efforts they are exposed to, professional athletes are bound to undergo the mentioned examinations, but also to report any changes in terms of new health problems, whether it is the locomotor system, cardiovascular, respiratory system, etc. It is important that every professional athlete is enabled to return safely to competitive form. Corona virus infection, for most people, including professional athletes, can pass with a mild clinical picture and without sequelae (consequences after the disease). According to the latest recommendations for athletes, a range of examinations should be conducted before an athlete returns to the training process, depending on the severity of their clinical picture, whether they were treated at home or in hospital. Depending on the course of the disease, the clinical picture, the conducted diagnostics, a return plan is made. The authors used data from papers published in: PubMed, the WHO COVID-19 database, BioArxiv, MedArxiv, MEDLINE (via OVID), PubMed Central, Google Scholar, Embase, Web of Science, Cochrane, Academic Search Premier, Emcare, and ScienceDirect, which compared data from the general population and athletes. In one review study, a total of 42 published papers were analyzed, and 198 patients were included. COVID-19 infection was confirmed in a total of 183 cases (92%), 168 (74%) were male. Of the 120 patients whose age was listed, the average age was 67.5 (ranging from 6 months to 96 years). The most common comorbidity was hypertension 49%, total number of cardiovascular diseases was 28.8%, and diabetes mellitus 24.8%. The following pathological conditions were diagnosed (by macroscopic/microscopic methods before death or postmortem): pulmonary pathology 131 cases, where 85% were changes in the epithelium, 59% were changes in the microvascular network, and fibrous changes were 22% (4). However, among athletes, Rajpal and co. stated that of the 26 athletes who had a moderate clinical picture of COVID-19 infection (no hospitalization was required), 12 had mild symptoms, sore throat, shortness of breath, muscle ache and fever), and other cases were asymptomatic. Pericardial effusion was observed in 2 athletes (with mild symptoms when breathing), out of a total of 4 with previously confirmed magnetic resonance myocarditis, and 2 without symptoms. In general, the mechanism of cardiac tissue injury associated with COVID-19 infection remains unclear in athletes (5). For all athletes who were detected as asymptomatic, i.e. with a negative test for COVID-19, and had a suspicion of the mentioned infection, return to training is allowed without additional tests, because there is no confirmation of the infection. All athletes who were positive were recommended to take a break from training for at least 2 weeks from the date of the positive test. If athletes remain asymptomatic, a gradual return to training should be conducted under the supervision of a team physician or sports

[1] branko.boskovic@vss.edu.rs

medicine physician (5). Gradual return to the training process is individual, and depends mostly on the severity of the clinical picture of the disease, and the detected consequences, if any.

Keywords: professional athlete; COVID-19; training process; ahlete's recovery; return to training process.

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5. Cardiovascular Magnetic Resonance Findings in Competitive Athletes Recovering From COVID-19 Infection
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ORGANIZACIJA NASTAVNOG RADA FIZIČKOG I ZDRAVSTVENOG VASPITANJA DECE SA MOTORIČKIM POREMEĆAJIMA PREMA NEUROLOGIČKIM NIVOIMA

Anita Kovačić Popović[1], Dragana Čanović[2], Milena Vezmar[1]

[1]Visoka zdravstvena škola strukovnih studija „Medika“, Beograd, Srbija.
[2]Osnovna škola „Knjeginja Milica“, Beograd, Srbija.

Sažetak: Fizičko i zdravstveno vaspitanje predstavlja društvenu, planiranu i organizovanu delatnost, koja je zasnovana na pedagoško didaktičkim načelima. Na nastavi fizičkog i zdravstvenog vaspitanja dete se, kroz sistematski i organizovan proces, bio-psiho-socijalno razvija, stvara higijenske navike, stiče motoričke veštine i znanja, poboljšava motoričke sposobnosti, jača zdravlje. Od toga koliko su mu razvijene psiho-motoričke sposobnosti i u kakvoj je kondiciji mnogo mu zavisi i kvalitet svakodnevnog života. Diltsova piramida neurologičkog nivoa je model koji služi za struktuisanje promena, u kojoj viši nivoi uglavnom imaju veći efekat u odnosu na niže nivoe. Ovaj model nam omogućava da bolje razumemo organizaciju, kao i da identifikujemo na kojem nivou je potrebno izvršiti promene kako bi dete iz inicijalnog stanja doveli do očekivanog finalnog stanja, odnosno, da očekivano i realno finalno stanje budu identični. Ovaj rad ima za cilj da kroz Diltsovu piramidu neurologičkih nivoa predstavi organizaciju vaspitno-obrazovnog rada u nastavi fizičkog i zdravstvenog vaspitanja dece sa motoričkim poremećajima. Organizacija nastave fizičkog i zdravstvenog vaspitanja može se prikazati kroz neurologičke nivoe. Prvi Diltsov nivo je okruženje u koje možemo svrsatati prostorne uslove za rad, veličinu grupe, opremu i sredstva za rad, kao i izgled nastavnika. Sledeći novo je ponašanje koje obuhvata verbalno i neverbalno ponašanje nastavnika, položaj i kretanje nastavnika tokom izvođenja vežbi, pravilno davanje instrukcija za rad, jasno i precizno demonstriranje zadataka i davanje povratnih informacija. Treći nivo su sposobnosti i strategije. Ovde ubrajamo znanje i kompetencije nastavnika fizičkog i zdravstvenog vaspitanja, izbor oblika i metoda za rad, izbor vežbi optimalne obrazovne vredosti, izbor rekvizita, funkcionalno povezivanje svih delova časa, prilagođavanje zadataka i vežbi prema stepenu motoričkog oštećenja, zdravstvenom stanju i psihomotornim sposobnostima deteta. Posle sposobnosti su uverenja i vrednosti. Na ovom višem nivou uključene su psihološke veštine. Motivacija je ključan faktor koji dovodi do postignuća i uspešnosti realizacije nastave, razvoja svesne discipline, pozitivnog odnosa prema vežbanju i vere u sopstvene sposobnosti. Takođe, potrebno je decu upoznati sa vrednostima motoričkih aktivnosti, igara i sportskih disciplina, kao i formirati pozitivne stavove i vrednovanje motoričkih aktivnosti. Najviši nivo neurologičkog koncepta je identitet. U okviru fizičkog i zdravstvenog vaspitnja bitno je formirati sportski identitet koji predstavlja način na koji dete shvata ulogu bavljenja sportom ili fizičkom aktivnošću, a nastavnik je taj koji predstavlja model. Časovi se moraju dobro organizovati, kako u pogledu jasnih i preciznih oblika i metoda rada, tako i u pogledu stvaranja radne i pozitivne atmosfere. Vaspitno-obrazovni rad u nastavi fizičkog i zdravstvenog vaspitanja organizovan prema neurologičkim nivoima doprinosi bržem i boljem učenju, ličnom razvoju i motivisanosti deteta sa motoričkim poremećajima za učestvovanje u nastavi fizičkog i zdravstvenog vaspitanja. Takođe, ovaj pristup organizaciji nastavnog rada fizičkog i zdravstvenog vaspitanja pruža mogućnost identifikovanja nivoa gde je potrebno napraviti promenu koja bi dovela do uspešnosti u radu sa decom sa motoričkim poremećajima.

[1] anitakovacic987@hotmail.com

Ključne reči: fizičko i zdravstveno vaspitanje, deca se motoričkim poremećajima, neurologički nivoi, organizacija nastavnog rada fizičkog i zdravstvenog vaspitanja

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ORGANIZATION OF TEACHING WORK OF PHYSICAL AND HEALTH EDUCATION OF CHILDREN WITH MOTOR DISORDERS, BY NEUROLOGICAL LEVELS

Anita Kovačić Popović[1], Dragana Čanović[2], Milena Vezmar[1]

[1]Medical College of Applied Sciences „Medika“, Belgrade, Serbia.
[2]Primary School „Knjeginja Milica“, Belgrade, Serbia.

Abstract: Physical and health education is a social, planned and organized activity, which is based on pedagogical and didactic principles. In the teaching of physical and health education, the child, through a systematic and organized process, develops bio-psycho-socially, creates hygienic habits, acquires motor skills and knowledge, improves motor skills, strengthens health. The quality of his/her everyday life depends a lot on how developed his psycho-motor abilities are and in what shape he/she is in. The Dilts pyramid of the neurological level is a model that serves to structure changes, in which higher levels generally have a greater effect compared to lower levels. This model allows us to better understand the organization, as well as to identify at what level it is necessary to make changes in order to bring the child from the initial state to the expected final state, that is, that the expected and real final state are identical. This paper aims to present the organization of educational work in the teaching of physical and health education of children with motor disorders through Dilts pyramid of neurological levels. The teaching organization of physical and health education can be shown through neurological levels. The first Dilts level is an environment in which we can compare the spatial conditions for work, the size of the group, the equipment and means for work, as well as the appearance of the teacher. Next is a new behavior that includes verbal and nonverbal behavior of teachers, the position and movement of teachers during the performance of exercises, proper giving of instructions for work, clear and precise demonstration of tasks and giving feedback. The third level is skills and strategies. This includes knowledge and competencies of physical and health education teachers, choice of forms and methods of work, choice of exercises of optimal educational value, choice of props, functional connection of all parts of the class, adjustment of tasks and exercises according to the degree of motor impairment, health and psychomotor abilities. After abilities there are beliefs and values. At this higher level, psychological skills are involved. Motivation is a key factor that leads to the achievement and success of teaching, the development of conscious discipline, a positive attitude towards exercise and faith in their own abilities. Also, it is necessary to acquaint children with the values of motor activities, games and sports disciplines, as well as to form positive attitudes and evaluation of motor activities. The highest level of the neurological concept is identity. Within physical and health education, it is important to form a sports identity that represents the way in which the child understands the role of playing sports or physical activity, and the teacher is the one who represents the model. Classes must be well organized, both in terms of clear and precise forms and methods of work, and in terms of creating a working and positive atmosphere. Vocational and educational work in the teaching of physical and health education organized according to neurological levels contributes to faster and better learning, personal development and motivation of a child with motor disorders to participate in the class teaching of physical and health education. Also, this approach to the organization of physical education and health education provides the opportunity to identify the levels where it is necessary to make a change that would lead to success in working with children with motor disorders.

[1] anitakovacic987@hotmail.com

Keywords: physical and health education, children with motor disorders, neurological levels, organization of teaching physical and health education

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PRIMENA CPTED PRINCIPA PREVENCIJE KRIMINALITETA U PROJEKTOVANJU I IZGRADNJI SPORTSKIH OBJEKATA

Aleksandar Petrov[1]

Visoka škola za ekonomiju i upravu, Beograd

Sažetak: Nedolično ponašanje na sportskim tribinama, huliganizam, umešanost navijačkih grupa u kriminalne aktivnosti, uobičajena su pojava na stadionima i sportskim dvoranama širom Srbije. Uprkos Zakonu o sprečavanju nasilja i nedoličnog ponašanja na sportskim priredbama, ovaj ozbiljni društveni problem nije rešen i preti da eskalira ugrožavajući pritom ne samo javni red i mir, već i nacionalnu bezbednost. Jedan od mogućih predloga rešenja ovog problema, kojim bi se nasilju na tribinama stalo na put, ogleda se u specifičnoj strategiji kontrole kriminaliteta kroz arhitektonsko projektovanje i urbanističko planiranje koje svoju namenu može ostvariti i prilikom izgradnje novih i rekonstrukcije i adaptacije postojećih sportskih objekata i terena. U istraživanju se dominantno koristi metod analize sadržaja dokumenata. Prevencija kriminaliteta kroz uređenje okoline (CPTED – Crime Prevention Through Environmental Design) predstavlja jedan segment koncepta urbane bezbednosti koji podrazumeva prilagođavanje životnog okruženja ljudi u zaštiti od kriminalnih napada. Ciljevi CPTED-a jesu smanjenje stope kriminaliteta i povećanje osećaja bezbednosti građana. Strategije CPTED-a proizvode preventivno dejstvo i utiču na počinioce da odustanu od izvršenja kriminalnih radnji. Ovaj koncept podrazumeva projektovanje i izgradnju objekata tako da spreče zločin. Četiri glavna principa CPTED-a su prirodni nadzor (Natural Surveillance), prirodna kontrola pristupa (Natural Access Control), teritorijalno ojačanje (Territorial Reinforcement) i održavanje (Maintenance). Iako svoju namenu najviše pronalazi u planiranju i izgradnji rezidencijalnih objekata, koncept prevencije kriminaliteta kroz uređenje okoline može pozitivno delovati i na smanjenje i sprečavanje nasilja na sportskim terenima i oko njih. Arhitektonsko-urbanističkim uređenjem stadiona i dvorana, kao i prostora oko njih, može se postići jasna preglednost koja, uz projektovanje fizičkih mera zaštite (bezbednosne prepreke, video-nadzor, osvetljenje) omogućava detaljan pregled okruženja i terena, kontrolu pristupa terenu i okolini sportskog objekta (parkirališta za automobile, prilazi za pešake, pristupni putevi za vozila, stajališta javnog prevoza). Takvim posebnim urbanističkim planiranjem stvaraju se uslovi da pripadnici organa reda i redari sportskog objekta imaju jasnu sliku kontrole pristupa sumnjivih lica i nadzora navijača (unošenje nedozvoljenih sredstava, oružja, pirotehnike, osobe pod dejstvom alkohola i narkotika). Ovaj vid prevencije efikasno utiče i na suzbijanje straha od kriminala, čime se na sportskim tribinama postiže maksimalni osećaj bezbednosti posetilaca.

Ključne reči: prevencija kriminaliteta, arhitektura, sportski objekti.

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[1] aleksandar.jpetrov@gmail.com

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THE APPLICATION OF CPTED PRINCIPLES IN DESIGN AND CONSTRUCTION OF SPORTS FACILITIES

Aleksandar Petrov[1]

College of Economics and Administration, Belgrade

Abstract: Misconduct in sports stands, hooliganism, and involvement of sports fan groups in criminal activities are common occurrences at stadiums and sports halls throughout Serbia. Despite the Law on the Prevention of Violence and Misconduct at Sports Events, this serious social problem has not been resolved and threatens to escalate, thus endangering not only public order and peace but national security as well. One of the possible suggestions for resolving this issue, which would put a stop to violence in the stands, is reflected in a specific crime control strategy through architectural design and urban planning, which can accomplish its purpose in the construction of new and reconstruction and adaptation of existing sports facilities and sports grounds. The document analysis method was predominantly used in the research. Crime Prevention Through Environmental Design (CPTED) represents a segment of the concept of urban security that involves adapting the environment of people in such a way so that they are protected from criminal acts. The goals of the CPTED include reducing the crime rate and increasing the sense of security of citizens. CPTED strategies have a preventive effect and influence perpetrators to stop committing criminal acts. This concept involves designing and constructing facilities in such a way that they prevent the occurrence of crime. The four main principles of CPTED are Natural Surveillance, Natural Access Control, Territorial Reinforcement, and Maintenance. Although it generally finds its purpose in the planning and construction of residential facilities, the concept of crime prevention through environmental design can have a positive effect on reducing and preventing violence on and around sports grounds. The architectural and urban design of stadiums and sports halls, as well as the space around them, can provide visibility which, along with the physical protection measures plan (security barriers, video surveillance, lighting) allows a detailed view of the environment and field, control of access to the field and surrounding area of a sports facility (parking lots, pedestrian accesses, vehicle access roads, public transport stops). Thanks to special urban planning, conditions are created for members of law enforcement agencies and wardens of the sports facility to have a clear picture of access control of suspicious persons and supervision of fans (bringing in prohibited items, weapons, pyrotechnics, persons under the influence of alcohol and narcotics). This type of prevention has an effective influence on the suppression of the fear of crime, thus ensuring that visitors in sports stands feel safe.

Keywords: crime prevention, architecture, sports facilities.

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[1] aleksandar.jpetrov@gmail.com

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PARKUR KAO SREDSTVO U SPECIJALNOM FIZIČKOM VASPITANJU

Piljak Aleksandar[1], Miletić Vladimir[2], Rajković Željko[2]

[1]Parkur Srbija
[2]Fakultet sporta i fizičkog vaspitanja Univerzitet u Beogradu

Sažetak: Parkur predstavlja adaptirano poligonsko kretanje preuzeto iz vojnih struktura. Koristi se sa ciljem efikasnog savladavanja prepreka koje se nalaze na čovekovom putu u različitim situacijama. Specifičnosti terenskog kretanja usmerene su na izvršavanje taktičkih zadataka vojnih, policijskih i spasilačkih jedinica. Prepreke koje se javljaju u realnim uslovima su promenjive kategorije (po broju, dimenzijama, karakteru, trajanju i težini) i kao takve smanjuju brzinu i otežavaju način njihovog savladavanja. Specijalno fizičko vaspitanje u dovoljnoj meri ne obrađuje specifične prepreke na koje pripadnici navedenih službi mogu da naiđu tokom izvršavanja zadataka. Do sada su ovu privilegiju imale samo malobrojne elitne jedinice, dok prilike u savremenom društvu zahtevaju široki obuhvat. Parkur predstavlja odlično sredstvo za povećanje originalnosti, efikasnosti i kreativnosti savladavanja različitih prepreka u kontinuitetu. Parkur je moguće primeniti u specijalnom fizičkom obrazovanju (Kriminalističko-policijskih akademija, Vojnih akademija, Fakulteta za diplomatiju i bezbednost, Fakulteta sporta i fizičkog vaspitanja, srednjih policijskih škola, vojnih gimnazija i svih kurseva sa sličnom tematikom) kao sredstvo kretanja, vančasovnu nastavnu aktivnost, poseban predmet i u formiranju odgovarajućeg sistema takmičenja. Specifičnost parkura kao složene kretne aktivnosti, zahteva rukovođenje obrazovnim procesom od strane diplomiranog pedagoga fizičke kulture sa bogatim iskustvom i usmerenjem iz ove oblasti.

