

MEĐUNARODNA NAUČNA KONFERENCIJA

**„Efekti primene fizičke aktivnosti
na antropološki status dece, omladine i odraslih**

ZBORNİK SAŽETAKA

BOOK OF ABSTRACTS

**International Scientific Conference
Effects of Physical Activity Application to
Anthropological Status with Children,
Youth and Adults**



**Univerzitet u Beogradu
Fakultet sporta i fizičkog vaspitanja
Beograd, 11-12 decembar 2015.**

MEĐUNARODNA NAUČNA KONFERENCIJA

„EFEKTI PRIMENE FIZIČKE AKTIVNOSTI
NA ANTROPOLOŠKI STATUS
DECE, OMLADINE I ODRASLIH“

Zbornik sažetaka

INTERNATIONAL SCIENTIFIC CONFERENCE

“EFFECTS OF PHYSICAL ACTIVITY APPLICATION TO
ANTHROPOLOGICAL STATUS
WITH CHILDREN, YOUTH AND ADULTS“

Book of Abstracts

Međunarodna naučna konferencija
Efekti primene fizičke aktivnosti na antropološki status dece, omladine i odraslih / Zbornik sažetaka

International Scientific Conference
Effects of Physical Activity Application to Anthropological Status With Children, Youth and Adults / Book of Abstract

Izdavač / Published by

Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja
University of Belgrade, Faculty of Sport and Physical Education

Urednici / Editors

Prof. dr Goran Kasum
As. Miloš Mudrić

Naučni odbor / Scientific Board

Predsednik / President

Prof. dr Goran Kasum (Faculty of Sport and Physical Education, Belgrade)

Članovi / Members

Članovi sa matične institucije / Members from the Institution

Prof. dr Dušan Mitić (Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja)
Prof. dr Sanja Mandarić (Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja)
Prof. dr Milivoj Dopsaj (Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja)
Prof. dr Marina Dorđević Nikić (Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja)
Prof. dr Irina Juhas (Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja)
Prof. dr Snežana Radisavljević Janjić (Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja)
Prof. dr Ivana Milanović (Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja)
Prof. dr Vladimir Mrdaković (Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja)
Prof. dr Bojan Leontijević (Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja)
Prof. dr Sandra Radenović (Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja)
Prof. dr Branka Savović (Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja)
Prof. dr Ana Orlić (Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja)
Prof. dr Vladimir Ilić (Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja)

Članovi sa ostalih nacionalnih institucija / Members of other National Institutions

Prof. dr Dragan Radovanović (Univerzitet u Nišu, Fakultet sporta i fizičkog vaspitanja)
Prof. dr Marko Aleksandrović (Univerzitet u Nišu, Fakultet sporta i fizičkog vaspitanja)
Prof. dr Borislav Obradović (Univerzitet u Novom Sadu, Fakultet sporta i fizičkog vaspitanja)
Prof. dr Patrik Drid (Univerzitet u Novom Sadu, Fakultet sporta i fizičkog vaspitanja)
Prof. dr Nenad Koropanovski (Kriminalističko-policijska akademija, Beograd)

Članovi iz inostranstva / Foreign Members

Prof. dr Dana Badau (University of Medicine and Pharmacy of Targu Mures, Romania)
Prof. dr Milan Čoh (Univerzitet u Ljubljani, Fakultet za šport)
Prof. dr Hermann Müller (Institute for Sport Science, Justus Liebig University, Germany)
Prof. dr Gregor Starc (Univerzitet u Ljubljani, Fakultet za šport)
Prof. dr Daniela Dasheva (National Sports Academy „Vasil Levski“, Bulgaria)
Prof. dr Goran Bošnjak (Univerzitet u Banja Luci, Fakultet sporta i fizičkog vaspitanja)
Prof. dr Athanailidis Ioannis (Democritus university of Thrace, Greece)
Prof. dr Hrvoje Karninčić (Kineziološki fakultet, Split)
Prof. dr Stefan Stoikov (National Sports Academy „Vasil Levski“, Bulgaria)

Organizacioni odbor / Organizational Board

Predsednik / President

Prof. dr Goran Nešić (University of Belgrade, Faculty of Sport and Physical Education, Belgrade)

Članovi / Members

As. Miloš Mudrić (Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja), generalni sekretar
Dr Jelena Jovanović (Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja)
As. dr Branka Marković (Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja)
Nastavnik stranog jezika Gordana Vekarić (Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja)
As. dr Igor Ranisavljev (Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja)
As. dr Milan Matić (Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja)
As. Radivoj Mandić (Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja)
As. Miloš Marković (Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja)

Prevod na srpski i engleski / Translated by: Gordana Vekarić

Kompjuterska obrada i grafički dizajn/ Technical editing - layout: Newpress

Fotografija na koricama/ Cover page photo: Dunja Dopsaj

Štampa / Printed by: Newpress Smederevo

Tiraž / Circulation: 30 copies



МЕЂУНАРОДНА НАУЧНА КОНФЕРENCIЈА
**EFEKTI PRIMENE FIZIČKE AKTIVNOSTI
NA ANTROPOLOŠKI STATUS
DECE, OMLADINE I ODRASLIH**

Zbornik sažetaka

*INTERNATIONAL SCIENTIFIC CONFERENCE
EFFECTS OF PHYSICAL ACTIVITY APPLICATION TO
ANTHROPOLOGICAL STATUS
WITH CHILDREN, YOUTH AND ADULTS*