Ključne reči: vojska, policija, spasilačke službe, prepreke, poligoni

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[1] aleksandarpiljak93@gmail.com

PARKUR AS A MEANS OF SPECIAL PHYSICAL EDUCATION

Piljak Aleksandar[1], Miletić Vladimir[2], Rajković Željko[2]

[1]Parkour Serbia
[2]Faculty of sport and physical education University in Belgrade

Abstract: Parkour is an adapted ground movement taken from military structures. It is used with the aim of effectively overcoming obstacles that are in the way of a person in different situations. The specifics of the field movement are aimed at performing the tactical tasks of military, police and rescue units. Obstacles that occur in real conditions are variable categories (in number, dimensions, character, duration and complexity) and as such reduce the speed and make it difficult to overcome them. Special physical education does not sufficiently treat the specific obstacles that members of the said service may encounter during the performance of tasks. Until now, only a small number of elite units have had this privilege, while situation in modern society require wide coverage. Parkour is a great tool for increasing originality, efficiency and creativity in overcoming various obstacles in continuity. Parkour can be applied in special physical education (Criminal Police Academies, Military Academies, Faculties of Diplomacy and Security, Faculties of Sports and Physical Education, High police schools, High military schools and all courses with similar topics) as a means of movement, extracurricular teaching activity, elective subject and informing appropriate competition system. The specificity of parkour as a complex movement activity, requires the management of the educational process by a graduate pedagogue of physical culture with rich experience and direction in this field.

Keywords: army, police, rescue services, obstacles, training grounds

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[1] aleksandarpiljak93@gmail.com

MUSCLE FATIGUE AND MUSCLE SORENESS: ETIOLOGY, MECHANISMS AND PREVENTION

Jasmina Pluncević Gligoroska[1], Sanja Mančevska

University "Ss. Cyril and Methodius", Faculty of Medicine, Institute of Physiology and Anthropology, Student Counseling Service, Skopje, North Macedonia

Abstract: Muscle fatigue is a temporary and transient muscle incapacity to develop muscle force, and inability of muscle to perform work or maintain a certain level of physical activity. Several mechanisms are proposed as physiological base of the muscle fatigue: structural and functional changes that occurred in the sarcomera, reduced sarcoplasmic pH value, inhibition of the cross bridges cycle, blocking the process of excitation and contraction coupling, and depletion of energy reserves. Common consecutive process of muscle fatigue is muscle soreness. This phenomenon can lead to a disturbance of the integrity of muscle cells or temporary disruption of muscle function. Acute muscle soreness causes insignificant inconvenience in the athlete because it is short-term and quickly retreat. The delayed onset of muscle soreness (DOMS) often affect sport's performance by limiting the range of motion, decreasing the muscle force and alternating the movement pattern. Recommendations for the prevention of muscle soreness include stretching exercises, gradually increasing of the training intensity and consumption of anti-inflammatory supplements. The scientific and empiric knowledge of the etiology and mechanisms of muscle fatigue and muscle soreness will allow better understanding how to alleviate and attenuate these adverse phenomena in athletes.

Keywords: muscle fatigue, muscle soreness, contraction, force.

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[1] jasnapg965@yahoo.com

EFEKTI BEZGLUTENSKOG I GLUTENSKOG INTERVALNOG POSTA SA TRENAŽNIM PROCESOM NA MORFOLOŠKE KARAKTERISTIKE

Miloš Purković[1]

Studio za individualne treninge PAMP

Sažetak: U intervalnom postu ili popularnije autofagiji odvija se prirodno-regulatorni fiziološki proces sa mehanizmom raspadanja nefunkcionalnih i nepotrebnih delova ćelija (Klionsky DJ 2008). Fizičko vežbanje menja biohemijske aktivnosti u mišićima, jetri i ostalim masnim tkivima (Hong HC, Hwang SY, Choi HY 2014). Kombinacija autofagije sa fizičkim aktivnostima može doprineti pozitivnim benefitima po zdravlje pojedinca. Cilj ovog rada je uočiti efekte na morfološke karakteristike u trenažnom procesu i eventualne razlike između bezglutenske i glutenske ishrane. Studija slučaja koja uključuje jednog ispitanika 35 godina starosti, visine 188 cm dobrog zdravlja, sa 4 do 5 treninga aerobnog i anaerobnog karaktera nedeljno u trajanju između 45 i 60 minuta. Ispitivanje 8-mesečnog trenažnog ciklusa na autofagiji koji je podeljen na 4 meseca sa ishranom koja isključuje namirnice sa glutenom i šećerom i 4-mesečni period koji uključuje ove namirnice. Parametri su dobijeni pomoću bioimpedance marke Tanita BC-601, dok je za merenje cirkularnih dimenzija korišćena nerastegljiva traka sa preciznošću od 0.1cm. U prvom ciklusu od 4 meseca uočeno smanjenje telesne mase (-14,5 kg), procenta masti (-5,7%), procenat vode (+3%), mišićna masa (-6,5kg) i obima abdomena (-13,5 cm). Dobijeni rezultati ukazuju na kontinuitet skidanja telesne težine u proseku od 906 grama na nedeljnom nivou što je gornja granica za zdravo regulisanje težine po kriterijumu Američkog centra za kontrolu i prevenciju gojaznosti. U drugom ciklusu u trajanju od 4 meseca primećen je porast telesne mase (+3,1 kg), procenta masti (+0,4%), procenat vode (+0,1 %), mišićna masa (+2,2 kg), i obima abdomena (+3 cm). Što se telesne težine tiče ovde postoji porast od 187,5 grama na nedeljnom nivou. U toku 8 meseci od prelaska sa bezglutenske na glutensku ishranu postoje značajnije promene u morfološkim karakteristikama. Studija je pokazala da bezglutenska dijeta normalizuje telesnu težinu, odnosno osobe sa preokomernom težinom smanje telesnu masu, dok osobe sa smanjenom telesnom masom povećaju telesnu masu (Cheng J, Brar PS, Lee AR, Green PH.2010). Bezglutenska ishrana se u ovom istraživanju pokazala kao efikasno sredstvo u smanjenju telesne mase, dok se ishrana sa glutenom pokazala kao dobra metoda za održavanje telesne težine, ili dodavanje iste prilikom većeg kalorijskog unosa bez negativnih uticaja na fizičku formu.

Ključne reči: Aktivnosti, Bioimpedanca, Ishrana, Merenje, Težina.

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[1] purkovic.milos@gmail.com

EFFECTS OF GLUTEN-FREE AND GLUTEN INTERVAL FASTING WITH TRAINING PROCESS ON MORPHOLOGICAL CHARACTERISTICS

Miloš Purković[1]

PAMP individual training studio

Abstract: In intermittent fasting or more popularly autophagy, a natural-regulatory physiological process takes place with the mechanism of disintegration of non-functional and unnecessary parts of cells (Klionsky DJ 2008). Physical exercise alters biochemical activities in muscle, liver, and other adipose tissue (Hong HC, Hwang SY, Choi HY 2014). The combination of autophagy with physical activity can contribute to the positive health benefits of an individual. The aim of this paper is to observe the effects on morphological characteristics in the training process and possible differences between gluten-free and gluten diets. A case study involving one subject 35 years of age, height 188 cm in good health, with 4 to 5 aerobic and anaerobic workouts per week lasting between 45 and 60 minutes. Examination of an 8-month training cycle on autophagy divided into 4 months on a diet that excludes gluten and sugar foods and a 4-month period that includes these foods. The parameters are obtained using Tanita BC-601 bioimpedance, while an inextensible tape with a precision of 0.1 cm was used to measure the circular dimensions. In the first 4-month cycle, a decrease in body weight (-14.5 kg), fat percentage (-5.7%), water percentage (+ 3%), muscle mass (-6.5 kg) and abdominal volume (-13.5 cm). The obtained results indicate the continuity of weight loss averaging 906 grams per week, which is the upper limit for healthy weight regulation according to the criteria of the American Center for Obesity Control and Prevention. In the second 4-month cycle, an increase in body weight (+3.1 kg), fat percentage (+ 0.4%), water percentage (+ 0.1%), muscle mass (+ 2.2 kg) was observed, and abdominal circumference (+3 cm). As far as body weight is concerned, there is an increase of 187.5 grams on a weekly basis. Within 8 months of the transition from a gluten-free to a gluten diet, there are significant changes in morphological characteristics. The study showed that a gluten-free diet normalizes body weight, namely overweight people lose weight, while people with reduced weight gain weight (Cheng J, Brar PS, Lee AR, Green PH.2010). In this study, a gluten-free diet proved to be an effective means of reducing body weight, while a gluten-free diet proved to be a good method for maintaining body weight, or adding it during higher calorie intake without negative effects on physical shape.

Keywords: Activities, Bioimpedance, Nutrition, Measurement, Weight.

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[1] purkovic.milos@gmail.com

EFEKTI VEGANSKE ISHRANE NA ZDRAVLJE I FIZIČKE SPOSOBNOSTI

Nemanja Rebić[1]

Fakultet sporta i fizičkog vaspitanja, Univerzitet u Beogradu

Sažetak: Veganska ishrana apsolutno isključuje sve životinjske namirnice, odnosno meso, ribu, mlečne proizvode, jaja, pa čak i med. Ona je naročito popularna u poslednje vreme, kako u opštoj populaciji tako i među sportistima. Stavovi po pitanju veganske ishrane su podeljeni pa se sa jedne strane isključivanje životinjskih namirnica smatra zdravim i plemenitim dok se sa druge strane navodi da ovako restriktivan pristup može da dovede do deficita određenih makro i mikronutrijenata. Cilj ovog rada je da pregledom naučnih istraživanja ispita efekte veganske ishrane na zdravlje i fizičke sposobnost. U radu su korišćeni deskriptivni i analitički metod, dok su za prikupljanje literature korišćene sledeće elektronske baze podataka: KoBSON, Google Scholar, MEDLINE, PEDro, DOAJ i PubMed. Ključne reči koje su korišćene za pronalaženje radova su: veganska ishrana, kardiovaskularne bolesti, fizičke sposobnosti, maksimalna potrošnja kiseonika. Većina studija pokazuje da vegani imaju nižu stopu mortaliteta, ređe oboljevaju od malignih bolesti i imaju manji rizik od nastanka gojaznosti. Takođe, vegani generalno imaju niži krvni pritisak, niže vrednosti ukupnog i holesterola lipoproteina niske gustine – LDL, te ređe oboljevaju od hipertenzije, koronarne bolesti srca i imaju manji rizik od nastanka kardiovaskularnih bolesti. Veganska ishrana ostvaruje pozitivne efekte na regulisanje metaboličkih oboljenja, kao što su dijabetes i insulinska rezistencija. Iako je ustaljeno mišljenje da je veganska ishrana siromašna gvožđem, većina studija ne pokazuje njegove smanjene vrednosti u serumu. Verovatno da visok unos vitamina C, koji je karakterističan za vegansku ishranu olakšava apsorpciju gvožđa. Sa druge strane, veganska ishrana može imati i neke negativne efekte na zdravstveno stanje. Konkretno, zbog isključivanja namirnica životinjskog porekla, vegani uglavnom imaju niže vrednosti cijanokobalamina (vitamin B12). Pored toga, zbog nižih vrednosti lipoproteina visoke gustine – HDL i viših vrednosti homocisteina u serumu što je pokazatelj deficita vitamina B12 i folne kiseline, rizik od ateroskleroze kod vegana može biti povećan. Međutim, uz pravilno sprovođenje ishrane i suplementaciju vitamina B12 ove neželjene efekte je moguće sprečiti. Na osnovu analize svega nekoliko studija koje su do sada ispitivale uticaje isključivo veganske ishrane na fizičke sposobnosti možemo da kažemo da vegani ne zaostaju za vegeterijancima i osobama koje konzumiraju raznovrsnu ishranu u pogledu ispoljavanja snage (Pmax) i jačine (kg/kg LBM), dok u pogledu ispoljavanja maksimalne potrošnje kiseonika (VO2max) uglavnom pokazuju bolje rezultate. Visoke vrednosti VO2 max kod vegana mogu se objansiti nižim vrednostima BMI i visokim unosom ugljenih hidrata koji omogućavaju popunjavanje skladišta glikogena. Pored toga budući da je mnoštvo povrća, voća i drugih biljnih namirnica bogato antioksidantima, oni dodatno pomažu ubrzanom oporavku sportista tako što smanjuju oksidativni stres i inflamacije, koje izazivaju intenzivni trenizi i takmičenja. Veganska ishrana pokazuje brojne zdravstvene benefite, međutim potrebna je suplementacija vitaminom B12 kako bi se izbegli neželjeni efekti. U poređenju sa osobama koje konzumiraju namirnice životinjskog porekla vegani uglavnom ostvaruju veće vrednosti maksimalne potrošnje kiseonika.

Ključne reči: veganska ishrana, kardiovaskularne bolesti, fizičke sposobnosti, maksimalna potrošnja kiseonika

[1] rebicnemanja@gmail.com

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EFFECTS OF VEGAN DIET ON HEALTH AND PHYSICAL ABILITIES

Nemanja Rebić[1]

Faculty of Sports and Physical Education, University of Belgrade

Abstract: The vegan diet absolutely excludes all animal foods, ie meat, fish, dairy products, eggs, and even honey. Nowadays it is especially popular among the general population and athletes. Attitudes towards the vegan diet are divided, so on the one hand the exclusion of animal foods is considered healthy and noble, while on the other hand it is stated that such a restrictive approach can lead to a deficiency of certain macro and micronutrients. This paper aims to investigate the effects of a vegan diet on health and physical ability. The paper used a descriptive and analytical method, while the following electronic databases were used to collect literature: KoBSON, Google Scholar, MEDLINE, PEDro, DOAJ, and PubMed. The keywords used to find the literature: vegan diet, cardiovascular diseases, physical abilities, maximum oxygen consumption. Most studies show that vegans have a lower mortality rate, are less likely to develop malignancies, and have a lower risk of obesity. Also, vegans generally have lower blood pressure, lower levels of total and low-density lipoprotein cholesterol - LDL, and are less likely to suffer from hypertension, coronary heart disease, and have a lower risk of cardiovascular disease. A vegan diet has positive effects on the regulation of metabolic diseases, such as diabetes and insulin resistance. Although it is widely believed that the vegan diet is low in iron, most studies do not show its reduced serum levels. It is likely that the high intake of vitamin C, which is characteristic of a vegan diet, facilitates the absorption of iron. On the other hand, a vegan diet can have some negative effects on health. In particular, due to the exclusion of animal food, vegans generally have lower levels of cyanocobalamin (vitamin B12). Also, due to lower values of high-density lipoprotein - HDL and higher values of serum homocysteine, which is an indicator of deficiency of vitamins B12 and folic acid, the risk of atherosclerosis in vegans might be increased. However, with proper nutrition and vitamin B12 supplementation, these side effects can be prevented. Based on the analysis of only a few studies that have examined the effects of a vegan diet on physical abilities, we can say that vegans in terms of maximum oxygen consumption (VO2max) generally show better results while in terms of power (Pmax) and strength (kg/kg LBM), do not lag behind vegetarians and omnivores. The high VO2max values in vegans can be explained by lower BMI values and high carbohydrate intake that allow replenishment of glycogen stores. In addition, since many vegetables, fruits, and other plant foods are rich in antioxidants, they further help speed up the athlete's recovery by reducing oxidative stress and inflammation, which are caused by intense training and competition. A vegan diet shows many health benefits, but vitamin B12 supplementation is needed to avoid side effects. Compared to people who consume animal foods, vegans generally achieve higher values of maximum oxygen consumption.

Keywords: vegan diet, cardiovascular diseases, physical abilities, VO2max

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[1] rebicnemanja@gmail.com

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OVERWEIGHT STEREOTYPICAL THREAT: ITS DETRIMENTAL IMPACT ON THE BALANCE PERFORMANCE AND SELF-EFFICACY

Esmaeel Saemi[1], Maryam Rabeinia, Rasool Abedanzadeh

Shahid Chamran University of Ahvaz, Ahvaz, Iran

Abstract: Humans fail to perform a wide range of actions when they consider themselves members of a particular group with poor performance (Steele, Spencer, & Aronson, 2002). The reason for this is a variable called stereotyped threat. Stereotype threat is a cognitive-emotional-social variable that has been of interest to sports psychologists and is defined as beliefs that link a group of individuals to a particular trait (Steele & Aronson, 1995). Numerous studies have shown the negative effects of stereotype threat on different aspects of human behavior (for a review see Chalabaev, 2020). Purpose: the purpose of the present experiment was to investigate the impact of overweight stereotype threats on balance performance and self-efficacy. Twenty-four adults (all female, Mage=22.79 ± 1.21 years; BMI=25.89± 1.71 kg/m2) were recruited and randomly assigned to two groups: A negative overweight stereotypical threats which received the following instruction; " this experiment involves practicing a balance task consisting of maintaining the balance on the platform as long as possible during the 30 second trials. This balance task is usually influenced by individual differences such as weight. For example, overweight individual generally produces worse results than those who are not overweight" and or a nullified stereotype group that received the following instruction; " this experiment involves practicing a balance task consisting of maintaining the balance on the platform as long as possible during the 30-second trials. This balance task isn't influenced by individual differences such as weight. For example, overweight individual and those who are not overweight generally produces similar results". The task consisted of maintaining the dynamic balance on the stabilometer during 30-second trials (10 trials in the acquisition phase and 5 trials in the retention test). Results: The results of the experiment indicated lower balance performance and self-efficacy in the retention test for the overweight stereotypic threat compared to the nullified stereotype group ($p \leq 0.05$, all measures). Conclusion: Collectively, the findings of the present study showed the negative impact of training under the overweight stereotype threat condition on balance task learning and self-efficacy. These results can be used in similar situations where overweight people try to learn a sports skill. In these situations, it is suggested that trainers and practitioners reduce the stereotype threats and prevent the negative impact on motor performance and learning by emphasizing that personal characteristics such as overweight do not affect motor performance.

Keywords: stereotypical threat, motor learning, self-efficacy, balance performance

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[1] e.saemi@scu.ac.ir

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ADAPTIRANA FIZIČKA AKTIVNOST I INVALIDITET

Maja Savić Sekulić[1], Ljubica Pajić Nikolić

Ministarstvo odbrane Republike Srbije, Uprava za vojno zdravstvo, Centar vojnomedicinskih ustanova, Vojnomedicinski centar Karaburma, Kabinet za hirurške bolesti

Sažetak: Adaptirana fizička aktivnost – AFA, (Adapted physical activity - PA) je individualno prilagođena aktivnost koja uzima u obzir fizičke, psihosomatske i psihosocijalne mogućnosti osobe, sa jedne, i cilja koji treba da se postigne, sa druge strane (Bošković i sar, 2013). Invaliditet (nesposobnost, nemoć) je stanje organizma kod kog usled kongenitalne anomalije, bolesti ili traume ne postoji mogućnost izvršavanja aktivnosti dnevnog života ili posebnih oblika funkcionisanja (WHO, Disability 2005). U takvoj situaciji neophodno je se svakom stanju osobe ponaosob prilagodi protokol adaptirane fizičke aktivnosti. Pregledom literature u poslednjih deset godina utvdi i definisati pojmove adaptirane fizičke aktivnosti i invaliditeta. Gruba podela invalidnosti je fizička invalidnost (ljudi sa otežanom pokretljivošću), senzorna invalidnost (oštećenje senzorijela, sluh i vid) i intelektualni invaliditet (osobe ometene u mentalnom razvoju, autizam i sl.). Adaptirana fizička aktivnost može da se sprovodi u svakom životnom dobu, sa osvrtom na primarno oboljenje tj. disfunkciju i na pol osobe (Crnković i sar. 2013). Procenjuje se da 15% svetske populacije čine osobe sa invaliditetom, tj. preko 800 mil. ljudi, od čega polovinu čine žene (WHO, Disability 2005). Pre početka fizičke aktivnosti neophodno je obaviti medicinsku procenu zdravstvenog stanja osobe i utvrditi ograničenja i smernice u pogledu aktivnosti i vežbanja. Ta interprofesionalna saradnja koja je na neki način inicirana od pacijenta tj. osobe sa invaliditetom, ide preko lekara, medicinke sestre, fizioterapeuta, fizijatra do personalnog trenera, ne treba da obeshrabri pacijenta već da ga motiviše da bude istrajan zarad svog zdravlja. Zato je i bitna socijalna podrška ua ranoj fazi fizičke aktivnosti. U Srbiji su stručni i naučni radovi na temu AFA usmereni u okviru jedne profesije. Može se sa sigurnošću reći da je ovakav oblik interprofesionalne edukacije i saradnje imperativ za unapređenje kvaliteta života osoba sa invaliditetom i društva u celini (Javorina et all 2020).

Ključne reči: fizička aktivnost, invalidnost, personalni trener, interprofesionalna edukacija, kvalitet života

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[1] ma83ja@gmail.com

ADAPTED PHYSICAL ACTIVITY AND DISABILITY

Maja Savić Sekulić[1], Ljubica Pajić Nikolić

Ministry of Defense of the Republic of Serbia, Directorate of Military Health, Center of Military Medical Institutions, Military Medical Center of Karaburma, Cabinet for Surgical Diseases

Abstract: Adapted physical activity (AFA) is an individually adapted activity that takes into account a person's physical, psychosomatic and psychosocial abilities, on the one hand, and the goal to be achieved, on the other hand (Bošković et al., 2013). . Disability (incapacity, impotence) is a condition of an organism in which due to a congenital anomaly, illness or trauma there is no possibility of performing activities of daily living or special forms of functioning (WHO, Disability 2005). In such a situation, it is necessary to adapt the protocol of adapted physical activity to each condition of the person individually. By reviewing the literature in the last ten years, determine and define the concepts of adapted physical activity and disability. The gross division of disability is physical disability (people with reduced mobility), sensory disability (sensory impairment, hearing and vision) and intellectual disability (persons with mental disabilities, autism, etc.). Adapted physical activity can be carried out at any age, with reference to the primary disease, ie. dysfunction and gender of the person (Crnković et al. 2013). It is estimated that 15% of the world's population are people with disabilities, ie. over 800 mil. men, half of whom are women (WHO, Disability 2005). Before starting physical activity, it is necessary to perform a medical assessment of a person's health condition and determine restrictions and guidelines regarding activities and exercise. That interprofessional coperation which is in some way initiated by the patient, that is. a person with a disability, goes through a doctor, nurse, physiotherapist, physiatrist to a personal trainer, should not discourage the patient but motivate him to be persistent for the sake of his health. That is why social support is important in the early phase of physical activity. In Serbia, professional and scientific papers on the topic of AFA are directed within one profession. It can be said with certainty that this form of interprofessional education and cooperation is imperative for improving the quality of life of persons with disabilities and society as a whole (Javorina et all 2020).

Keywords: physical activity, disability, personal trainer, quality of life.

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[1] ma83ja@gmail.com

PHYSIOLOGICAL DEMANDS AND CHARACTERISTICS OF THE PARTICIPANTS IN A CYCLING SPORTIVE EVENT

Sebastian Sitko[1], Isaac López Laval, Rafel Cirer Sastre

Abstract: Cycling sportives have become increasingly popular in the last years. With over 11,000 participants, the Quebrantahuesos (Qh), is one of the most prominent cycling events in Europe and its ever-growing competitive nature has increased the physiological demands required to obtain a great result. The objectives of the current study were to determine the relationship between the power profile and the result in the event as well as to describe the physiological differences among subgroups of participants according to their result. **Methods:** Ninety-one male cyclists took part in the study. Data regarding weight, height, experience and training volume were collected before the event. Subjects were required to use a power meter which had been previously validated in a laboratory setting. Participants received a list of admitted power meters that was based on a previously published study (Maier et al., 2017). The raw data from the power meter used by the participants during the event's four climbs was sent to the researchers as an Excel file. Participants were then divided in three different groups according to their performance in the event: Gold Group (GG=30 cyclists; Silver Group (SG=28 cyclists; < 7 h) and Bronze Group (BG=33 cyclists). One-way analysis of variance was performed to assess differences between groups. Pearson's product-moment correlation coefficient was used to assess for associations among performance and/or anthropometric data. **Results:** Group differences were found in body weight ($P<0.001$), body mass index ($P<0.001$), training volume ($P<0.001$) and previous participations in the event ($P<0.001$). There were significant differences in relative power between the groups (all $P<0.001$): GG= 4.26±0.28 W/kg; SG= 3.44±0.33 W/kg and BG= 2.93±0.38 W/kg. A very high negative correlation between relative power during the climbs and the final time was also observed ($r>-0.92$; $P<0.001$). **Discussion:** Better performances were associated to lower body weight and body mass index and higher training volume, relative power and experience. The current study provides data that suggest that as long as the average relative power is sustained, the pacing strategy throughout the different climbs does not affect the race outcome. This information could be used by cyclists and coaches when preparing the pacing strategy for the event.

Keywords: cycling, power output, performance, cyclosportive

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[1] sebastiansitko@yahoo.es

CLUSTER SET IN THE PLYOMETRIC TRAINING: A SHORT NARRATIVE REVIEW

Sannicandro Italo[1], Cofano Giacomo, Traficante Paolo

University of Foggia, Italy

Abstract: Resistance training programs can be modulated by manipulating one or more of a series of variables session (sets, reps, load, exercise selection, and rest periods). An alternative training setup to traditional resistance strength training for the practitioner is called cluster training, or inter-repetition, rest training. This training structure involves the manipulation of work and rest periods, breaking sets into small clusters of repetitions, which may alter. This short narrative review aims to describe the use of the cluster set in the plyometric training. Methods: For the bibliographic search PubMed and Sport Discuss databases were used selecting articles published between 01/01/2011 and 01/03/2021. Two keyword groups were identified, using synonyms and similar terms, using the operator "OR":1)"cluster set" OR "plyometric training" 2)"cluster set" OR "jump training". Subsequently, all the categories were combined together using the "AND" operator. Results: The initial database search produced 24 results. After removing the studies and reviews on resistance training (9), endocrine/biomechanical aspects (4), studies on the effects of cluster set resistance training on the jump performance (3) and other aspects not related to cluster set training (4), 4 studies were selected, analyzed and included in the narrative review. Discussion and conclusions: The training organization with traditional sets (TS) and with cluster set (CS) allows for different benefits in performance. TS allow you to obtain advantages in straight sprinting, while CS are more advantageous for increasing jumping and agility performance (power values, take-off velocity, ump height). Furthermore, CS allow to control ground reaction force values.

Keywords: cluster set, plyometric training, jump training

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[1] italo.sannicandro@unifg.it

STUDENTS ATTITUDES ON THE IMPACT OF SPORT ON HEALTH AND IMPROVEMENT OF MENTAL HYGIENE

Aleksandar Stojmenović[1], Borko Katanić[1], Bojan Ugrinić[1,2]

[1]University of Nis, Faculty of Sports and Physical Education, Nis, Serbia
[2]College of Sports and Health, Belgrade

Abstract: The aim of this study was to investigate the attitudes of first- and fourth-year students about the impact of sports on health and the improvement of mental hygiene. Method: 80 first and fourth year students of the Technical Faculty in Cacak, University of Kragujevac. Of these, 47 students were male, while 33 were female. For the purposes of this research, a survey questionnaire was used as a measuring instrument. The survey consists of 60 questions divided into 10 groups. The obtained data were entered and analyzed using the statistical program "SPSS 19". Results: The average response of all variables in first year students is 3,665, while the average response in fourth year students is 3,686. Analysis of the "Mann-Whitney U" test yielded a value of 0.317 for all ten variables. Conclusion: The obtained results indicate that there are no differences in the attitudes of students between I and IV years regarding the impact of sports on health and mental hygiene. The data we obtained confirm the fact that there are no differences in attitudes both in general about sports on the impact of health, and about other segments of sports based on the obtained results.

Key words: Sport, Health, Mental Hygiene, Mental Health, Sociology

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[1] borkokatanic@gmail.com

PHYSICAL ACTIVITY AND MENTAL HEALTH

Aleksandar Stojmenović[1], Borko Katanić[1], Bojan Ugrinić[1,2]

[1]University of Nis, Faculty of Sports and Physical Education, Nis, Serbia

[2]College of Sports and Health, Belgrade

Abstract: This review study aimed to determine the impact of physical activity on mental health. The following electronic databases were used to search the literature: PubMed, Medline, Google Scholar from 1999 to 2019. The search was performed using the following keywords: physical activity, physical exercise, mental health, psychological health. After selecting papers related to the criteria, 20 studies were selected to meet the needs of this systematic review. This research included a total of 26,940 respondents of different genders and ages, which is a very large sample of respondents. All research has confirmed that physical activity affects the mental health of people of different health status, gender, and age. A detailed analysis of all these studies has shown that there is an impact of physical activity on mental health, as well as what types of physical activities affect the psychological state of both persons with mental disorders and the healthy population.

Keywords: physical activity, physical exercise, mental health, psychological health

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[1] borkokatanic@gmail.com

TERAPEUTSKO IZUZEĆE I ZLOUPOTREBA LEKOVA U CILJU POBOLJŠANJA SPORTSKIH PERFORMANSI

Dragutin Stojmenović[1], Ivan Nikolić, Tamara Stojmenović

Fakultet za fizičku kulturu i menadžment u sportu, Univerzitet Singidunum

Sažetak: Doping u sportu, u jednostavnom smislu, predstavlja svaku primenu supstanci, lekova ili metoda koje su zabranjene, a koji dovode do poboljšanja rezultata sportista. Ipak, sportisti, kao i obični ljudi, imaju pravo da se razbole i da se leče, ali ne smeju da koriste većinu lekova koji su za druge ljude uobičajeni, jer se nalaze na listi zabranjenih. Zbog toga je Svetska antidoping agencija (WADA) uvela „Izuzeće radi terapeutske upotrebe u sportu“ skraćeno TUE (Therapeutic Use Exemptions) koje se podnosi u slučaju kada postoji indikacija za primenu supstanci i metoda sa liste zabranjenih sredstava. Ovo „izuzeće“ služi da sportistu oslobodi opasnosti od proglašenja doping pozitivnim u toku ili van takmičenja. Poslednjih godina sve više se traže dozvole za terapijsku upotrebu nedozvoljenih lekova za lečenje, a cilj ovog rada je istražiti uzroke za traženje TUE, te da li postoji zloupotreba TUE sa ciljem poboljšanja sportskih sposobnosti i rezultata. Za prikupljanje, klasifikaciju i analizu ciljanih istraživanja korišćena je deskriptivna metoda i teorijska analiza, a podaci koji su korišćeni za potrebe istraživanja prikupljeni su uz pomoć Google Scholar, PubMed i KoBSON pretraživača. Ovaj revijalni rad u najvećoj meri potvrđuje da je primena glukokortikoida u cilju lečenja sportskih povreda najčešći uzrok zbog kojeg sportisti traže TUE odobrenje. Drugi na listi su stimulansi, za lečenje dijagnoze hiperaktivnosti i poremećaja pažnje (ADHD-a) kod sportista, a na trećem mestu su beta blokatori kod hronične opstruktivne bolesti pluća. Glukokortikoidi se najčešće primenjuju u vidu kortikosteroidnih injekcija koje su vrlo potentni anti-zapaljenski lekovi i koje dovode do efikasnog saniranja povrede i umanjenja bola. Sa druge strane, dijagnoza astme ili neke druge hronične opstruktivne bolesti pluća, predstavlja idealnu podlogu za zloupotrebu lekova koji se primenjuju za lečenje ovih oboljenja. I pored propisane terapijske doze, mnogi sportisti su i dalje spremni da rizikuju doping pozitivan rezultat tako što uzimaju veće doze od onih potrebnih smatrajući da će ih TUE odobrenje za primenu leka zaštiti na potencijalnoj doping kontroli. Istovremeno, moguća potencijalna zloupotreba TUE može se videti i na primeru primene stimulanasa u lečenju ADHD. Ukoliko se u obzir uzme činjenica da je uvidom u svetsku statistiku u pogledu TUE prijava jasno pokazano da je odobrenje TUE za primenu stimulanasa najčešće traženo od strane sportista, posle glukokortikoida, i to upravo za dijagnozu poremećaja pažnje, onda se postavlja sumnja da li se ova bolest od strane sportista koristi kao paravan za zloupotrebu ovih lekova.

Ključne reči: doping, terapeutsko izuzeće, glukokortikoidi, stimulansi, beta blokatori

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[1] dragutin.stojmenovic@gmail.com

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THERAPEUTIC USE EXEMPTION IN SPORT AND ABUSE OF MEDICINE IN ORDER TO IMPROVE SPORTS PERFORMANCES

Dragutin Stojmenović[1], Ivan Nikolić, Tamara Stojmenović

Faculty of Physical Education and Sports Management, Singidunum University, Serbia

Abstract: Doping in sports, in a simple sense, represents any application of substances, drugs or methods that are prohibited, and which lead to the improvement of athletes' results. At the same time, athletes, as well as ordinary people, have the right to get sick and be treated, but they must not use most of the drugs that are common to other people, because they are on the banned list. Therefore, the World Anti-Doping Agency (WADA) has introduced the "Therapeutic Use Exemptions" (TUE) which is submitted when there is an indication for the use of substances and methods from the list of prohibited substances. This "exemption" serves to relieve the athlete of the danger of being declared doping positive during or outside the competition. In recent years permits for the therapeutic use of illicit drugs for treatment have been increasingly sought, and the aim of this paper is to investigate the causes of seeking TUE, and whether there is abuse of TUE in order to improve athletic ability and results. Descriptive method and theoretical analysis were used to collect, classify and analyze the targeted research, and the data used for the research were collected using Google Scholar, PubMed and KoBSON search engines. This review paper largely confirms that the use of glucocorticoids for the treatment of sports injuries is the most common cause for which athletes seek TUE approval. Second on the list are stimulants, for the treatment of the diagnosis of hyperactivity and attention deficit disorder (ADHD) in athletes, and in third place are beta blockers in chronic obstructive pulmonary disease. Glucocorticoids are most often used in the form of corticosteroid injections, which are very potent anti-inflammatory drugs and which lead to effective healing of the injury and reduction of pain. On the other hand, the diagnosis of asthma or some other chronic obstructive pulmonary disease is an ideal basis for the abuse of drugs used to treat these diseases. Despite the prescribed therapeutic dose, many athletes are still willing to risk a positive doping result by taking higher doses than necessary, believing that the TUE approval for the use of the drug will protect them from potential doping control. At the same time, the possible potential abuse of TUE can be seen in the example of the use of stimulants in the treatment of ADHD. If we take into account the fact that the review of world statistics regarding TUE applications clearly shows that TUE approval for the use of stimulants is most often sought by athletes, after glucocorticoids, and precisely for the diagnosis of attention deficit disorder, then there is a presumable doubt whether this disease is used as a cover by athletes for the abuse of these drugs.