Bokk of Abstracts

Beograd, 11-12, decembar 2015

PROGRAM RADA NAUČNE KONFERENCIJE 2015

2015 SCIENTIFIC CONFERENCE PROGRAMME

**„EFEKTI PRIMENE FIZIČKE AKTIVNOSTI NA
ANTROPOLOŠKI STATUS DECE, OMLADINE I ODRASLIH“**

**“EFFECTS OF PHYSICAL ACTIVITY APPLICATION TO
ANTHROPOLOGICAL STATUS WITH CHILDREN, YOUTH AND ADULTS”**

Prvi dan: petak (11. decembar 2015.) – AMF 1 /
First day: Friday, 11. December, 2015 (Hall 1)

09:00 – 15:00 **Registracija učesnika / Registration of participants**

14:00 – 14:15 **Otvaranje Konferencije / Opening of conference**

Predsedavajući / *Chairmans: Prof. dr Goran Kasum*

Pozdravni govor – predsednik Naučnog odbora van. prof. dr Goran Kasum
Welcome Speech: President of the Scientific Board Prof. dr Goran Kasum

14:15 – 16:45 **Plenarni rad – Pozivna predavanja / Plenary – Key Note Speakers**

14:15 – 15:00

Prof. dr Gregor Starc

The outcomes of school-based interventions on children’s physical fitness:

A case of Slovenia

Fakultet za šport, Univerzitet u Ljubljani, Slovenija

Faculty of Sport, University of Ljubljana, Slovenia

15:00 - 15:10 Diskusija / *Discussion*

15:10 - 15:25 Kafe pauza-Coffe break

15:25 - 16:10

Prof. dr Hermann Müller
„Error processing in motor learning”
Institut za sportske nauke, Univerzitet Justus Liebig, Nemačka
Institute for Sport Science, Justus Liebig University, Germany

16:10 - 16:20

Diskusija / *Discussion*

16:20 - 17:05

Prof. dr Daniela Dasheva
Sport for all, adaptation, health promotion
Nacionalna Sportska akademija „Vasil Levski“, Bugarska
National Sports Academy „Vasil Levski“, Bulgaria

17:05 - 17:15

Diskusija / *Discussion*

17:15 - 17:30

Kafe pauza-Coffe break

17:30 - 19:30

Sesije / *Sessions – Saopštenja / Presentations*

Prvi dan: petak (11. decembar 2015.) – AMF 1 /
First day: Friday, 11. December, 2015 (Hall 1)

AMF 1 / Hall 1

Moderator / *Chairman*: **prof. dr Ana Orlić**

17:30 – 19:30 Radovi / *Presentations*

AMF 2 / Hall 2

Moderator / *Chairman*: : **prof. dr Irina Juhas**

17:30 – 19:30 Radovi / *Presentations*

AMF 3 / Hall 3

Moderator / *Chairman*: **prof. dr Snežana Radisavljević Janjić**

17:30 – 19:30 Radovi / *Presentations*

AMF 4 / Hall 4

Moderator / *Chairman*: **prof. dr Marina Đorđević-Nikić**

17:30 – 19:30 Radovi / *Presentations*

Drugi dan: subota (12. decembar 2015.) /
Second day – Saturday, 12 December 2015

10:00 – 11:30 **Rad po sesijama – Saopštenja / Sessions**

AMF 1 / Hall 1

Moderator / *Chairman*: **prof. dr Branka Savović**

10:00-11:45 Radovi / *Presentations*

12:15 – 12:30 Kafe pauza-Coffe break

Moderator / *Chairman*: **prof. dr Dušan Mitić, prof. dr Sandra Radenović**

12:30– 13:30 Sesija posteru (Hodnik na spratu) / *Posters session (Upstairs lobby)*

AMF 2 / Hall 2

Moderator / *Chairman*: **prof.dr Bojan Leontijević**

10:00-12:15 Radovi / *Presentations*

12:15 – 12:30 Kafe pauza-Coffe break

Moderator / *Chairman*: **prof. dr Dušan Mitić, prof. dr Sandra Radenović**

12:30– 13:30 Sesija posteru (Hodnik na spratu) / *Posters session (Upstairs lobby)*

AMF 3 / Hall 3

Moderator / *Chairman*: **prof. dr Ivana Milanović**

10:00-12:10 Radovi / *Presentations*

12:15 – 12:30 Kafe pauza-Coffe break

Moderator / *Chairman*: **prof. dr Dušan Mitić, prof. dr Sandra Radenović**

12:30– 13:30 Sesija posteru (Hodnik na spratu) / *Posters session (Upstairs lobby)*

AMF 4 / Hall 4

Moderator / *Chairman*: **prof.dr Vladimir Ilić**

10:00-11:15 Radovi / *Presentations*

12:15 – 12:30 Kafe pauza-Coffe break

Moderator / *Chairman*: **prof. dr Dušan Mitić, prof. dr Sandra Radenović**

12:30– 13:30 Sesija posteru (Hodnik na spratu) / *Posters session (Upstairs lobby)*

13:30 – 13:45 Kafe pauza / *Coffee break*

13:45 – 14:00

Plenarni rad – Zaključni rad Konferencije / Plenary – End of Conference

Moderator / Chairman: prof. dr Goran Kasum

AMF I / Hall 1

PETAK / FRIDAY – 11. decembar 2015.