Keywords: doping, therapeutic exemption, glucocorticoids, stimulants, beta blockers

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[1] dragutin.stojmenovic@gmail.com

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DISCRIMINANT ANALYSIS OF GAME-RELATED STATISTICS BETWEEN NBA AND EUROLEAGUE PLAYERS IN WORLD CUP 2019

Matej Strniste[1], Karel Hulka, Jan Belka,

Palacký University Olomouc, Czech Republic

Abstract: Performance analysis in the elite level of basketball is an important aspect for coaches and scouts and should be performed regularly at all standards of competition (Ibáñez et al., 2009). Several authors compared players performance from NBA or Euroleague with other leagues using game-related statistics (Erčulj & Štrumbelj, 2015; Sampaio et al., 2006). However, these comparisons were mostly performed in different competitions and such methodology could be contaminated by different environment, rules, court dimensions, schedule, competitiveness, or psycho-social environment. Thus, the aim of the present study was to identify variables that discriminate between National Basketball Association (NBA) and Euroleague players competing at the same event - World Championship 2019. Game-related statistics of 92 games were gathered from official box score for two groups of players: NBA (n = 54, age: 27.8 ± 3.4 years; weight: 102.3 ± 11.5 kg; height: 202.7 ± 8.8 cm) and Euroleague (n = 62, age: 29.4 ± 3.0 years; weight: 95.2 ± 9.5 kg; height: 199.7 ± 8.6 cm). Players were included in one of the groups if they participated in NBA or Euroleague season 2018/2019. Factorial ANOVA was used to determine anthropometric differences between two groups and among players' positions (Guard, Forward, Center). Discriminant analysis was then performed to identify the game-related statistics that differentiate between NBA and Euroleague players and interpreted based on structure coefficients matrix (SC). Results revealed that NBA players significantly overcome their peers in body weight ($F = 14.90$; $p < 0.001$) and minutes played ($F = 11.11$; $p < 0.004$) throughout the championship. Furthermore, NBA players dominated over Euroleague players in several variables mostly related with body size such as blocks (SC = 0.35), defensive rebounds (SC = 0.48), free throws made (SC = 0.30), free throws attempted (SC = 0.31), two-points made (SC = 0.38), two-points attempts (SC = 0.52). On the other hand, variables associated with cognitive factors and technical skills such as turnovers or assists were not determined to differentiate between NBA and Euroleague players. Additionally, factorial ANOVA showed that players' anthropometric data including weight ($F = 80.23$; $p < 0.000$) and height ($F = 115$; $p < 0.000$) are position (Guard, Forward and Center) dependent in the game of basketball. Coaches and scouts may take these results into account when scouting players for certain leagues and when optimizing the training process by emphasizing the actions identified as very discriminant.

Keywords: anthropometric characteristics, discriminant analysis, basketball, game-related statistics

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UPOREDNA ANALIZA POSTURALNOG STATUSA DECE PREDŠKOLSKOG I MLAĐEG ŠKOLSKOG UZRASTA

Branimir Spasojević[1], Dragana Drljačić[2], Zoran Pajić[3], Katarina Vukosavljević[4]

[1]GFK Jagodina, Jagodina, Srbija
[2]Visoka sportska i zdravstvena škola, Beograd, Srbija
[3]Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja, Beograd, Srbija
[4]Univerzitet u Beogradu, Medicinski fakultet, Beograd, Srbija

Sažetak: Termin *postura* predstavlja stav, položaj ili držanje tela i opisuje relativnu poziciju telesnih segmenata u toku mirovanja ili aktivnosti. Pravilno držanje tela uslovljeno je pravilnim funkcionisanjem aktivnog dela lokomotornog aparata. Ukoliko je opterećenje spoljašnjih sila preveliko i/ili jednostrano slabost mišićnih grupa dovešće do nepravilnog držanja i promena u vidu odstupanja segmenata aparata za kretanje od pravilnog položaja. Najkritičniji period za nastajanje posturalnih poremećaja jeste period rasta i razvoja deteta, i to prvenstveno period polaska u školu, kada dete menja svoje dnevne navike i iz sredine u kojoj je moglo slobodno da se kreće, prelazi u sredinu gde je prinuđeno da znatan deo vremena provede u sedentarnom položaju. S obzirom na to da se poslednjih decenija beleži porast posturalnih poremećaja kod dece, a uzimajući u obzir najkritičniji period za njihov nastanak, cilj ovog rada bio je uporedna analiza posturalnog statusa dece predškolskog i mlađeg školskog uzrasta. Uzorak istraživanja činilo je 46-oro dece oba pola podeljenih u dva subuzorka: predškolski uzrast (PRU; N = 23, dečaci [M] = 11, devojčice [Ž] = 12) i mlađi školski uzrst (MŠU; N = 23, M = 13, Ž = 10). Istraživanje je sprovedeno u osnovnoj školi u Lazarevcu koja u okviru obrazovnog sistema obuhvata i predškolsku ustanovu. Pre početka ispitivanja roditelji su detaljno informisani o proceduri i protokolu istraživanja, a potom su dali pisani pristanak za učestvovanje njihovog deteta u istraživanju. Za potrebe ispitivanja praćene su sledeće varijable: položaj glave (PG), položaj ramena (PR), položaj lopatica (PL), trouglovi stasa (LT), položaj karlice (PK), položaj kolena posmatrano otpozadi (PKN), položaj Ahilovih tetiva (PAT), vratna krivina (VK), grudna krivina (GK), slabinska krivina (SK), položaj kolena posmatrano sa strane (XK), položaj stopala (PS) i grudni koš (GK). Kao merni instrument primenjena je modifikovana metoda somatoskopije po Napoleonu Volanskom. Rezultati istraživanja zabeležili su odsustvo razlika u odnosu na pol za oba subuzorka pojedinačno, tako da su rezultati za dečake i devojčice spojeni i u svrhu procene posturalnog statusa i utvrđivanja eventualnih razlika između subuzoraka primenjen je hi-kvadrat test nezavisnosti. Razlike u posturalnom statusu dece dve različite uzrasne kategorije nisu zabeležene. Posmatrajući celokupan uzorak kod najvećeg broja dece zabeležen je dobar posturalni status svih posmatranih segmenata osim za status stopala, gde najveći broj dece (56,5%) ima spušteno stopalo. Upoređujući razlike u posturalnom statusu u odnosu na pojedinačne segmente istraživanje je pokazalo prisustvo razlika između varijabli kojima je procenjivan status stopala (PAT i PS) i ostalih procenjivanih varijabli ($x^2_{(14)} = 148{,}65$; $p = 0{,}000$). No, značajno je naglasiti da svi poremećaji telesnog statusa koji su zabeleženi ovim istraživanjem spadaju u kategoriju funkcionalnih poremećaja (ocena 1). Prisustvo strukturalnih poremećaja nije zabeleženo. Polazeći od činjenice da stopalo predstavlja značajnu kariku aparata za kretanje čiji je normalan status od izuzetnog značaja za kompletnu posturu, kako statičku tako i dinamičku, prevenciji nastajanja ovog deformiteta treba posvetiti naročitu pažnju od najranijeg detinjstva.

Ključne reči: držanje tela, deformitet, hipokinezija, lokomotorni aparat, stopalo.

[1] banegaspasojevic0197@gmail.com

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COMPARATIVE ANALYSIS OF THE POSTURAL STATUS OF PRESCHOOL- AND YOUNGER SCHOOL-AGE CHILDREN

Branimir Spasojević[1], Dragana Drljačić[2], Zoran Pajić[3], Katarina Vukosavljević[4]

[1]GFC Jagodina, Jagodina, Serbia
[2]College of Sports and Health, Belgrade, Serbia
[3]University of Belgrade, Faculty of Sport and Physical Education, Belgrade, Serbia
[4]University of Belgrade, Faculty of Medicine, Belgrade, Serbia

Abstract: The term *posture* describes the relative position of body segments during rest or activity. Proper posture of the body is conditioned by the proper functioning of the active part of the locomotor system (LS). If a load of external forces is too large and/or one-sided, the weakness of the muscle groups will lead to incorrect posture and deviations of the segments of the LS. The most critical period for the development of postural disorders is the period of growth and development of the children, primarily the period of starting school, when children change their daily habits, and from an environment where they could move freely, moves to an environment where they are forced to spend a much time in a sedentary position. Given that in recent decades there has been an increase in postural disorders in children, and taking into account the most critical period for their occurrence, the aim of this study was a comparative analysis of the postural status of preschool- and younger school-age children. The sample consisted of 46 children of both boys [M] and girls [Ž], divided into two subsamples: preschool-age (PRU; N = 23, M = 11, Ž = 12) and younger school-age (MŠU; N = 23, M = 13, Ž = 10). The research was conducted in the primary school in Lazarevac, which includes a preschool institution within the educational system. Before the start of the examination, the parents were informed in detail about the procedure and protocol of the research, and they gave written consent for the participation of their child in the research. For the examination, the following variables were monitored: head position (PG), shoulder position (PR), shoulder blade position (PL), stature triangles (LT), pelvic position (PK), knee position observed from behind (PKN), Achilles tendon position (PAT), neck curve (VK), chest curve (GK), lumbar curve (SK), lateral knee position (XK), foot position (PS) and chest position (GK). As a measuring instrument, a modified method of somatoscopy according to Napoleon Volanski was applied. The results of the research showed the absence of differences concerning gender for both subsamples, respectively so the results for boys and girls were combined and to assess the postural status and possible differences between subsamples, a chi-square independence test was applied. Differences in the postural status of children of two different age categories were not found. Analyzing the results of the overall sample a good postural status of all observed segments was recorded, except for the status of the feet, where the largest number of children (56.5%) have a lowered foot. Comparing the differences in postural status concerning individual segments, the research showed that the variables used to assess the status of the feet (PAT and PS) differ from other assessed variables ($x^2_{(14)} = 148{,}65$; $p = 0{,}000$). However, it is important to emphasize that all disorders of physical status recorded in this study fall into the category of functional disorders (grade 1). The presence of structural disorders was not found. Starting from the fact that the foot is an important link in the kinetic chain of the LS, whose normal status is extremely important for complete posture, both static and dynamic, the prevention of this deformity should be given special attention from the earliest childhood.

Keywords: posture, deformity, hypokinesia, locomotor system, foot.

[1] banegaspasojevic0197@gmail.com

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VIZUOMOTORNA INTEGRACIJA KOD DECE SA I BEZ SMETNJI U RAZVOJU

Ivana Sretenović[1], Goran Nedović[1], Srećko Potić[2]

[1]Univerzitet u Beogradu, Fakultet za specijalnu edukaciju i rehabilitaciju, Beograd, Srbija
[2]Visoka medicinska škola strukovnih studija „Milutin Milanković“, Beograd, Srbija

Sažetak: Vizuomotorna integracija je složeni proces koji nastaje spajanjem motoričkog izlaza i vizuelnog ulaza, odnosno to je sposobnost povezivanja pokreta oka i ruke sa vizuelnim informacijama. Deca sa problemima vizuomotorne integracije mogu da imaju teškoće sa motoričkim aktivnostima koje zahtevaju vizuelni input i povratnu spregu. Cilj istraživanja je bio da se proceni vizuomotorna integracija kod dece sa i bez smetnji u razvoju, koja pohađaju prvi razred osnovne škole. Uzorak istraživanja je formiran od 105 učenika oba pola. Prosečan uzrast učenika je *Mdn* = 7,7 godina. U odnosu na tip razvoja bilo je 28,6% učenika tipičnog razvoja i 71,4% učenika sa smetnjama i poremećajima u razvoju (učenici sa motoričkim smetnjama i poremećajima, učenici sa senzornim smetnjama i poremećajima i učenici sa kognitivnim smetnjama i poremećajima). Za procenu vizuomotorne integracije korišćen je subtest 2, Fina motorička integracija iz baterije testova Bruininks-Oseretsky Test of Motor Proficiency, 2nd edition (BOT-2; Bruininks & Bruininks, 2005). U statističkoj obradi podataka primenjene su mere prebrojavanja, mere centralne tendencije i mere varijabilnosti, a za utvrđivanje razlike između grupa primenjena je jednofaktorska analiza varijanse sa naknadnim Post-hoc testovima. Rezultati pokazuju da sve grupe ispitanika ostvaruju niža prosečna postignuća u odnosu na maksimalno moguće postignuće. Istovremeno, statistički značajna razlika ($p \leq .05$) je otkrivena između ispitanika tipičnog razvoja i svih grupa ispitanika sa smetnjama u razvoju, dok između grupa ispitanika sa smetnjama u razvoju ta razlika nije na nivou statističke značajnosti. Ovi rezultati upućuju na značaj i potrebu stimulacije vizuomotorne integracije, kako kod dece sa smetnjama u razvoju, tako i kod dece tipičnog razvoja. Ukoliko ova sposobnost ne bude na vreme podvrgnuta preventivno – korektivnim programima može da utiče na smanjenu fizičku aktivnost i participaciju dece u vršnjačkim igrama, ali i da ostavi posledice na usvajanje akademskih veština, poput čitanja i pisanja.

Ključne reči: vizuelna integracija, motorna integracija, motoričke aktivnosti, akademske veštine

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[1] ivanasretenovic@fasper.bg.ac.rs

VISUAL-MOTOR INTEGRATION IN CHILDREN WITH AND WITHOUT DEVELOPMENTAL DISORDERS

Ivana Sretenović[1], Goran Nedović[1], Srećko Potić[2]

[1]University of Belgrade – Faculty of Special Education and Rehabilitation, Belgrade, Serbia
[2]High Medical College of Professional Studies "Milutin Milanković", Belgrade, Serbia

Abstract: Visual-motor integration is a complex process that arises by merging motor output and visual input. This is the ability that connect eye and hand movements with visual information. Children with visual-motor integration problems may have difficulty with motor activities that require visual input and feedback. The aim of the research was to evaluate the visual-motor integration in children with and without developmental disorders, who attend the first grade of elementary school. The research sample was formed of 105 participants of both sexes. The average age of participants was *Mdn* = 7.7 years. In relation to the type of development, there were 28.6% of children with typical development and 71.4% of children with developmental disorders (children with motor, sensory and cognitive disorders). Subtest 2, Fine Motor Integration from the Bruininks-Oseretsky Test of Motor Proficiency, 2nd edition (*BOT-2; Bruininks & Bruininks, 2005*) was used to assess visual-motor integration. Counting measures, measures of central tendency and measures of variability were applied in statistical data processing, and one-factor analysis of variance with subsequent Post-hoc tests was used to determine the difference between groups. The results showed that all groups of participants achieved lower average achievements compared to the maximum possible achievement. At the same time, a statistically significant difference ($p \leq .05$) was detected between participants with typical development and all groups of participants with developmental disorders, while between groups of participants with developmental disorders this difference was not at the level of statistical significance. These results indicate the importance and need to stimulate visual-motor integration, both in children with developmental disorders and in children of typical development. If this ability is not subjected to preventive and corrective programs in time, it can affect the reduced physical activity and participation of children in peer games, but it can also have consequences for the acquisition of reading and writing skills.

Keywords: visual integration, motor integration, motor activities, academic skills

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[1] ivanasretenovic@fasper.bg.ac.rs

SPORTSKI I VANSPORTSKI PRELOMI NOSA: ETIOLOGIJA, DIJAGNOSTIKA, KLASIFIKACIJA I LEČENJE

Jovanka Trifunović[1], Vladimir Biočanin, Katarina Kalevski

Stomatološki fakultet Pančevo

Sažetak: Nos je najistureniji deo lica i najčešće je izložen dejstvu traume kod povrede glave. Nalazi se na trećem mestu po učestalosti povređivanja pojedinih delova ljudskog tela i među 10 najčešćih spotskih povreda uopšte. Povrede nosa imaju poseban značaj zbog učestalosti njihovog nastajanja, različite dijagnostike, lečenja i procene njihove težine. Usled snažnog udara u područje spoljnog nosa, dolazi do preloma nosnih kostiju, frontalnih procesusa gornje vilice, lateralnih hrskavica nosa, a u većini slučajeva, nosnog septuma, kako u hrskavičnom, tako i u koštanom području. Kod preloma nosa dolazi do povrede integriteta koštane piramide nosa sa ili bez pomeranja koštanih fragmenata. U slučaju preloma nosnog septuma primećuje se modrica na sluzokoži sa mogućom rupturom, formiraju se mikrohematomi koji mogu izazvati opsežan hematom nosnog septuma sa formiranjem apscesa. Prelomi nosa većinom su kod osoba muškog pola. Najčešći uzroci nastanka su povrede u sportu, u domaćinstvu, padovi sa visine, padovi kod epileptičkog napada ili alkoholnog trovanja, saobraćajne nesreće, kao i voljne povrede. Lečenje povreda nosa zavise od vrste i težine povrede. Lečenje bi trebalo da bude timsko, zu tesnu saradnju između otorinolaringologa, oftalmologa, maksilofacijalnog hirurga, neurohirurga i neurologa.

Ključne reči: prelomi nosa, udruženi prelomi susednih kostiju, povrede u sportu, muški pol, timsko lečenje

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[1] drjotrifunovic@aol.com

SPORTS AND NON-SPORTS-RELATED NOSE FRACTURES: ETIOLOGY, DIAGNOSIS, CLASSIFICATION AND TREATMENT

Jovanka Trifunović[1], Vladimir Biočanin, Katarina Kalevski

Faculty of dentistry Pancevo, Serbia

Abstract: The nose is the most protruding part of the face and is most often exposed to the effect of trauma in head injuries. It is in the third place in terms of the frequency of injuries to certain parts of the human body and among the 10 most common sports injuries in general. Nasal injuries are of special importance due to the frequency of their occurrence, different diagnostics, treatment and assessment of their severity. Due to a strong blow to the area of the outer nose, there is a fracture of the nasal bones, frontal processes of the upper jaw, lateral cartilage of the nose, and in most cases, the nasal septum, both in the cartilaginous and in the bone area. In the case of a nasal fracture, the integrity of the nasal bone pyramid is violated with or without movement of the bone fragments. In the case of a fracture of the nasal septum, a bruise is noticed on the mucous membrane with a possible rupture, microhematomas are formed which can cause extensive hematoma of the nasal septum with the formation of an abscess. They are mostly in males. The most common causes are the injuries in sports, in the household, falls from heights, falls in epileptic seizures or alcohol poisoning, traffic accidents, as well as voluntary injuries. Treatment of nasal injuries depends on the type and severity of the injury. Treatment should be team-based, with close collaboration between otorhinolaryngologists, ophthalmologists, maxillofacial surgeons, neurosurgeons, and neurologists.