RAD PO SESIJAMA / WORK IN SESSION

SESIJA 1 / SESSION 1

**Psiho-socijalni aspekti primene fizičke aktivnosti
*Psycho-social aspects of physical activity application***

AMF 1 / Hall 1

17:30 – 19:15

Moderator / Chairman: prof. dr Ana Orlić

17:30 - 17:35	Uvodna reč / <i>Introduction</i>	
17:35 - 17:50	Natasa Sturza Milic Tanja Nedimovic Aleksandar Stojanovic	Research of the preschool teachers' and parent's opinion on the importance of physical activity for the prevention of peer violence
17:50 - 18:05	Marjan Malcev	The influence of motor abilities on sociometric status of the group at male students of 12 years old
18:05 - 18:20	Marija Zegnal Koretić Aleksandar Ivanovski Nevenka Breslauer	The sports coach and his role as an educator of children and young adults
18:20 - 18:35	Aleksandra Zdravković Sandra S. Radenović	Mišljenje studenata o potrebi usvajanja zdravih životnih navika
18:35 - 18:50	Dušanka Lazarević Ljiljana B. Lazarević Snežana Radisavljević Janjić	Psihološki korelati uključenosti studentkinja u sport i vežbanje
18:50 - 19:05	Marko Vidnjević Urška Gašperin Armin Paravlić	Physical-cognitive techniques for adults in transition from late middle age to early old age
19:05 - 19:15	Završna reč / <i>Conclusions</i>	

RAD PO SESIJAMA / *WORK IN SESSION*
SESIJA 2 / SESSION 2
 Istraživačko-metodološki aspekti efekata primene
 fizičkih aktivnosti u sportu
*Research-methodological aspects of the effects of
 physical activity application in sport*

AMF II / Hall 2

17:30 – 19:30

Moderator / *Chairman*: **prof. dr Irina Juhas**

17:30 - 17:35	Uvodna reč / <i>Introduction</i>	
17:35 - 17:50	Nenad Djuricic Daniel Hahn	Influence of different isometric preloads on eccentric force enhancement and muscle activity
17:50 - 18:05	Saša Đurić Milena Živković Aleksandar Nedeljković	Pouzdanost i konkurentna validnost parametra maksimalne sile dobijenog iz linearne relacije sila-brzina
18:05 - 18:20	Milena Živković Saša Đurić Aleksandar Nedeljković	Relacija sila-brzina u rutinskim testiranjima mišića nogu: evaluacija parametara maksimalne sile
18:20 - 18:35	Nikola J. Majstorović Olivera M. Knezevic Milan B. Jelić Slađan Milanović Saša R. Filipović Dragan M. Mirkov	Razlike u perifernim i supraspinalnim adaptacijama nakon tri tipa akutnog isometrijskog treninga jačine
18:35 - 18:50	Saša Bubanj Dušan Filipović Mladen Živković Ratko Stanković Borislav Obradović	Metrijske karakteristike mernih instrumenata za utvrđivanje eksplozivne snage mišića
18:50 - 19:05	Goran Bošnjak Gorana Tešanović Ilona Mihajlović Vladimir Jakovljević Slaven Kršić ¹	Statičko i dinamičko rastezanje kao priprema za sprintersko trčanje
19:05 - 19:20	Jelena Vukosavljević Saša Bubanj Danijela Živković Veselin Jakovljević Milan Stojić Katarina Nejić	Povezanost eksplozivne snage i telesnog sastava rukometaša starosti 14-16 godina u zavisnosti od igračke pozicije
19:20 - 19:30	Završna reč / <i>Conclusions</i>	

RAD PO SESIJAMA / *WORK IN SESSION*

SESIJA 3 / *SESSION 3*

Istraživačko-metodološki aspekti efekata primene fizičkih aktivnosti u fizičkom vaspitanju i rekreaciji

Research-methodological aspects of the effects of physical activity application in PE and recreation

AMF III / *Hall 3*

17:30 – 19:30

Moderator/ *Chairman*: **prof. dr Snežana Radisavljević Janjić**

17:30 - 17:35	Uvodna reč / <i>Introduction</i>	
17:35 - 17:50	Suzović Dejan Savičević Dejan	Parametri plivačkih sposobnosti učenika osnovne škole
17:50 - 18:05	Rade Jovanović Saša Bujanj Mladen Živković Ratko Stanković Borislav Obradović Tanja Cvetković	The differences in the explosive muscle strength of football players and non-athletes in high school age
18:05 - 18:20	Bojan Mitrović Miroslav Marković Saša Pantelić Katarina Herodek	Razlike u motoričkim sposobnostima učenika srednjih škola iz gradskih i seoskih područja opštine Lebane
18:20 - 18:35	Josip Cvenić	The effects of theoretical classes on health related fitness of female students
18:35 - 18:50	Andrea Aleksić Dragana Aleksić Jadranka Kocić Slađana Stanković	Efekti primene elemenata ritmičke gimnastike u nastavi fizičkog vaspitanja na razvoj statičke snage kod učenika mlađeg školskog uzrasta
18:50 - 19:05	Slobodanka Dobrijević Lidija Moskovljević Ivana Milanović	Značaj uključivanja devojčica mlađeg školskog uzrasta u rekreativni program ritmičke gimnastike
19:05 - 19:20	Sanja Mandarić Zorana Miljkovac Lidija Moskovljević Milinko Dabović	Efekti različitih vrsta plesova na koordinaciju u ritmu
19:20 - 19:30	Završna reč / <i>Conclusions</i>	