Keywords: nose fractures, joint fractures of adjacent bones, sports injuries, male, team treatment

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[1] drjotrifunovic@aol.com

WEARABLE SENSORS, DEVICES AND ELECTRONICS FOR TRAINING LOAD AND MATCH LOAD MONITORING: A SHORT REVIEW

José E. Teixeira[1,2,3], Pedro Forte[1,3,4], Ricardo Ferraz[1,5], Miguel Leal[4], Joana R. Soares[4], António J. Silva[1,2], Tiago M. Barbosa[1,3] and António M. Monteiro[1,3]

[1]Research Centre in Sports Sciences, Health and Human Development, 5001-801 Vila Real, Portugal
[2]University of Trás-os-Montes e Alto Douro, 5001-801 Vila Real, Portugal;
[3]Departamento de Desporto e Educação Física, Instituto Politécnico de Bragança, 5300-253 Bragança, Portugal;
[4]Department of Sports, Douro Higher Institute of Educational Sciences, 4560-708 Penafiel, Portugal;
[5]Department of Sports Sciences, University of Beira Interior, 6201-001 Covilhã, Portugal;

Abstract: Monitoring training and match load provides important insights about individual responses and fatigue-recovery status. Growing use of wearable sensors, devices and electronics in team sports as Football has allowed a most quick control of training and match demands. Following the Preferred Reporting Item for Systematic Reviews and Meta-analyses (PRISMA), a systematic search of relevant English-language articles was performed from earliest record to December 2020. The literature search was performed by seven online databases specifically Web of Science, PubMed, Medline, Science Direct, SCOPUS and SportDiscus. The literature search returned 12,497 and 22 full-text articles were reviewed after screening procedures. From the reviewed studies, the internal training load measures were reported in seven studies and the external training load were reported nine studies. With regard to internal load measures, nine studies reported heart-derived measures and six studies included perceived exertion. Measuring training impulse (TRIMP) with short-range telemetry system and ratings of perceived exertion (RPE) with Borg's category-ratio scale were the most common internal load indicators. Global positioning systems (GPS), local position measurement (LPM) systems and semi-automatic multiple-camera systems were vastly reported for assessing external training load providing gather football intermittent movements. High intensity movements represents a critical point to assess training and match demands. Integrating different wearable sensors, devices and electronics was reported as being a robust methodological approach. The micro-technology-derived measures have been largely selected to quantify training and match load (CV 1–2%).

Keywords: soccer; micro-technology; tracking systems; workload.

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[1] jose.eduardo@ipb.pt

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THE EFFECTS OF AEROBIC, RESISTANCE OR COMBINED TRAINING ON METABOLIC SYNDROME CLINICAL BIOMARKERS: A SHORT REVIEW

Teixeira JE[1,2], Bragada JA[1,2], Bragada JP[3], Coelho, JP[3], Pinto IG[3], Reis LP[3], Magalhães PM[1]

[1]Research Centre in Sports Sciences, Health and Human Development, 5001-801 Vila Real, Portugal
[2]Department of Sports Sciences and Physical Education, Polytechnic Institute of Bragança, 5300-253 Bragança, Portugal
[3]North East Local Health Unit - Health Care Unit of Santa Maria, 5301-852 Bragança, Portugal

Abstract: Metabolic Syndrome (MetS) is a common metabolic disorder characterized by a cluster of factors include dysglycaemia, elevated blood pressure, elevated triglyceride levels, low high-density lipoprotein cholesterol levels, and central obesity. Sedentary lifestyle and low physical activity levels increased the interrelated risk for cardiovascular diseases and metabolic disorders. The aim of this short review was to analyse the effects of aerobic, resistance and combined training on MetS clinical biomarkers. Following the Preferred Reporting Item for Systematic Reviews and Meta-analyses (PRISMA), a systematic search of relevant English-language articles was performed from earliest record to March 2020. The literature search was performed by seven online databases specifically Web of Science (WoS), PubMed and SCOPUS. The literature search returned 14,912 articles (WoS=2,359; PubMed=1,392 and SCOPUS=11,161); 21 full-text articles were reviewed after screening procedures. From the reviewed studies, aerobic exercise was reported in nine studies and the resistance exercise was reported in five studies. The combined training (or multicomponent exercise) was reported in seven studies. Overall exercise modes decreases the MetS clinical biomarkers, however, the aerobic training seemed to be the most efficient exercise mode. Moreover, the resistance exercise appears to have a positive effect on MetS prevention when associated with aerobic exercise. Aerobic and resistance exercises can contribute significantly to metabolic syndrome prevention and reduce the associated risk of cardiovascular disease and metabolic disorders. Combining exercise modes (i.e. combined or multi-component training) could be a valid strategy to control the metabolic syndrome clinical biomarkers.

Keywords: metabolic syndrome; cardiovascular disease; physical activity; exercise.

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KRITERIJUMI ZA KVALITATIVNU I KVANTITATIVNU KOMPARACIJU RONILAČKIH LOKALITETA

Luka Tomić[1], Vladimir Miletić, Željko Rajković
Chartwell School, Belgrade

Sažetak: Ronjenje je boravak ronioca pod vodom uz osiguranje fizioloških uslova disanja (ronjenje sa aparatom) ili bez osiguranja tih uslova (ronjenje na dah). Ronjenje počinje onog trenutka kad ronilac zaroni i prestane disati atmosferski vazduh, a prestaje kad nakon izronjavanja počne ponovo da ga diše. Ronjenje može biti podeljeno na: ronjenje sa disalicom – snorkeling, ronjenje sa disalicom uz povremeno zaranjanje celim telom – skin diving, ronjenje na dah – free diving i autonomno ronjenje – SCUBA diving. Ronilački lokaliteti su određena mesta za obavljanje ronilačkih aktivnosti pod vodom, mesta na kojima se vrše zaroni koja su precizno određena koordinatama ili markacijama unetim u mape. Da bi krajnji korisnik, turista, rekreativac ili sportski ronilac uopšte saznao za ronilačke lokalitete neophodno je informisanje na različitim glasilima (kroz vodiče). Svaki ronilački lokalitet iako dostupan svima ima svoj specifični pristup predstavljanju. Da bi korisnici lokaliteta mogli najoptimalnije isplanirati zarone u sezoni, potrebno je stručno i neutralno poređenje postojećih ronilačkih lokaliteta. Za precizno poređenje ronilačkih lokaliteta neophodno je korišćenje istih kriterijuma. Analizom i istraživanjem kroz praktično učešće formirani su kriterijumi koji su hijerarhijski postavljeni u jedinstvenu šemu i koji obuhvataju sve relavantne faktore za opis jednog ronilačkog lokaliteta: naziv, geografske koordinate, opis lokaliteta, blizina nadležnog ronilačkog centra, način pristupa, fotografija lokaliteta, maksimalna dubina, specifičnost, karakteristike, vidljivost, flora i fauna, deko zastanci, struje i napomene. Navedeni kriterijumi su univerzalni jer obuhvataju ronilačke lokalitete za sve vrste zarona. Nadogradnju ranije bodovanih lokaliteta po istim kriterijumima, predstavlja kontinuirana evaluacija njihovih korisnika, koja bi mogla i trebala da bude viralna. Navedene praktične aktivnosti mogu biti veoma korisne u zadovoljavanju afiniteta korisnika kroz izabrani ronilački lokalitet, gde eventualno ostvarivanje povratne sprege može posledično dovesti do porasta kvaliteta ukupnih usluga i kasnije dostići nivo standarda i zakonske regulative**.**

Ključne reči: ronjenje, akvatorija, geoprostor, šema opisa, nautički turizam

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[1] luka91tomic@gmail.com

CRITERIA FOR QUALITATIVE AND QUANTITATIVE COMPARISON OF DIVING SITES

Luka Tomić[1], Vladimir Miletić, Željko Rajković

Chartwell School, Belgrade

Abstract: Diving is the stay of a diver under water with the provision of physiological breathing conditions (diving with an apparatus) or without the provision of these conditions (SCUBA diving). Diving begins the moment the diver dives and stops breathing atmospheric air, and stops when he starts breathing again after diving. Diving can be divided into: snorkeling, skin diving, free diving and autonomous diving – SCUBA diving. Diving sites are actually designated places for underwater diving activities, places where we perform dives that are precisely determined by coordinates or markings drawn on maps and charts. In order for the actual user, tourist, recreational or sports diver to find out about diving sites in general, it is necessary to inform on various media (through guides). Each diving site, although available to everyone, has its own specific approach to presentation. In order for the users of the sites to be able to plan dives in the season in the most optimal way, a professional and neutral comparison of the existing diving sites is needed. The use of the same criteria is necessary for a precise comparison of diving sites. Analysis and research through practical participation formed criteria that are hierarchically placed in a single scheme and include all relevant factors for the description of a diving site: name, geographical coordinates, description of the site, proximity to the competent diving center, access, site photo, maximum depth, specificity, characteristics, visibility, flora and fauna, decos, currents and notes. These criteria are universal because they include diving sites for all types of dives. The upgrade of previously scored sites according to the same criteria is a continuous evaluation of their users, which could and should be viral. These practical activities can be very useful in meeting the affinity of users through the selected diving site, where the possible realization of feedback can consequently lead to an increase in the quality of overall services and later reach the level of standards and legislation.

Keywords: diving, aqatoria, geospace, description scheme, nautical tourism

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[1] luka91tomic@gmail.com

AN INVESTIGATION OF INDIVIDUAL INNOVATIVENESS LEVELS OF TEACHERS DURING THE COVID-19 PANDEMIC

Yalçın Tükel[1]

Necmettin Erbakan University, Faculty of Tourism, Department of Recreation Management, Turkey

Abstract: This study aims to determine the individual innovativeness levels of Physical Education and Sports Teachers and other branch teachers during the COVID-19 Pandemic and to examine whether there is a difference in individual innovativeness perceptions in terms of branch type and doing sport. The research is a quantitative study carried out in a descriptive survey model. The research sample consists of 317 teachers working in schools affiliated with the national education directorate Kahramanmaraş, Turkey. The data of the research were analyzed using the Jamovi 1.6.12 statistical software program. Arithmetic mean and standard deviation values were determined for data analysis and t-test and One-Way Analysis of Variance (ANOVA) tests were used to determine the differentiation of scores obtained for variables. As a result of the research, it was determined that most of the teachers are in the "skeptical" and "inquisitive" groups in terms of the individual innovativeness scale scores of the participants. Significant differences were found on the individual innovativeness scale and sub-dimensions of the participants in terms of the variables of the branch type and doing sport. Conducting this research during the pandemic process reveals the significance of the research. The results of this research are expected to provide contributions to researchers in the field.

Keywords: COVID-19, innovativeness, physical education, sport, teacher

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[1] ytukel@erbakan.edu.tr

ZNAČAJ SPORTSKO REKREATIVNIH PROGRAMA U DEČJEM TURIZMU NA PRIMERU BUKOVIČKE BANJE

Bojan Ugrinić[1], Aleksandar Ivanovski[1], Svetlana Petronijević[2]

[1]Visoka sportska i zdravstvena škola Beograd
[2]Fakultet za Sport, Univerzitet Union-Nikola Tesla, Beograd

Sažetak: Deca u današnjim vremenima nisu pošteđena zahtevima savremenog društva i samom brzinom razvoja tehnologija te su samim tim izložena stresu. Pošto veliki deo dana mladi provode u zatvorenom prostoru, poželjno je van časovne slobodno izabrane aktivnosti izvoditi na otvorenom prostoru, čistom i svežem vazduhu. Deca u okviru kampa koji se realizuje u Bukovičkoj Banji na 270m nadmorske visine prolaze kroz razne poligone koji su različitog karaktera u prirodnom okruženju. Predmet rada predstavlja analizu i komparaciju dece i mladih u prirodnom okruženju na sportsko rekreativnim kampovima i njihovo značaj od 2017. do 2020. godine. Osnovni cilj je predstavljanje značaja i uloge rekreativnih aktivnosti za decu i mlade, gde je usmerenje na animaciju, rekreaciju, edukaciju dece, učenje raznovrsnih sportskih veština, a pre svega njihovom boravku u prirodi i zdravom okruženju. Korišćeni su empirijski postupci kao što su posmatranje, razgovor, anketa. Koristila se metoda teorijske analize i bibliografska metoda prikupljanja podataka. Kao istraživačka tehnika korišćena je tehnika anketiranja i skaliranja. Korišćena je petostepena Likertova skala. Anketa je podrazumevala prikupljanje, analiziranje i prikazivanje podataka. Rezultati su prikazani u procentima. Urađena je osnovna statistička obrada podataka anketiranih 800 ispitanika. Rezultati istraživanja dovode nas do toga da zaključimo da je trend sportsko rekreativnih aktivnosti, tj animacije dece putem istih u postepenom rastu. Roditelji i deca shvataju suštinu značaja prirodnog okruženja i sve češće participiraju u organizovanim akcijama gde se animiraju kroz boravak u prirodi. Podjednako interesovanje pokazuje i ženska i muška populacija kada je u pitanju animacija rekreativnim programima u prirodi.

Ključne reči: kamp, rekreacija, boravak u prirodi

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[1] bojan.ugrinic@vss.edu.rs

THE IMPORTANCE OF SPORTS AND RECREATIONAL PROGRAMS IN CHILDREN'S TOURISM ON THE EXAMPLE OF BUKOVICKA BANJA

Bojan Ugrinić[1], Aleksandar Ivanovski[1], Svetlana Petronijević[2]

[1]College of Sports and Health, Belgrade
[2]Faculty of Sports, Union-Nikola Tesla University, Belgrade

Abstract: Children in today's times are not spared the demands of modern society and the speed of technology development and are therefore exposed to stress. Since young people spend a large part of the day indoors, it is desirable to perform freely selected activities outside the classroom in the open space, clean and fresh air. Children within the camp that is realized in Bukovicka Banja at 270 m above sea level pass through various polygons that are of different character in the natural environment. The subject of the paper is the analysis and comparison of children and youth in the natural environment at sports and recreational camps and their significance from 2017 to 2020. The main goal is to present the importance and role of recreational activities for children and youth, where the focus is on animation, recreation, education of children, learning various sports skills, and above all their stay in nature and a healthy environment. Empirical procedures such as observation, conversation, survey were used. The method of theoretical analysis and bibliographic method of data collection were used. The survey and scaling technique was used as a research technique. A five-point Likert scale was used. The survey involved collecting, analyzing and presenting data. The results are shown as a percentage. Basic statistical data processing of 800 respondents was performed. The results of the research lead us to conclude that the trend of sports and recreational activities, ie animation of children through them, is gradually growing. Parents and children understand the essence of the importance of the natural environment and increasingly participate in organized actions where they are animated through their stay in nature. Equally interested is the female and male population when it comes to animation with recreational programs in nature.

Keywords: camp, recreation, stay in nature

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FEATURES OF TACTICAL TRAINING MODELS IN SPORTS CLIMBING AT YOUTH LEVEL

Antonia Ioana VASILE (Trifu)[1], Florin PELIN[1], Monica STĂNESCU[1]

National University of Physical Education and Sport, Faculty of Physical Education and Sport, Bucharest, Romania

Abstract: Tactical preparation in climbing is that part of the training that helps the climber to master behaviours for: finding the best moments throughout the ascent to release the arms for relaxation, finding the best position for relaxation, choosing the right place to secure carabiniers, and choosing the most efficient climb speed. In addition, climbing tactics also mean good pre-ascent visualisation, implementation of a strategy for ascent planning, manifestation of creative imagination and decision-making ability. Given the content of tactical preparation, modern trends recommend complementing classical training (i.e., physical and technical objectives to be achieved) with mental training. Referring to the best climbers in Romania (national and Balkan champions, finalists of national competitions), the lack of psychological preparation was identified and its need for increasing their performance capacity in competitions. To enhance the Romanian climbers' performance, an intervention on the tactical and psychological components of the training is needed. We believe that this intervention should be made from a young age. The objective of this paper is to highlight the current training models for sports climbing in the literature and provide a critical analysis on them, so that we can define some project-programmes for the training of young climbers. The systematic review of the literature has identified that the variables most correlated with climbing performance are mental characteristics (personality traits, temperament, locus of control and tactics), technical characteristics (coordination and technical abilities) and physical characteristics (flexibility, fitness, and efficiency). We have also observed how efficient some practical and methodological approaches are in climbing training. The conclusions point out the directions for optimising climbing training by developing resources for the athlete's performance capacity.

Keywords: climbing, tactics, psychological preparation, training, sport

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[1] antoniatrifu@yahoo.com

KARAKTERISTIKE SPORTSKO – REKREATIVNIH OBJEKATA U ZAJEČARU

Branka Velojić[1], Miodrag Velojić

[1] Visoka sportska i zdravstvena škola, Beograd

Sažetak: Sa sportskom tradicijom koja traje više od jednog veka i velikim brojem sportskih događaja u drugoj polovini XX veka opština Zaječar je dokazala da ima potencijala za razvoj sporta i rekreacije. Nažalost, poslednjih godina ta činjenica se u velikoj meri promenila. Grad Zaječar raspolaže velikim brojem sportskih terena i objekata, a u samom gradu postoji i nekoliko većih sportsko-rekreativnih centara. Može se zaključiti da mali broj objekata zadovoljava uslove za organizovanje većih međunarodnih događaja, jer se u većini slučajeva radi o manjim, slabije opremljenim objektima i terenima. Uočava se nedostatak objekata za specifične vrste sportova, dok na polju rekreacije nedostaje zabavni (adrenalinski) park sa sportskim sadržajima. Uglavnom su to objekti koji nisu namenjeni profesionalnom sportu već rekreaciji ljudi, treninzima dece i sl. U ovim sportsko – rekreativnim centrima održavaju se kulturne, edukativne i druge manifestacije. Boravak ljudi na ovakvim prostorima je u većini slučajeva kratkotrajnog karaktera. Cilj ovog rada je da se napravi pregled sportsko – rekreativnih objekata u Zaječaru, objasni njihova namena i potencijal. Podaci su prikupljeni direktno iz ovih sportskih objekata, izveštaja sportskih organizacija i klubova i Sportskog Saveza grada Zaječara.

Ključne reči: sportski objekti, rekreacija, Zaječar

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http://zajecarsport.rs/

[1] branka.velojic@vss.edu.rs

CHARACTERISTICS OF SPORTS AND RECREATIONAL FACILITIES IN THE TOWN OF ZAJEČAR

Branka Velojić[1], Miodrag Velojić

[1] College of Sports and Health, Belgrade, Serbia

Abstract: With an over-a-century-long sports tradition and a great number of sports events in the second half of 20th century, the Municipality of Zaječar proved that it had great potential for sports and recreational development. Unfortunately, the circumstances have significantly changed lately. The Municipality has a large number of sports courts and facilities, and there are a few large sports and recreational centers in the town itself. However, a small number of these places meet the requirements for the organization of large international events because most of them are small and not fully equipped. There is an obvious lack of separate facilities for some types of sports. As for recreation, there is no adrenaline park with any sports activities. Also, the abovementioned facilities are mostly meant for individual recreation, children sports trainings, etc., but not for professional sports activities. Cultural, educational and other types of events take place in these sports and recreational centers. But people mostly spend a short period of time in these areas. The goal of this paper is to provide an overview on sports and recreational facilities in the Municipality of Zaječar and to explain their purpose and potential. The data has been collected directly from the abovementioned facilities, the reports of sports organizations and teams, and from the Sports Federation of the Municipality of Zaječar.

Keywords: sports facilities, recreation, Zaječar

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http://zajecarsport.rs/

[1] branka.velojic@vss.edu.rs

ZDRAVSTVENO - REKREATIVNI TURIZAM U PROCESU RAZVOJA BANJSKIH MESTA U ISTOČNOJ SRBIJI

Miodrag Velojić[1], Branka Velojić

Visoka sportska i zdravstvena škola, Beograd

Sažetak: Poslednjih godina u svetu sve više raste potražnja za specijalizovanim mestima koja nude kombinaciju lečenja, rehabilitacije i rekreacije. Mestima gde postoje očuvani prirodno-ekološki potencijali, koja imaju očuvane istorijske i arheološke vrednosti, posebnu klimu, čist vazduh, zdravu pijaću vodu ili termomineralne izvore. Mestima koja omogućuju savremenim turistima potpunu rekreaciju u fizičkom i psihološkom smislu. Takva mesta su za svaku državu izuzetno vredna i neophodno ih je isticati i apostrofirati u svakoj prilici. Zbog pomenutih tendencija i zahteva savremene turističke klijentele i ovaj rad ima za cilj da ukaže na značaj zdravstveno-rekreativnog turizama i njegovu ulogu u procesu razvoja poznatih i manje poznatijih banjskih mesta u istočnoj Srbiji. Zaključuje se da postojeća ponuda ovih banjskih mesta, zasnovana pre svega na korišćenju prirodnih lekovitih resursa u zdravstvene i rekreativne svrhe, mora biti zamenjena savremenim konceptima razvoja baziranih na ponudi niza atraktivnih programa različite namene, koji mogu privući daleko veći broj potencijalnih korisnika.

Ključne reči: zdravstveno-rekreativni turizam, Istočna Srbija

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[1] miodragvelojic@yahoo.com

HEALTH AND RECREATIONAL TOURISM IN THE DEVELOPMENT PROCESS OF EASTERN SERBIA SPAS

Miodrag Velojić[1], Branka Velojić

College of Sports and Health, Belgrade, Serbia

Abstract: Recently, all over the world, there has been an increase in the demand for places that offer health treatment, rehabilitation and recreation, all together. These locations have huge natural and ecological potential, intact historical and archaeological values, a climate good for treatment of certain diseases and ailments, clean air, drinkable water or thermo-mineral springs. They also offer various possibilities for recreation, be it physical or psychological. Such places are extremely valuable for a country and it is absolutely necessary to make them known to the public. Due to the abovementioned increase and demands of modern tourists, this paper focuses on highlighting the significance of health and recreational tourism and its role in the development process of popular and less popular spas in Eastern Serbia. Also, it deals with the fact that the current offer of these places, above all based on using natural healing resources for health and recreational purposes, has to be replaced by modern development concepts. These concepts are based on offering various activities for different purposes, which can attract a considerable number of users.

Keywords: health and recreational tourism, Eastern Serbia

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[1] miodragvelojic@yahoo.com

WATER DOES NOT COOL THE MIND: ARE THERE DIFFERENCIES IN COMPETITIVE ANXIETY OF YOUNG ATHLETS BASED ON SPORT TYPE?

Elvis Vardo[1], Andrej Simić[2]

[1]University of Tuzla, Faculty of Humanities and Social Sciences, Department of Psychology
[2]University of Milano-Bicocca, Department of Psychology

Abstract: Previous studies suggest conflicting evidence regarding differences in competitive anxiety between athletes participating in individual and team sports. One possibility for these unclear findings is that previous work did not consider the specificity of youth-level sport. We aimed to compare the levels of competitive anxiety on a bosnian sample of 28 swimmers (Mage = 14.75, SDage = 1.32) and 32 basketball players (Mage = 16.94, SDage = .91) competing at youth-level in their respective sports. All participants completed the Competetive State Anxiety Inventory-2 (CSAI-2) 30 minutes before the start of their competitive events. No group differences were found between team and individual sport athletes in the Cognitive and Somatic Anxiety subscales, as well as the Self-confidence subscale. Furthermore, age was not a significant moderator in the effect of sport type on all three CSAI-2 subscales. Our results indicate that different experiences present in the later development of athletes competing in individual and team sports might contribute to varying levels of competitive anxiety at the senior level.

Keywords: youth athletes, individual and team sports, cognitive anxiety, somatic anxiety

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[1] elvis.vardo@gmail.com

ANALYSIS OF DIFFERENCES OF DRAFTED AND UNDRAFTED NBA PLAYERS IN SOME ANTHROPOMETRIC AND MOTOR PARAMETERS

Šime Veršić[1], Nikola Foretić, Vladimir Pavlinović

Kineziološki fakultet - University of Split, Faculty of Kinesiology, Croatia

Abstract: NBA Draft Combine is annually event where anthropometry, athletic and technical-tactical skills of college level basketball prospects are being assessed. The main aim of this study was to validate an existing set of Combine anthropometric and motor tests as a tool to distinguish drafted and undrafted basketball players. METHODS: This study included 36 participants that went through whole testing protocol that include anthropometric measurements consisted (body height, body weight, body fat and wingspan) and motoric tests measuring speed (¾ court sprint), agility (lane agility and shuttle run) and power (standing vertical leap and maximal vertical leap). Student T-test was used to identify differences between drafted and undrafted players on NBA Draft 2020. RESULTS: Results showed no significant differences between observed groups for any of measured variables. CONCLUSION: Authors assumed that the players entering NBA Draft Combine already have an adequate level of motor skills and body dimensions and therefore the main criterion for selection on the Draft are basketball skills. In order to get more detailed and precise results, in future studies participants from all Combines (year 2000-2020) should be included and differences should be observed regarding to specific playing positions.

Keywords: NBA Draft Combine, morphology, speed, agility, power

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[1] simeversic@gmail.com

FIZIČKA AKTIVNOST U PREVENCIJI I LEČENJU GOJAZNOSTI KOD DECE I MLADIH OSOBA

Milena Vezmar[1], Anita Kovačić Popović[1], Jelena Ilić Živojinović[2]

[1]Visoka zdravstvena škola strukovnih studija "Medika", Beograd, Srbija
[2]Institut za higijenu sa medicinskom ekologijom, Medicinski fakultet, Univerzitet u Beogradu, Srbija

Sažetak: Povećana telesna težina i gojaznost kod dece i mladih tokom poslednjih godina postale su globalni zdravstveni problem. Iako novi trend sugeriše da prevalenca gojaznosti stagnira kod predškolske dece, podaci Svetske zdravstvene organizacije pokazuju da je broj osoba sa prekomernom telesnom težinom i dalje u porastu. Podaci pogotovo ukazuju na porast prevalence gojaznosti kod mladih, što dovodi do povećanja kardiometaboličkih komorbiditeta, a smatra se da je posebni faktor rizika abdominalna gojaznost. Gojaznost u detinjstu je značajan problem javnog zdravlja zbog povezanosti sa negativnim zdravstvenim ishodima u odraslom dobu. Cilj ovog rada bio je da se predstavi fizička aktivnost, kao značajan faktor, u prevenciji i lečenju gojaznosti kod dece i mladih osoba. Dosadašnje studije potvrđuju da je došlo do promene životnog stila dece i mladih, što je doprinelo smanjenju fizičke aktivnosti, neredovne i nepravilne ishrane. Prepoznato je da je povećanje telesne težine prourokovano povećanim unosom energije, koji podrazumeva disproporcionalnu količinu rafinisanih ugljenih hidrata ili prerađene hrane, kao i smanjenom fizičkom aktivnošću. Kroz edukaciju i fizičku aktivnost, sa akcentom na vežbe kružnog treninga, mogu se očekivati poboljšanja u telesnom sastavu, fizičkoj spremnosti i markerima kardiometaboličkog rizika. Deca koja su više fizički aktivna imaju niži procenat telesne masti kao i niži indeks telesne mase. Povećana fizička aktivnost u ranijem dobu povezana je sa kasnijim stepenom fizičke aktivnosti kao i sa niskim rizikom od javljanja kardiovaskularnih bolesti i dijabetesa. Ovi zaključci su potkrepljeni studijama o većem padu indeksa telesne mase kod dece u odnosu na mlade. Redovno sprovođenje fizičke aktivnosti od najranijeg uzrasta doprinosi poboljšanju indeksa telesne mase, i time sprečava povećanje telesne težine i gojaznosti. Program fizičke aktivnosti kod gojazne dece i mladih zahteva individualni pristup, koji se odnosi na doziranje učestalosti, intenziteta, trajanja i oblika fizičke aktivnosti. Promena životnih navika, redovna i adekvatna fizička aktivnost, kao i redukovana dijetalna ishrana predstavljaju determinantu u prevenciji prekomerne telesne težine i gojaznosti kod dece i mladih osoba. Multidisciplinarni pristup promene načina života kod dece i mladih sa prekomernom težinom dovodi do značajnih rezultata u smanjenju telesne mase i poboljšanju kvaliteta života ove populacije.

Ključne reči: gojaznost, detinjstvo, fizička aktivnost, lečenje, prevencija

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[1] milenavezmar91@gmail.com

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PHYSICAL ACTIVITY IN PREVENTION AND TREATMENT OF OBESITY IN CHILDREN AND YOUTH

Milena Vezmar[1], Anita Kovačić Popović[1], Jelena Ilić Živojinović[2]

[1]Medical College of Applied Sciences „Medika“, Belgrade, Serbia[2]Institute of Hygiene with Medical Ecology, Faculty of Medicine, University of Belgrade, Serbia

Abstract: Overweight and obesity in children and youth have become a global health issue in the recent years. Although new trends suggest that the prevalence of obesity is stagnating in pre-school children, the World Health Organization data show that the number of overweight individuals is still growing. The data particularly indicate the rising prevalence of obesity in youth, which leads to growth of cardiometabolic comorbidities, and the opinion is that abdominal obesity represents a particular risk factor. Obesity in childhood is a significant public health issue because it is related to negative health outcomes in adult age. The purpose of this paper is to present physical activity as an important factor in prevention and treatment of obesity in children and youth. The studies have confirmed so far that changes have taken place in the lifestyle of children and youth that have contributed to diminishing of physical activity, irregular and improper diet. It has been recognized that the increase in body mass was caused by increased intake of energy, which implies disproportionate quantity of refined carbohydrates or processed food, as well as reduced physical activity. Education and physical activity, with emphasis on circuit training exercises, can provide improvements in body composition, physical fitness and cardiometabolic risk markers. More physically active children have a lower body fat percentage as well as lower body mass index. Increased physical activity at earlier age is linked to the degree of physical activity later in life as well as low risk of cardiovascular diseases and diabetes. These conclusions are supported by studies on greater body mass drop index in children compared to youth. Regular physical activities since earliest age contribute to improving the body mass index and thereby prevent overweight and obesity. The physical activity program in obese children and youth requires an individual approach pertaining to proportioning the frequency, intensity and forms of physical activity. The change in life habits, regular and adequate physical activity as well as reduced diet are determinants in the prevention of overweight and obesity in children and youth. The multidisciplinary approach to lifestyle of overweight children and youth leads to significant results in cutting down the body mass and improving the quality of lie of this population.

Keywords: obesity, childhood, physical activity, treatment, prevention

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[1] milenavezmar91@gmail.com

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UTICAJ SPORTA NA FIZIČKI RAZVOJ DJECE PREDŠKOLSKOG I RANOG ŠKOLSKOG UZRASTA

Jelena Vidojević, Suzana Jevđenović[1]

Fakultet za specijalnu edukaciju i rehabilitaciju, Beograd, Srbija

Sažetak: Fizički rast i razvoj su okosnica i materijalna osnova celokupnog razvoja i zbog toga je ostvarivanje ciljeva vaspitanja i obrazovanja u ovom aspektu razvoja osnovni uslov svakog drugog razvoja (Spasojević, Pribišev-Beleslin, Nikolić, 2007). Potencijalno pozitivnu ulogu može imati učestvovanje u sportskim aktivnostima u smislu ostvarivanja prijateljstva, osećaja zadovoljstva i sreće, entuzijazma i inspiracije što sve doprinosi povećanju kvaliteta života (Shapiro, Martin, 2010). Sport je vrijedan i perspektivan mehanizam za jačanje fizičkog i emocionalnog zdravlja, kao i izgradnju vrijednih i važnih društvenih odnosa (Wilhite, Shank, 2009). Kroz istraživanje će se utvrditi na koji način sport utiče na razvoj motorike djeteta navedenog uzrasta. Cilj je da se dokaže povezanost bavljenja fizičkim aktivnostima i pravilnog razvoja fine i grube motorike kod djeteta. Uzorak istraživanja je formiran od 17 djece tipičnog razvoja, oba pola (58,8% dečaka), uzrasta 6,1-7,7 godina (Md = 7,2), koji su završili prvi razred osnovne škole, a ujedno su bili korisnici usluga JPU "Dječiji vrtić" Gacko, grupa-produženi boravak. Korišćeni su sljedeći upitnici: Upitnik za prikupljanje opštih demografskih podataka, Upitnik za procjenu fizičkog razvoja i Upitnik o bavljenju sportskim aktivnostima (autorski upitnici). U obradi podataka je korišćena deskriptivna i inferencijalna statistika. Rezultati istraživanja su pokazali da između dječaka i djevojčica na aspektu fizičkog razvoja postoje razlike u ukupnim prosečnim postignućima-dječaci (M=42,60, SD=2,951) i djevojčice (M=42,43, SD=2,820), ali da te razlike nisu na nivou statističke značajnosti (p > 0,05). Zatim, rezultati između mlađe i starije uzrasne grupe takođe ne pokazuju statističku značajnost (mlađi uzrast 6,1-6,9 godina (M=41,88, SD=2,167) i stariji uzrast 7,2-7,7 godina (M=43,11, SD=2,934)). Istovremeno, rezultati su pokazali da postoji statistički značajna korelacija između sportskih aktivnosti i fizičkog razvoja djece oba pola navedenog uzrasta. Na osnovu navedenih rezultata može se zaključiti da učenici prvog razreda koji se nalaze u dnevnom boravku razvojno ne prate u potpunosti fizičke aspekte predviđene programom predškolskog vaspitanja i obrazovanja koji se sprovodi u ustanovi "Dječiji vrtić" Gacko. Ipak, postoji značajan pozitivni uticaj bavljenja sportom na razvoj fizičkih sposobnosti, kao i jačanja motorike djece oba pola navedenog uzrasta. Zbog prikazanih rezultata, zaključak je da učenike prvog razreda koji pohađaju produženi boravak treba dodatno stimulisati kroz aktivnosti u okviru programa podrške, kako bi se bolje podstakao razvoj sposobnosti na kojima se oslanja vaspitno-obrazovni rad. Preporuka za buduća istraživanja ove i sličnih tema bi bila obuhvat većeg broja djece, odnosno povećanje uzorka. Takođe, bilo bi dobro da se sprovede longitudinalno istraživanje, koje bi obuhvatilo procjenu djece na početku i na kraju pohađanja boravka, a time i dovođenje u vezu uticaja koji boravak ima na njihov razvoj.

Ključne reči: sport, fizički razvoj, djeca predškolskog i ranog školskog uzrasta.