RAD PO SESIJAMA / *WORK IN SESSION*
SESIJA 4 / SESSION 4
Biomedicinski aspekti primene fizičke aktivnosti
Biomedical aspects of physical activity application

AMF IV / Hall 4

17:30 – 18:45

Moderator/ *Chairman*: **prof. dr Marina Đorđević Nikić**

17:30 - 17:35	Uvodna reč / <i>Introduction</i>	
17:35 - 17:50	Ksenija Bubnjević Lela Marić Stevan Grujić Đorđe Kozomara Mile Ranđelović	Uticaj kontinuiranog fizičkog fežbanja aerobnog tipa na nivo prolaktina u krvi tokom dojenja
17:50 - 18:05	Armin Paravlić Rado Pišot Marko Vidnjević Stefan Đorđević	Uticaj nivoa fizičke aktivnosti na stepen uhranjenosti adolescenata- sistematsko pregledno istraživanje
18:05 - 18:20	Dejan Ilić Gligor Škrpan Danica Janićijević	Analiza telesnog statusa odbojkašica uzrasta od 11 do 14 godina
18:20 - 18:35	Boris Glavač Marina Djordjević Nikić Miloš Maksimović Dragan Strelić Saša Vajić	Životne navike, morfološki i motorički razvoj učenika vojne gimnazije, tokom četvorogodišnjeg školovanja
18:35 - 18:45	Završna reč / <i>Conclusions</i>	

SUBOTA/ SATURDAY– 12. decembar 2015.

RAD PO SESIJAMA / WORK IN SESSION

SESIJA 5 / SESSION 5

Psiho-socijalni aspekti primene fizičke aktivnosti
Psycho-social aspects of physical activity application

AMF I / Hall 1

10:00-11:45

Moderator / Chairman: prof. dr Branka Savović

10:00 - 10:05	Uvodna reč / <i>Introduction</i>	
10:05 - 10:20	Živorad Marković Dragoljub Višnjić Aleksandar Ignjatović	Stavovi učenika mlađeg školskog uzrasta o đačkoj torbi
10:20 - 10:35	Sandra Radenović Branka Savović	Supkultura navijača stranih fudbalskih klubova u Srbiji
10:35 - 10:50	Ružena Popović Evdokia Samouilidou Milan Dolga	Quality of life in school-age children and youth
10:50 - 11:05	Tea Pirsl Danica Pirsl Esad Besirovic Sophia Tripagnastopoulos	Disability advertising - fair play or foul play
11:05 - 11:20	Goran Kasum Marijana Mladenović	Anksioznost i takmičarsko samopouzdanje kod sportista sa i bez invaliditeta
11:20 - 11:35	Ana Orlić Ana Gromović Dušanka Lazarević Snežana Radisavljević Janić	Konstrukcija skale stavova prema fizičkom vaspitanju
11:35 - 11:45	Završna reč / <i>Conclusions</i>	

12:15 – 12:30 Kafe pauza-Coffe break

12:30-13:30 Sesija posteri (Hodnik na spratu) / Posters session (Upstairs lobby)

RAD PO SESIJAMA / *WORK IN SESSION*
SESIJA 6 / SESSION 6
 Istraživačko-metodološki aspekti efekata primene
 fizičkih aktivnosti u sportu
*Research-methodological aspects of the effects of
 physical activity application in sport*

AMF II / Hall 2

10:00-12:15

Moderator / *Chairman*: **prof. dr Bojan Leontijević**

10:00 - 10:05	Uvodna reč / <i>Introduction</i>	
10:05 - 10:20	Feđa Piščević Dejan Gavrilović Milivoj Dopsaj	Analiza takmičarske aktivnosti vrhunskih kik boksera u okviru međunarodnih takmičenja
10:20 - 10:35	Marković Milan Dopsaj Milivoj	Analiza takmičarske aktivnosti rvača slobodnim stilom na prvim evropskim olimpijskim igrama 2015. Godine
10:35 - 10:50	Branko Aleksić Vladimir Timotijević Miloš Mudrić Srećko Jovanović Dejan Suzović	Razlike motoričkih sposobnosti karatista juniorskog uzrasta prema specijalizaciji
10:50 - 11:05	Goran Nešić Nikola Majstorović Zoran Savić Jelena Simić	The impact of a two month brake from training on motor abilities in 13 to 14 years old female volleyball players
11:05 - 11:20	Aleksandar Janković Bojan Leontijević Miloš Pejović	Tactical efficiency of the winning football national teams at the 2010 and 2014 fifa world cup
11:20-11:35	Bojan Leontijević Aleksandar Janković Nikola Čosić	Comparative analysis of tactical manifestation of the football players of partizana in the games of european competitions and the serbian superliga
11:35-11:50	Radivoje Radaković Filipović Nenad Vulović Radun Bojan Leontijević	The reliability of motion analysis at elite football players during the match measured by the tracking motion software system
11:50-12:05	Zoran Savić Goran Nešić Vladimir Grbić	Razlike u ispoljavanju opštih i specifičnih motoričkih sposobnosti odbojkašica i netreniranih devojčica starosti 15 godina
12:05 - 12:15	Završna reč / <i>Conclusions</i>	