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[1] jevdjenovicdusan@gmail.com

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THE IMPACT OF SPORTS ON THE PHYSICAL DEVELOPMENT OF PRESCHOOL AND EARLY SCHOOL AGE CHILDREN

Jelena Vidojević, Suzana Jevđenović[1]

Faculty for Special Education and Rehabilitation, University of Belgrade

Abstract: Physical growth and development are the backbone and material basis of whole development and because of this achieving the goals of upbringing and education in this aspect of development is tke main condition of every other development (Spasojević, Pribišev-Beleslin, Nikolić, 2007).Potential positive role may have the participation in sports activities in terms of making friendships, feelings of contentment and happiness, enthusiasm and inspiration, which all contributes to increasing the quality of life (Shapiro, Martin, 2010). The sport is valuable and perspective mechanism for improving physical and emotional health, and also building valuable and important social relations (Wilhite, Shank, 2009). The research will determine how sport affects the development of motor skills of a child of that age. The goal is to prove the connection between engaging in physical activities and the proper development of fine and gross motor skills in a child. The research sample was formed of 17 children of typical development, both sexes (58.8 % of boys), aged 6.1-7.7 years (Md = 7.2), who completed the first grade of primary school, and were also users service of JPU "Dječiji vrtić" Gacko, group-extended stay. The following questionnaires were used: Questionnaire for collecting general demographic data, Questionnaire for assessing physical development and Questionnaire on engaging in sports activities (author's questionnaires). Descriptive and inferential statistics were used in data processing. The results of the research showed that there are differences between boys and girls in the aspect of physical development in the overall average achievements - boys (M = 42.60, SD = 2.951) and girls (M = 42.43, SD = 2.820), but that these differences are not at the level of statistical significance (p> 0.05). Then, the results between the younger and older age group also do not show statistical significance (younger age 6.1-6.9 years (M = 41.88, SD = 2.167) and older age 7.2-7.7 years) (M = 43.11, SD = 2.934)). At the same time, the results showed that there is a statistically significant correlation between sports activities and physical development of children of both sexes of the specified age. Based on the above results, it can be concluded that first grade students who are in the preschool facility do not fully follow the physical aspects provided by the program of preschool education that is implemented in the institution “Dječiji vrtić” Gacko. Yet, there is significant positive impact doing sports on the development of physical abilities, also on improving motor skills of children of both sexes of the specified age. Due to the presented results, the conclusion is that the first grade students who attend the extended stay should be additionally stimulated through activities within the support program, in order to better encourage the development of abilities on which the educational work relies. The recommendation for future research on this and similar topics would be to include a larger number of children, to increase the sample. Also, it would be good to conduct a longitudinal research, which would include the assessment of children at the beginning and end of the stay, and thus linking the impact that the stay has on their development.

Keywords: sport, physical development, preschool and early school age children.

[1] jevdjenovicdusan@gmail.com

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SMERNICE ZA FIZIČKU AKTIVNOST U KUĆNIM USLOVIMA U VREME KOVID-19 PANDEMIJE

Katarina Vukosavljević[1], Kristina Vukušić[2], Zoran Pajić[3], Dragana Drljačić[1]

[1]Univerzitet u Beogradu, Medicinski fakultet, Beograd, Srbija
[2]Visoka sportska i zdravstvena škola, Beograd, Srbija
[3]Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja, Beograd, Srbija

Sažetak: Širenje virusa KOVID-19 na globalnom nivou poremetilo je normalnost svakodnevnog života primoravajući stanovništvo na fizičko distanciranje i samoizolaciju, a samim tim i na smanjenu fizičku aktivnost. Ujedno, nedovoljna fizička aktivnost glavni je faktor rizika za razvoj stanja i bolesti koje su istovremeno faktori rizika i za KOVID-19 infekciju. Terapija vežbanjem poznat je nefarmakološki tretman u razvijenim zemljama i zemljama u razvoju, prvenstveno kod ljudi koji pate od fizičkih, fizioloških ili psiholoških problema. No, s obzirom na to da se u velikom procentu mere predostrožnosti tiču i sportskih aktivnosti, kućni trening je ostao kao jedna od retkih mogućnosti bavljenja fizičkim vežbanjem i održavanja aktivnosti tokom pandemije. Iz tog razloga cilj ovog rada bio je teorijsko razmatranje posledica (samo)izolacije tokom KOVID-19 pandemije na zdravlje pojedinca i davanje smernica za fizičku aktivnost u kućnim uslovima. U tu svrhu opisan je višekomponentni preporučeni program vežbanja za trening u kućnim uslovima koji uključuje aerobni trening, trening otpora i trening istezanja. Svaka komponenta ovog programa udovoljava preporukama za učestalost, intenzitet i obim vežbanja i vrstu vežbi (FITT preporuke - *frequency, intensity, time, and type of exercise*). Čak i ako pojedinac ne može da ispuni preporučene ciljeve, izvođenje vežbi je korisno, posebno kod neaktivnih osoba, te ih iz tog razloga treba podsticati, osim u slučajevima kada postoje kontraindikacije za to. Vežbanje u kućnim uslovima treba da pomogne u ublažavanju gojaznosti i smanjenju pojave mišićno-koštanog bola, boljoj kontroli psiholoških problema i jačanju mentalnog zdravlja.

Ključne reči: izolacija, karantin, trening, vežbanje, FITT.

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[1] katarina.vukosavljevic@vss.edu.rs

GUIDELINES FOR PHYSICAL ACTIVITY AT HOME DURING THE COVID-19 PANDEMIC

Katarina Vukosavljević[1], Kristina Vukušić[2], Zoran Pajić[3], Dragana Drljačić[1]

[1]University of Belgrade, Faculty of Medicine, Belgrade, Serbia
[2]College of Sports and Health, Belgrade, Serbia
[3]University of Belgrade, Faculty of Sport and Physical Education, Belgrade, Serbia

Abstract: The spread of the COVID-19 virus worldwide has disrupted the normalcy of everyday life, forcing the population to physically distance themselves and self-isolate, and thus reducing physical activity. At the same time, insufficient physical activity is the main risk factor for the development of conditions and diseases that are at the same time risk factors for COVID-19 infection. Exercise therapy is a well-known non-pharmacological treatment in developed and developing countries, primarily in people who suffer from physical, physiological or psychological problems. However, given that a large percentage of precautionary measures also apply to sports activities, home training has remained one of the few opportunities to engage in physical exercise and maintain activities during a pandemic. For this reason, this paper aimed to theoretically consider the consequences of (self)isolation during the COVID-19 pandemic on an individual's health and to provide guidelines for physical activity at home. For this purpose, a multi-component recommended exercise program for training at home is described, which includes aerobic training, resistance training and stretching training. Each component of this program meets the recommendations for the frequency, intensity, time, and type of exercise ((FITT). Even if an individual cannot meet the recommended goals, performing the exercises is useful, especially for inactive people, and for that reason, they should be encouraged, except in cases when there are contraindications for that. Exercising at home should help alleviate obesity and reduce the occurrence of musculoskeletal pain, better control of psychological problems and strengthen mental health.

Keywords: isolation, quarantine, training, exercise, FITT.

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[1] katarina.vukosavljevic@vss.edu.rs

ZNAČAJ MULTIDISCIPLINARNOG DIJAGNOSTIČKOG I TERAPIJSKOG PRISTUPA SINDROMU BOLNE SIMFIZE SPORTISTA

Katarina Vukosavljević[1], Miloš Bojović[1,2], Dragana Drljačić[2], Kristina Vukušić[2]

[1]Univerzitet u Beogradu, Medicinski fakultet, Beograd, Srbija
[2]Visoka sportska i zdravstvena škola, Beograd, Srbija

Sažetak: Sindrom bolne simfize sportista (pubalgija) je specifična povreda, bolno stanje i disfunkcija femoro-ingvinalne regije, koje nastaje usled disproporcije snage mišića trbušnog zida i mišića donjih ekstremiteta. Cilj ovog rada bio je teorijsko razmatranje značaja multidisciplinarnog dijagnostičkog i terapijskog pristupa sindromu bolne simfize sportista. U literaturi je izneto više od 70 uzroka nastanka pubalgije, pri čemu su oni uslovljeni sportskim činiocima najzastupljeniji. Aktivnosti koje uključuju ponavljajuće snažne udarce nogama, pokrete rotacije, cirkumdukcije i torzije predstavljaju faktore rizika. Sindrom je najpre registrovan kod fudbalera, a uglavnom se javlja kod sportista muškog pola, mlađih od 40 godina. Uspostavljanje dijagnoze je teško zbog složene anatomije i preklapanja simptoma među različitim povredama prepona. Terapijski pristup je uslovljen složenošću povreda i dinamikom oporavka pacijenta. Podrazumeva poštovanje principa započinjanja lečenja minimalno invazivnim modalitetima, pri čemu je za krajnji terapijski pristup rezervisan operativni tretman, nakon kog je neophodno sprovesti odgovarajući rehabilitacioni program, u skladu sa bolom i dinamikom oporavka. Najveći broj sportista se nakon dva do tri meseca vraća na teren, pri čemu recidivi nakon operativnog lečenja praktično nisu registrovani. No, s obzirom na to da kod nastanka pubalgije dolazi do onesposobljavanja u sportskim aktivnostima u prolongiranom periodu, posebnu pažnju treba posvetiti prevenciji nastajanja ovog bolnog sindroma. S tim u vezi, s prevencijom treba započeti u najranijim uzrastima sprovodeći svakodnevni program vežbi jačanja mišića prednjeg trbušnog zida, s posebnim akcentom na kose i poprečne trbušne mišiće.

Ključne reči: atletska pubalgija, sindrom simfize, sportisti, rehabilitacija.

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[1] katarina.vukosavljevic@vss.edu.rs

THE IMPORTANCE OF A MULTIDISCIPLINARY DIAGNOSTIC AND THERAPEUTIC APPROACH TO THE ATHLETE'S PAINFUL SYMPHYSIS SYNDROME

Katarina Vukosavljević[1], Miloš Bojović[1,2], Dragana Drljačić[2], Kristina Vukušić[2]

[1]University of Belgrade, Faculty of Medicine, Belgrade, Serbia
[2]College of Sports and Health, Belgrade, Serbia

Abstract: Athlete's painful symphysis syndrome (pubalgia) is a specific injury, painful condition and dysfunction of the femoro-inguinal region, which occurs due to the disproportion of the strength of the muscles of the abdominal wall and the muscles of the lower extremities. This study aimed to theoretically consider the importance of a multidisciplinary diagnostic and therapeutic approach to athletes' painful symphysis syndrome. More than 70 causes of pubalgia have been presented in the literature, and they are the most common due to sports factors. Activities that include repetitive strong kicks, rotational movements, circumductions, and torsions are risk factors. The syndrome was first registered in football players and mostly occurs in male athletes under the age of 40. Establishing a diagnosis is difficult due to the complex anatomy and overlap of symptoms between different groin injuries. The therapeutic approach is conditioned by the complexity of the injuries and the dynamics of the patient's recovery. It implies respect for the principle of initiating treatment with minimally invasive modalities, with surgical treatment reserved for the final therapeutic approach, after which it is necessary to conduct an appropriate rehabilitation program, following the pain and the dynamics of recovery. Most athletes return to the field after two to three months, with no recurrences after surgical treatment. However, considering that the occurrence of pubalgia results in disability in sports activities in a prolonged period, special attention should be paid to the prevention of this painful syndrome. In this regard, prevention should begin at the earliest age by conducting a daily program of exercises to strengthen the muscles of the anterior abdominal wall, with special emphasis on the oblique and transverse abdominal muscles.

Keywords: athletic pubalgia, symphysis syndrome, athletes, rehabilitation

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[1] katarina.vukosavljevic@vss.edu.rs

POVEZANOST REGULACIJE GLUKOZE, ŠEĆERNE BOLESTI I KOVID-19

Kristina Vukušić[1], Katarina Vukosavljević[2], Miloš Bojović[1,2], Dragana Drljačić[1]

[1]Visoka sportska i zdravstvena škola, Beograd, Srbija
[2]Univerzitet u Beogradu, Medicinski fakultet, Beograd, Srbija

Sažetak: Šećerna bolest (dijabetes) jedno je od najčešćih hroničnih nezaraznih oboljenja i predstavlja veliki javnozdravstveni problem. Svetska zdravstvena organizacija procenjuje da u svetu od dijabetesa boluje oko 425 miliona ljudi, s daljom tendencijom porasta prevalence, posebno dijabetesa tipa 2. S pojavom pandemije koronavirusne bolesti 2019 (KOVID-19), povećala se svest o uticaju dijabetesa na zarazne bolesti, uključujući povećani rizik od različitih infekcija, komplikacija i mortaliteta od infekcija. Prethodna istraživanja su pokazala da je dijabetes, pored gojaznosti, kardiovaskularnih bolesti i hronične opstruktivne bolesti pluća najčešći komorbiditet kod pacijenata obolelih od KOVID-19. Iz tog razloga cilj ovog rada bio je teorijsko razmatranje dosadašnjih saznanja o vezi između regulacije nivoa glukoze u krvi, dijabetesa i Kovid-19. Pregledani su i analizirani podaci o regulaciji glukoze i patofiziologiji bolesti dijabetesa i Kovid-19. Dosadašnji nalazi ukazuju na dvosmerni uticaj između dijabetesa i Kovid-19. Osobe sa dijabetesom spadaju u kategoriju osoba sa povišenim rizikom za razvoj ozbiljnih formi oboljenja Kovid-19, dok bi KOVID-19 mogao imati efekat na patofiziologiju dijabetesa. S druge strane, osobe obolele od dijabetesa koje nemaju komplikacije i čiji je nivo šećera u krvi dobro regulisan, nemaju veći rizik od razvoja težih oblika KOVID-19 od opšte populacije. Sagledavši rezultate dosadašnjih istraživanja izvodi se zaključak da je za prevenciju komplikacija od Kovid-19 od velikog značaja regulacija nivoa glukoze u krvi. S tim u vezi inovacije poput telemedicine korisne su za lečenje pacijenata sa dijabetesom u vreme pandemije KOVID-19.

Ključne reči: insulin, imunitet, komorbiditeti, diabetes mellitus, gojaznost.

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[1] kristina.vukusic@vss.edu.rs

RELATIONSHIPS BETWEEN GLUCOSE REGULATION, DIABETES AND COVID-19

Kristina Vukušić[1], Katarina Vukosavljević[2], Miloš Bojović[1,2], Dragana Drljačić[1]

[1]College of Sports and Health, Belgrade, Serbia
[2]University of Belgrade, Faculty of Medicine, Belgrade, Serbia

Abstract: Diabetes is one of the most common chronic non-communicable diseases and is a major public health problem. The World Health Organization estimates that about 425 million people worldwide suffer from diabetes, with a further tendency to increase in prevalence, especially type 2 diabetes. With the advent of the 2019 coronavirus disease pandemic (KOVID-19), awareness of the impact of diabetes on infectious diseases, including the risk of various infections, complications and mortality of infection. Previous research has shown that diabetes, in addition to obesity, cardiovascular disease, and chronic obstructive pulmonary disease, is the most common comorbidity in patients with KOVID-19. For that reason, this paper aimed to theoretically consider the current knowledge about the relationship between the regulation of blood glucose levels, diabetes and Kovid-19. Data on glucose regulation and pathophysiology of diabetes and Kovid-19 were reviewed and analyzed. The findings indicate a two-way effect between diabetes and Kovid-19. Patients with diabetes belong to the category of people at increased risk for developing serious forms of Kovid-19 disease, while KOVID-19 could have an effect on the pathophysiology of diabetes. On the other hand, patients with diabetes who do not have complications and whose blood sugar level is well regulated, do not have a higher risk of developing more severe forms of KOVID-19 than the general population. Considering the results of previous research, it can be concluded that the regulation of blood glucose levels is of great importance for the prevention of complications from Kovid-19. In this regard, innovations such as telemedicine are useful for the treatment of patients with diabetes during the KOVID-19 pandemic.

Keywords: insulin, immunity, comorbidities, diabetes mellitus, obesity.

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[1] kristina.vukusic@vss.edu.rs

UTICAJ PANDEMIJE COVID-19 NA NIVO UČESTALOSTI FIZIČKE AKTIVNOSTI POPULACIJE RAZLIČITOG POLA I UZRASTA

Zećirović Armin[1], Trivun Milomir[2], Konstantinos Stratakis[3]

Univerzitet u Istočnom Sarajevu, Fakultet sporta i fizičkog vaspitanja

Sažetak: Fizička aktivnost je višestruko korisna za očuvanje i razvijanje psihofizičkih sposobnosti. Faktore koji utiču na fizičku aktivnost možemo podeliti na tri glavne grupe: biološki, psihološki i socijalni. Kada je reč o biološkim faktorima među najvažnijim su uzrast i pol. Drastične mere koje su preduzete zbog pandemije virusa COVID-19 su značajno uticale na svakodnevni život ljudi. Zatvaranje sportsko-rekreativnih centara i zabrana boravka na otvorenim mestima za rekraciju su prouzrokovale promene u vrsti, obimu, intenzitetu i učestalosti fizičke aktivnosti. Iz uzorka od 175 ispitanika (116 žena, 59 muškaraca) uzrasta do 65 godina iz grada Novog Pazara, dobijeni su podaci upitnikom i obrađeni su sa odgovarajućim statističkim postupcima, radi dobijanja informacija o uticaju COVID-19 pandemije na nivo učestalosti fizičke aktivnosti populacije različitog pola i uzrasta kao i utvrđivanje razloga potencijalnih promena. Rezultati istraživanja potvrđuju da su pol i uzrast faktori od posebnog značaja kad dolazi do promena u nivou učestalosti fizičke aktivnosti za vreme pandemije. Takođe, utvrđeno je da su glavni razlozi za pad nivoa učestalosti fizičke aktivnosti kod oba pola različitih uzrasta za vreme društvene izolacije „nedostatak motivacije“ kao i nedostatak „rekvizita i prostora“. Sa druge strane, utvrđeno je da je glavni razlog za povećanje fizičke aktivnosti više „slobodnog vremena“.