12:15 – 12:30 Kafe pauza-Coffe break

12:30 -13:30 Sesija poster (Hodnik na spratu) / *Posters session (Upstairs lobby)*

RAD PO SESIJAMA / *WORK IN SESSION*

SESIJA 7 / *SESSION 7*

Istraživačko-metodološki aspekti efekata primene fizičkih aktivnosti u fizičkom vaspitanju i rekreaciji

Research-methodological aspects of the effects of physical activity application in PE and recreation

AMF III / *Hall 3*

10:00-12:10

Moderator / *Chairman*: **prof. dr Ivana Milanović**

10:00 - 10:05	Uvodna reč / <i>Introduction</i>	
10:05 - 10:20	Aldvin Torlaković Arneta Borovac-Bekaj Faris Rašidagić Roman Kebat Ekrem Čolakhodžić	Efficiency of the programme of inclusive physical education in children with disabilities – swimming school example
10:20 - 10:35	Bojan Pejčić Ana Orlić Ivana Milanović	Stavovi nastavnika fizičkog vaspitanja prema inkluziji dece sa razvojnim smetnjama
10:35 - 10:50	Katarina Horvat Tihomir Vidranski Ivana Klaričić Zvonimir Tomac Josip Cvenić	A total weekly difference in physical education class - activities between 3rd and 4th grade pupils of elementary school
10:50 - 11:05	Duško Spasovski Stanimir Stojiljković	Assesment of movement quality and quantity in fitness – corefitmax
11:05 - 11:20	Dunja Antić Dušan Mitić	Motivacija žena za grupne fitnes programe
11:20 - 11:35	Violeta Novaković Bojan Ugrinić Saša Pantelić	Program aktivnosti na rekreativnoj nastavi na primeru o.š «Nada Popović» kruševac
11:35 - 11:45	Dragiša Mladenović	Specifičnosti obuke skijanja kod dece
11:45-12:00	Bojan Ugrinić Aleksandar Ivanovski Marija Zegnal Koretić Srđan Milosavljević	Značaj i uloga faza menadžmenta u analizi sportsko rekreativnog kampa
12:00-12:15	Vladimir Miletić Zorica Davidović Irina Juhas	Aktivnosti u prirodi u funkciji zaštite životne sredine na primeru mapiranja divljih deponija na izletničkoj turi
12:15-12:20	Završna reč / <i>Conclusions</i>	

12:15 – 12:30 Kafe pauza-Coffe break

12:30 -13:30 Sesija poster (Hodnik na spratu) / *Posters session (Upstairs lobby)*

RAD PO SESIJAMA / *WORK IN SESSION*
SESIJA 8/ SESSION 8
 Biomedicinski aspekti primene fizičke aktivnosti
Biomedical aspects of physical activity application

AMF IV / Hall 4

10:00-11:15

Moderator / *Chairman*: **prof. dr Vladimir Ilić**

10:00 - 10:05	Uvodna reč / <i>Introduction</i>	
10:05 - 10:20	Stanimir Stojiljković Goran Nerandžić Dušan Mitić Vladimir Ilić	Uporedna analiza maksimalne potrošnje kiseonika kod žena pušača i nepušača u fitnessu
10:20 - 10:35	Stefan Đorđević Bojan Jorgić Marko Aleksandrović Igor Stanojević Armin Paravlić	Zastupljenost deformiteta ravnog stopala kod dece od 6 do 14 godina u Srbiji: sistemsko pregledno istraživanje
10:35 - 10:50	Danica Janićijević Milena Mijailović Dejan Ilić	Analiza statusa stopala dece mlađeg školskog uzrasta
10:50 - 11:05	Mourtzios Christos Athaniailidis Ioannis Kellis Eleftherios	Plantar pressures in simulated tennis movements at different surfaces
11:05 - 11:15	Završna reč / <i>Conclusions</i>	

12:15-12:30 Kafe pauza-Coffe break

12:30 -13:30 Sesija posteru (Hodnik na spratu) / *Posters session (Upstairs lobby)*

13:45 – 14:00 Plenarni rad – Zaključni rad Konferencije / *Plenary – End of Conference*

Moderator / *Chairman*: **prof. dr Goran Kasum**

AMF I / Hall 1

**SUBOTA/ SATURDAY– 12. decembar 2015.
POSTERI / POSTERS**

12:30- 13:30 Sesija posteri / Posters Sessions

Moderator / *Chairman*: **prof. dr Dušan Mitić, prof. dr Sandra Radenović**

1.	Aleksandar Ignjatović, Živorad Marković, Boban Janković	Stavovi roditelja o glavnim barijerama za uključivanje fudbala kao aktivnost za devojčice mlađeg školskog uzrasta
2.	Saša Semeredi, Valdemar Štajer, Tatjana Jezdimirović, Sergej Ostojić	Dodaci ishrani u prevenciji i lečenju mišićne atrofije
3.	Tatjana Jezdimirović, Saša Semeredi, Valdemar Štajer, Sergej Ostojić	Autonomni nervni sistem i gojaznost: aktuelna stanovišta
4.	Valdemar Štajer, Tatjana Jezdimirović, Saša Semeredi, Sergej M. Ostojić	Mogući anabolički efekti suplementacije kretinom kod ljudi
5.	Milovan Ljubojević, Jovan Gardašević, Rajko Milašinović, Ivan Vasiljević, Danilo Bojanić, Aldijana Muratović, Marija Bubanja	Efekti nastavnog programa iz fizičkog vaspitanja na motoričke sposobnosti učenika završnog razreda osnovne škole
6.	Stela Srpak, Zvonimir Tomac, Tihomir Vidranski	Application of modify crofit battery in the elementary school
7.	Nenad Koropanovski, Radivoje Janković, Raša Dimitrijević	Trend promena inicijalnog nivoa motoričkih sposobnosti studetkinja policijske akademije
8.	Hristyana Guteva, Plamen Nyagin, Iva Dimova	Study the effect of coordination exercises on speed development of football player u17
9.	Grigor Gutev	Modelling 110 m hurdle stride based on sport result factors (junior age group)
10.	Rumiana Karapetrova	Quantitative-qualitative evaluation of shot put throwers sport and technical abilities
11.	Iva Dimova, Hristyana Guteva, Jelio Dobrev, Valentin Filiov, Grigor Gutev	Running speed dynamics in the discipline 110 m hurdles – men-
12.	Petrović Lana, Kocić Jadranka, Aleksić Dragana, Stanković Slađana	Sportsko-rekreativni objekti i menadžment kao činilac uspeha u sportsko-rekreativnim aktivnostima
13.	Miloš Popović, Ivana Đorđević, Ružena Popović, Jadranka Kocić	Why, where, what and how to assess motor competence of individuals in adapted physical education?
14.	Vassilios Panoutsakopoulos, Apostolos S.Theodorou, Mariana C. Kotzamanidou, Marko Aleksandrović, Emmanouil Skordilis, Iraklis A. Kollias	Biomechanical parameters of top european t11 triple jumpers
15.	Jovan Gardašević, Ivan Vasiljević, Danilo Bojanić, Aldijana Muratović, Milovan Ljubojević, Rajko Milašinović, Marija Bubanja	Six-week preparation period and its effects on coordination transformation with football players under 16
16.	Fehim Joshan, Ivaylo Lazarov, Romyana Karapetrova	Assessment of functional effectiveness with athletes in middle distance running
17.	Ivaylo Lazarov	RESEARCH OF ANTHROPOMETRIC MARKS WITH MARATHON RUNNERS
18.	Giurka Gantcheva	Ensemble routines in rhythmic gymnastics - qualification for the olympic games – 2016
19.	Vessela Ivanova, Giurka Gantcheva	Survey the effectiveness of a methodology for optimizing the level of motor quality speed at 10-12 years old, dealing with rhythmic gymnastics
20.	Sanela Pacić, Radmila Nikić, Fadilj Eminović, Radmila Nikić, Fadilj Eminović	Hronične bolesti kao determinanta u planiranju fizičkih aktivnosti kod osoba sa daunovim sindromom

SESIJA 1 / SESSION 1

Psiho-socijalni aspekti primene fizičke aktivnosti
Psycho-social aspects of physical activity application

STAVOVI UČENIKA MLAĐEG ŠKOLSKOG UZRASTA O ĐAČKOJ TORBI

Živorad Marković¹; Dragoljub Višnjić²; Aleksandar Ignjatović¹

¹Fakultet pedagoških nauka, Jagodina, Srbija

²Fakultet sporta i fizičkog vaspitanja, Beograd, Srbija

Uvod

Đačka torba uvek asocira na školske dane i predstavlja početak jednog važnog perioda u životu. Preteška đačka torba je veći problem, naročito učenika mlađeg školskog uzrasta. Masa đačke torbe koju nose učenici mlađeg školskog uzrasta u Srbiji prelazi 10% telesne mase učenika i ne kreće se u dozvoljenim preporukama Svetske zdravstvene organizacije. Masa đačke torbe u većini istraživanja kreće se preko 15% telesne mase učenika (Fošnarić i Delčnjak, 2007; Paušić i Kujundžić, 2008; Marković, Bogdanović i Trkulja-Petković, 2011). Cilj istraživanja je utvrditi stavove učenika mlađeg školskog uzrasta prema problemima vezanim za đačku torbu.