Ključne reči: zdravlje, pol, uzrast, epidemija, rekreacija

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[1] armin.zecirovic@gmail.com

INFLUENCE OF COVID-19 PANDEMIA ON THE LEVEL OF FREQUENCY OF PHYSICAL ACTIVITY OF POPULATION OF DIFFERENT GENDER AND AGE AND REASONS FOR POTENTIAL CHANGE

Zećirović Armin[1] , Trivun Milomir[2], Konstantinos Stratakis[3]

University of East Sarajevo, Faculty of Sports and Physical Education

Abstract: Physical activity is repeatedly useful for maintaining and developing psychophysical abilities. The factors that influence physical activity can be divided into three main groups: biological, psychological and social. When it comes to biological factors, age and gender are among the most important. The drastic measures taken because of the COVID-19 virus pandemics have had a significant impact on people's daily lives. The closure of sports and recreation centers and the prohibition of outdoor recreation have caused changes in the type, extent, intensity and frequency of physical activity. From a sample of 175 subjects (116 female, 59 male) aged up to 65 years from the city of Belgrade, questionnaire data were obtained and processed with appropriate statistical procedures to obtain information on the impact of COVID-19 pandemic on the frequency of physical activity of population of different sex and age as well as identifying the reasons for potential changes. The results of the study confirm that gender and age are factors of particular importance when there is a change in the frequency of physical activity during the COVID-19 pandemic. Also, it was found that the main reasons for the fall in the frequency of physical activity at both sexes of different ages during social isolation were „lack of motivation“ as well as „lack of equipment and space“. On the other hand, it was found that the main reason for increasing physical activity was more „free time“.

Keywords: health, gender, age, epidemic, recreation

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[1] armin.zecirovic@gmail.com

ŽENSKI FUDBAL I RAVNOPRAVNOST POLOVA

Marija Zegnal Koretić[1], Aleksandar Ivanovski [2], Tamara Vrhovec[1]

[1]Međimurskoveleučilište Čakovec, Hrvatska
[2]Visoka sportska i zdravstvena škola, Beograd

Sažetak: U samom početku sport je bio dostupan samo muškarcima, dok su žene svoje mesto u tom segment pronašle nekoliko godina kasnije. Fudbal je danas postao jedna od najpopularnijih aktivnosti kojima se ljudi bave. U današnje vreme sve se više ženao kreće ka tom sportu, upravo zbog popularizacije ženskog fudbala u društvu, ali i podsticanju na pozitivne promene između ženskog i muškog fudbala. Kroz istoriju žene godinama nisu imale nikakva prava u sportu, uprkos vidljivim pozitivnim pomacima još uvek postoji očigledna diskriminacija između polova (Vojković 2017). Ženska nezastupljenost u strukturama sporta nije samo nepravedna već ima i daleko sežne posledice na učestvovanje žena u sportu, tvrde Key i Jones (2018, 136). Neravnopravnost koja je prisutna između finansiranja muškaraca i žena, transferi koji su znatno manji, zatim uslovi treniranja pa čak i medijske popraćenosti i zapaženosti. Popularizacija sporta doprinela je sve većem broju žena koje se bave sportom, ili u ovom slučaju fudbalom. Samo učešće žena u ovom sportu povezano je sa brojnim predrasudama i nejednakostima. Ispitan je uzorak žena (N0 40, starosti od 16 do 32 godine) kako bi se utvrdila trenutna situacija u ženskom fudbalu u pogledu jednakosti i zastupljenosti u medijima. Anketa, a zatim i analiza rezultata istraživanja na temu ovog rada sprovedena je u tri prvoligaška hrvatska ženska fudbalska kluba. U istraživanju su kao osnovna metoda korišćeni servei metoda i metoda skaliranja. Za obradu rezultata istraživanja korišćen je Chisk test statističke tehnike. Rezultati istraživanja pokazali su da većina žena dolazi iz ruralnih područja i da obrazovna struktura ne utiče značajno na stavove i izbor sporta. Sa nejednakošću su usko povezani mediji koji u fudbalu manje pažnje posvećuju ženama nego muškarcima. Sve hipotetičke pretpostavke su potvrđene i da još uvek ne postoji rodna ravnopravnost, posebno u fudbalu, da je zastupljenost u medijima vrlo mala kao i prihod i žena fudbalerki.

Ključne reči: rodna ravnopravnost, sport, ženski fudbal

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WOMEN'S FOOTBALL AND GENDER EQUALITY

Marija Zegnal Koretic[1], Aleksandar Ivanovski[2], Tamara Vrhovec[1]

[1]Međimurje University of Čakovec, Croatia

[2]College of Sports and Health, Belgrade

Abstract: In the very beginning, sport was available only to men, but it found its place in that segment a few years later. Today, football has become one of the most popular activities that people do. Nowadays, more and more women are turning to that sport, precisely because of the popularization of women's football in society, but also encouraging positive changes between women's and men's football. Throughout the history of women, they have had little rights in sports, despite visible positive changes, there is still obvious discrimination between the sexes (Vojković 2017). Women's underrepresentation in the structure of sports is not just for the greater and far-reaching consequences of women's participation in sports, claim Key and Jones (2018, 136). Inequality that is present between the financing of men and women, transfers that are significantly less, then training and even media coverage and observation. The popularization of sports has contributed to the growing number of women who play sports, or in this case football. Self-participation in this sport is connected with numerous prejudices and inequalities. A sample (N0 40, aged 16 to 32) was examined in order to determine the current situation in women's football in terms of equality and representation in the media. The survey, and then the analysis of the results of the research on this city, was conducted in three first league Croatian women's football clubs. In the research, the basic method used was the method and method of scaling. The Chisk test of statistical technique was used to process the research results. The results of the research showed that most women come from rural areas and that the educational structure does not significantly affect teaching and sports choices. With the inequality of closely related media, which in football pay less attention to women and men. All hypothetical assumptions have been confirmed and that there is still no national equality, especially in football, that the representation in the media is very small as well as the income of football players.

Keywords: gender equality, sports, women's football

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FAKTORSKA STRUKTURA UPITNIKA MENTALNE JAČINE SPORTISTA

Ivana Zubić[1]

Fakultet za sport, Beograd, Univerzitet "Union-Nikola Tesla"

Sažetak: Mentalna jačinu predstavlja jedan od ključnih atributa za uspeh u takmičarskom sportu i razvoj šampionskih sportskih izvođača (Connaughton i dr., 2008; Crust,Clough, 2011; Jones i dr., 2007). Mentalna jačina u sportu (Thelwell, Veston i Greenless, 2005) predstavlja urođeno ili razvijeno stanje psihološke oštrine koje omogućava sportisti da se uvek bolje od svojih protivnika nosi sa mnogim zahtevima (takmičenje, trening, način života) koje sport stavlja pred njega i da bude dosledniji, odlučniji, koncentrisaniji, samopouzdaniiji i sa većom emocionalnom regulacijom u situacijama pritiska od protivnika. Cilj istraživanja je proveriti metrijske karakteristike upitnika odnosno pouzdanost i faktorsku strukturu upitnika za merenja mentalne jačine „Sports Mental Toughness Questionnaire“. Upitnik je prvi put primenjen na populaciji sportista Srbije. Ovo istraživanje je obuhvatilo 100 sportista, 59 muškaraca i 41 žena, 58 sportista individualnih sportova (streličarstvo, različite vrste borilačkih veština, tenis) i 42 sportista kolektivnih sportova (košarka, fudbal, odbojka). Mentalna jačina je merena upitnikom „Sports Mental Toughness Questionnaire“ (SMTQ) (Sheard, Golby, van Wersch, 2009). Ovaj upitnik je sastavljen od 14 tvrdnji sa ponuđenom četvrtostepenom skalom Likertovog tipa za davanje stepena saglasnosti za datu tvrdnju. Sumacioni skor na skali pokazuje meru mentalne jačine. Pored ukupnog skora, mentalna jačina se može posmatrati i kroz tri dimenzije: samopouzdanje (Pod pritiskom mogu da donosim odluke sa samopouzdanjem i posvećenošću), konzistentnost (Posvećen sam izvršavanju zadataka koje moram obaviti) i kontrola (Uznemirim se zbog događaja koje nisam očekivao ili ne mogu da kontrolišem). Pouzdanosti skale mentalne jačine (α=0,89) i subskala (samopouzdanje α=0,79; kontrola α=0,72; konzistentnost α=0,72) su visoke. Kroz faktorsku analizu procenjena su dva testa opravdanosti primene faktorske analize: Bartlettov test sferičnosti i Kaiser-Meyer-Olkinov pokazatelj adekvatnosti uzorka. Bartlettov test sferičnosti je dostigao statističku značajnost što ukazuje na faktorabilnost korelacione matrice. A vrednost Kaiser-Meyer-Olkinovog pokazatelja iznosi 0,802 i premašuje preporučenu vrednost od 0,6. Po Kaiser-Gutmannovom kriterijumu u obzir se uzeto je tri faktora koji najbolje objašnjavaju promenjivost, odnosno čija je vrednost veća od jedan. Ovi faktori kumulativno objašnjavaju 65,45% varijance. Svojstvena vrednost prvog faktora je 3,86, drugog faktora 2,69 i na kraju trećeg faktora 2,60. Prvi faktor odgovara teorijskom faktoru konzistentnosti, drugi faktor samopouzdanju i treći dimenziji kontrole. Može se zaključiti da su rezultati faktorske analize na našem uzorku u skladu sa podacima drugih istraživanja, kao i sa teorijskim očekivanjima.

Ključne reči: mentalna jačina, sportisti

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[1] ivana.zubic@fzs.edu.rs

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FACTOR STRUCTURE OF SPORTS MENTAL TOUGHNESS QUESTIONNAIRE

Ivana Zubić[1]

Faculty of Sports, Belgrade, Union-Nikola Tesla University

Abstract: Mental toughness is one of the key attributes for success in competitive sports and the development of champion sports performers (Connaughton et al., 2008; Crust, Clough, 2011; Jones et al., 2007). Mental toughness in sport (Thelwell, Weston and Greenless, 2005) is an inborn or developed state of psychological toughness that allows athletes to cope better than their opponents with many demands (competition, training, lifestyle) that sport puts before them and to be more consistent, determined, more concentrated, more confident and with greater emotional regulation in situations of pressure from the opponent. The aim of the research was to verify reliability and factor structure of "Sports Mental Toughness Questionnaire". The questionnaire was applied for the first time to the population of Serbian athletes. This research included 100 athletes, 59 men and 41 women, 58 athletes of individual sports (archery, boxing, tennis) and 42 athletes of collective sports (basketball, football, volleyball). Mental toughness was measured by the Sports Mental Toughness Questionnaire (SMTQ) (Sheard, Golby, van Wersch, 2009). This questionnaire consisted of 14 statements with a four-point Likert-type scale offered to give a degree of agreement for a given statement. The summation score on the scale shows a measure of mental toughness. In addition to the overall score, mental toughness can be viewed through three dimensions: self-confidence (Under pressure I can make decisions with confidence and commitment), consistency (I am committed to doing tasks I have to do) and control (I get upset about events I didn't expect or I can not control). The reliability of the mental toughness scale ($\alpha = 0.89$) and subscales (self-confidence $\alpha = 0.79$; control $\alpha = 0.72$; consistency $\alpha = 0.72$) were high. Through factor analysis, two tests of justification for the application of factor analysis were evaluated: the Bartlett test of sphericity and the Kaiser-Meyer-Olkin indicator of sample adequacy. The Bartlett test of sphericity reached statistical significance indicating the factorality of the correlation matrix. And the value of the Kaiser-Meyer-Olkin index was 0.802 and exceeded the recommended value of 0.6. According to the Kaiser-Gutmann criterion, three factors were taken into account that best explain the variability, theirs value was greater than 1. These factors cumulatively explain 65.45% of the variance. The eigenvalue of the first factor was 3.86, the second factor 2.69 and at the end of the third factor 2.60. The first factor corresponded to the theoretical consistency factor, the second to self-confidence, and the third to the control dimension. It can be concluded that the results of the factor analysis in our sample were in accordance with the data of other researches, as well as with the theoretical expectations.

Keywords: mental toughness, athletes

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[1] ivana.zubic@fzs.edu.rs

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TREND PROMENA FITNES PARAMETARA GOJAZNIH DEVOJČICA

Živković Danijela[1], Ranđelović Nebojša[1], Đošić Anđela[1], Purenović-Ivanović Tijana[1], Pantelić Saša[1]

[1]Fakultet sporta i fizičkog vaspitanja, Univerzitet u Nišu

Sažetak: Istraživanja koja su sprovedena na uzorku gojaznih devojčica i dečaka ukazuju na diskontinuiranu formu rasta i razvoja, kako fitnes parametara, tako i morfoloških karakteristika (Ђорђевић, 2015). Vrednosti telesnih masti u organizmu obrnuto su proporcionalne nivou kardiorespiratornog fitnesa, brzini i eksplozivnoj snazi (Pantelić et al., 2012; Aphamis et al., 2015; Cattuzzo et al., 2016). Cilj ovog istraživanja bio je da se utvrdi trend promena određenih parametara fitnesa kod gojaznih devojčica mlađeg školskog uzrasta. **Metod:** Uzorak ispitanika sačinjen je od učenica nižih razreda osnovnih škola sa teritorija gradova u jugoistočnoj Srbiji. Uzorak je činilo 213 ispitanica uzrasta od sedam do deset godina, koje su u istraživanje uvrštene na osnovu stepena uhranjenosti određenog pomoću BMI (Cole, Bellizzi, Flegal, & Dietz, 2000). Uzorak je podeljen na četiri subuzorka u odnosu na uzrast (I razred, N=63; II razred, N=104; III razred, N=22; IV razred, N=24). Mišićni fitnes je procenjen na osnovu Abalakovog testa i testa pretklon-zaklon-izbačaj. Fleksibilnost je procenjena na osnovu testa pretklon na klupi, dok je kardiorespiratorni fitnes procenjen na osnovu vrednosti VO_2max (ml/kg/min), srčane frekvence (HR) pri opterećenju i srčane frekvence u mirovanju (RHR). **Rezultati:** Trendovi promena mišićnog fitnesa i fleksibilnosti su kontinuirani, pri čemu se uočava da je gojaznost remeteći faktor samo za izvršavanje aktivnosti koja zahteva dislokaciju celog tela u prostoru. Rezultati pokazuju da je trend promena RHR i HR u opterećenju diskontinuiran, dok je trend promena VO_2max kontinuiran i beleži pad vrednosti. **Diskusija:** Rezultati ukazuju da su vrednosti srčane frekvence od sedme do desete godine povećane za dva otkucaja u minutu (96.6 – 98.8 bpm) pa se zaključuje da je trend promena varijable RHR pozitivan i diskontinuiran i da odstupa od fiziološke krive razvoja. Odstupanje od normalne krive razvoja može se pripisati gojaznosti, ali i nekim ograničenjima studije, kao što je veličina uzorka. Stresogena reakcija ispitanica tokom testiranja takođe bi mogla da ubrza srčanu frekvencu. Vrednosti pulsa u opterećenju kod devojčica imaju pozitivan trend između sedme i devete godine (160.3 – 170.6 bpm), a između devete i desete godine trend je negativan (170.6 – 168.4 bpm). Srčana frekvenca u opterećenju pokazuje u kojoj meri je organizam deteta adaptiran na fizički napor i u direktnoj je vezi sa fizičkom aktivnošću. Rezultati istraživanja indirektno mogu da ukažu da su gojazne devojčice fizički neaktivne, odnosno nedovoljno adaptirane na fizičku aktivnost.

Ključne reči: gojaznost, trendovi, kardiorespiratorni fitnes, mišićni fitnes, fleksibilnost.

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[1] danijela21581@yahoo.com

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TREND OF CHANGES OF FITNESS PARAMETERS IN OBESE GIRLS

Zivkovic Danijela[1], Randjelovic Nebojsa[1], Djosic Andjela[1], Purenovic-Ivanovic Tijana[1], Pantelic Sasa[1]

[1]Faculty of Sport and Physical Education, University of Nis

Abstract: Previously conducted researches on a sample of obese girls and boys indicate the presence of discontinuous form of growth and development, both in fitness parameters and morphological characteristics (Ђорђевић, 2015). Body fat values in children are inversely related to the level of cardiorespiratory fitness, speed, and explosive power (Pantelić et al., 2012; Aphamis et al., 2015; Cattuzzo et al., 2016). This study aimed to determine the trend of changes in certain fitness parameters in obese girls of younger school age. **Method:** The sample of subjects was composed of lower grades primary school students from the cities in Southeast Serbia. The sample consisted of 213 girls aged seven to ten, who were included in the study based on the degree of nutritional status determined by BMI (Cole, Bellizzi, Flegal, & Dietz, 2000). The sample was divided into four subsamples, in relation to age (1st grade, N=63; 2nd grade, N=104; 3rd grade, N=22; 4th grade, N=24). Muscle fitness was assessed based on the Abalakov test and the lean forward - bend backward - throw test. Flexibility was assessed based on the lean on the bench test, while cardiorespiratory fitness was assessed based on the values of VO_2max (ml/kg/min), heart rate (HR) in load, and resting heart rate (RHR). **Results:** Trends of changes in muscle fitness and flexibility are continuous, with obesity being a disruptive factor only for performing activities that require the whole body dislocation in space. The results show that the trend of changes in RHR and HR in the load is discontinuous, while the trend of changes in VO_2max is continuous and decreases in time. **Discussion:** The results indicate that the heart rate values increase by two beats per minute (96.6 - 98.8 bpm) from the first to the fourth grade, and it can be concluded that the trend of changes in the RHR variable is positive, discontinuous, and deviates from the physiological development curve. Deviation from the normal development curve can be attributed to obesity, but also to some limitations of the study such as sample size. The stress response of the subjects during the testing could also speed up the heart rate. The values of HR in load have a positive trend from the age of seven to the age of nine (160.3 - 170.6 bpm), but between the age of nine and the age of ten the trend is negative (170.6 - 168.4 bpm). The heart rate in load shows the extent to which the child's organism is adapted to physical effort and is directly related to physical activity. The results of the research may indirectly indicate that obese girls are physically inactive, i.e. insufficiently adapted to physical activity.

Keywords: obesity, trends, cardiorespiratory fitness, muscular fitness, flexibility.

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[1] danijela21581@yahoo.com

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