Metod

Istraživanje je transverzalnog karaktera realizovano u 33 seoske i gradske osnovne škole na teritoriji Beogradskog, Šumadijskog, Braničevskog i Pomoravskog okruga u drugom polugodištu školske 2014/2015. Uzorak ispitanika obuhvatio je 307 učenika podeljenih na četiri karakteristična subuzoraka u odnosu na uzrast i to: 18 učenika prvog razreda, 92 drugog, 52 trećeg i 145 učenika četvrtog razreda. Za prikupljanje podataka primenjen je anketni upitnik sa sedam pitanja. Upitnik je popunjavao za vreme redovnih časova nastave fizičkog vaspitanja uz prisustvo učitelja. Priroda i distribucija dobijenih rezultata odredili su adekvatne statističke procedure. U okviru kvantitativne analize podataka primenjeno je: procentualno izražavanje frekvencija i hi-kvadrat test (χ^2) za testiranje hipoteza o značajnosti razlika.

Rezultati sa diskusijom

Dobijeni rezultati ukazuju da najveći procenat učenika seoskih i gradskih škola dolazi u školu pešice, jedan manji deo autobusom, a najmanji autom. Dužina pređenih kilometara je raznolika i kreće se od nekoliko stotina metara do tri i više kilometara. Skoro svi učenici đačku torbu nose na oba ramena. Pored mase, problem predstavlja i torba koja seže ispod kukova učenika i uslovljava kompenzatorne pokrete prema napred, što predstavlja ozbiljan činioc u formiranju kifotičnog lošeg držanja. Sve bi to izgledalo drugačije, kada bi roditelji pomagali u pakovanju torbe i pripremi učenika za polazak u školu. Masu torbe značajno opterećuju radni listovi i preteški udžbenici koje učenici u većini slučajeva nose svakodnevno. Učenici mlađeg školskog uzrasta ukazuju da su njihove torbe teže, a u većini dana u nedelji i preteške.

Zaključak

Đačka torba ne predstavlja problem samo učenika, već porodice, škole, grada i države. Preko potrebni đački ormarići su najzastupljeniji u beogradskim školama, dok će se u manjim seoskim školama sa kombinovanim odeljenjima na njih dugo čekati. Učenicima trebaju pomoći učitelji, roditelji, Školske uprave i Ministarstvo prosvete, nauke i tehnološkog razvoja. Sve dok svi ovi faktori ne budu u funkciji deteta, ono će grcati pod teretom preteških torbi.

Ključne reči: stav, učenik, mlađi školski uzrast, đačka torba

Literatura

1. Marković, Z., Bogdanović, Z., Trkulja-Petković, D. (2011). What does a schoolbag of primary school girl pupils look like. *Acta Kinesiologica*. 5(1), 83-86. Travnik: University of Travnik. e-ISSN: 1840-3700 p-ISSN: 1840-2976 UDK: 796
2. Fošnarić, S., Delčnjak, I. S. (2007). Physical overburdening of pupils with the weight of school bags during the period of passing from eight year primary school to nine year primary school. *Informatologia*, 40(3), 207-210.

THE ATTITUDES OF YOUNGER SCHOOL AGE STUDENTS TOWARDS A SCHOOLBAG

Zivorad Markovic¹; Dragoljub Visnjic²; Aleksandar Ignjatovic¹

¹ Faculty of Pedagogical Science, Jagodina, Serbia

² Faculty of Sport and Physical Education, Belgrade, Serbia

Introduction

A schoolbag is always associated with schooldays and represents the beginning of a very important period in life. A too heavy schoolbag has always been a problem, especially for pupils in lower grades. The weight of a schoolbag which is carried by younger school age pupils in Serbia is over 10% of a body mass of a pupil and it is over the recommended values of the World Health Organisation. The weight of a schoolbag is in most studies over 15% of a body mass of a student (Fasnarić and Delčnjak 2007; Pausić and Kujundžić, 2008; Marković, Bogdanović and Trkulja-Petković, 2011). The goal of this study was to determine the attitudes of younger school pupils towards their problems connected with a schoolbag.

Method

The research has transversal character and it was realized in 33 village and town primary schools on the territory of Belgrade, Šumadija, Braničevo and Pomoravlje region in the second term of 2014/2015 school year. The sample consisted of 307 students divided into four characteristic sub samples in relation to their age, and these were: 18 first grade pupils, 92 second grade pupils, 52 third grade pupils and 145 fourth grade pupils. A seven question survey was used for the collecting of the data. The survey was filled during regular physical education classes in the presence of a teacher. The nature and the distribution of the results determined adequate statistical procedures. In the realm of quantitative analysis of the data the following was applied: percentage expressing of frequencies and hi-square test (χ^2) for the testing of hypothesis about the significance of differences.

Results with discussion

The results indicate that most students in village and town schools go to school on foot. A small number of them come to school by bus, and the smallest number of them comes to school by car. The length in kilometres is variable and goes from a few hundred meters to three and more kilometres. Almost all students carry a schoolbag on both shoulders. Besides the mass, the problem is also a schoolbag which goes under the students' hips and makes compensatory forward movements, which represents a serious factor in forming of kyphotic posture. Everything would be different, if parents helped during the packing of a schoolbag and preparation of a pupil for going to school. A schoolbag weight is significantly enlarged by workbooks and too heavy textbooks, which are carried every day to school. Pupils of younger school age say that their schoolbags are heavy and in most cases too heavy during most days of the week.

Conclusion

A schoolbag does not represent a problem only for a pupil, but also for the family, school, town and the state. The most needed school lockers are most frequent in schools in Belgrade, while in smaller village school with combined classes will wait for them for a long time. Teachers, parents, school managements and Ministry of Education, Science and Technological Development should help their pupils. Pupils will suffer under the burden of heavy bags until all these factors are in favour of children.

Key words: attitude, pupil, younger school age, schoolbag

References

1. Marković, Z., Bogdanović, Z., Trkulja-Petković, D. (2011). What does a schoolbag of primary school girl pupils look like. *Acta Kinesiologica*. 5(1), 83-86. Travnik: University of Travnik. e-ISSN: 1840-3700 p-ISSN: 1840-2976 UDK: 796
2. Fošnarič, S., Delčnjak, I. S. (2007). Physical overburdening of pupils with the weight of school bags during the period of passing from eight year primary school to nine year primary school. *Informatologia*, 40(3), 207-210.

SUPKULTURA NAVIJAČA STRANIH FUDBALSKIH KLUBOVA U SRBIJI

Sandra Radenović¹; Branka Savović¹

¹Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja, Beograd, Srbija

Uvod

Jedna od značajnijih tema koja je prisutna u brojnim istraživanjima u okviru sociologije sporta kao posebne sociološke discipline jeste supkultura navijača fudbalskih klubova. Navijači i navijačke grupe kao deo publike jesu veoma značajan element svakog sportskog događaja, te su otuda i jedna od nezaobilaznih tema u sociološkim istraživanjima. Brojni autori razmatraju klasifikacije sportske publike i tipologije navijača, kao i supkulturu navijača, i to prevashodno navijača fudbalskih klubova (Koković, 2010, Radenović, 2014), ali je supkultura navijača stranih fudbalskih klubova u Srbiji neistražena tema. Kako bismo došli do određenih saznanja vezanih za osnovne karakteristike supkulture navijača stranih fudbalskih klubova u Srbiji, sproveli smo pilot istraživanje eksplorativnog karaktera na namernom uzorku (n=30). Osnovna ideja vodilja istraživanja ticala se ispitivanja razloga zbog kojih pojedinci postaju navijači stranih fudbalskih klubova. Pretpostavili smo da je glavni razlog nezadovoljstvo rezultatima domaćeg fudbala.

Metod

Istraživanje je sprovedeno metodom anketiranja. Za potrebe ovog istraživanja konstruisan je upitnik koji se sastoji od 30 pitanja (4 pitanja zatvorenog i 26 pitanja otvorenog tipa).

Rezultati sa diskusijom

Pored opšteg nezadovoljstva rezultatima domaćeg fudbala, ispitanici navode uplitanje političke elite u rukovodstva fudbalskih klubova, te nasilje na stadionima u Srbiji kao glavne razloge zbog kojih su počeli da navijaju za strane fudbalske klubove. Ispitanici su pripadnici organizovanih navijačkih grupa koji podržavaju strane fudbalske klubove, a okupljaju se u kaficima u kojima se prate prenosi fudbalskih utakmica. Izvestan broj ispitanika navodi humanitarne akcije koje je njihova navijačka grupa organizovala ili namerava da organizuje. Većina ispitanika se bavi sportom rekreativno duži niz godina.

Zaključak

Rezultati ovog pilot istraživanja koje je osmišljeno prvenstveno kao istraživanje eksplorativnog karaktera upućuju na potencijalni društveni značaj supkulture navijača stranih klubova u Srbiji. Ovu supkulturu karakteriše ne samo privrženost određenom fudbalskom klubu, već i svest o važnosti humanitarnih akcija za društvenu zajednicu, kao i svest o zdravim stilovima života (rekreativno bavljenje sportom). Smatramo da su potrebna dalja istraživanja ove supkulture na većem uzorku ispitanika kao i uporedna istraživanja ove supkulture i supkulture navijača domaćih fudbalskih klubova u Srbiji.

Ključne reči: supkultura, navijači, fudbalski klubovi

Literatura

1. Koković, D. (2010). Društvo, nasilje, sport. Novi Sad: Mediterran Publishing.
2. Radenović, S.(2014). Sport i društvo – Sociologija sa sociologijom sporta. Sociologija sporta. Beograd: FSFV.

SUBCULTURE OF SUPPORTERS OF FOREIGN FOOTBALL CLUBS IN SERBIA

Sandra Radenović¹; Branka Savović¹

¹University in Belgrade, Faculty of Sport and Physical Education, Belgrade, Serbia

Introduction

One of the most important topics present in numerous studies within the sociology of sport as a special sociological discipline is the subculture of supporters of football clubs. Fans and supporters' groups as the part of the audience are very important element of the sport event and an unavoidable topic in sociological research. Numerous authors discuss the classification of sport's audience and typology of supporters and subculture of supporters, primarily supporters of football clubs (Koković, 2010, Radenović, 2014), but the subculture of foreign football clubs in Serbia is unknown issue. In order to collect results on the characteristics of subculture of supporters of foreign football clubs in Serbia, we conducted a pilot survey of explorative character on intentional sample (n=30). The basic idea of the research was related to the consideration of the reasons why individuals become supporters of foreign football clubs. We assumed that the main reason for that is discontent with the results of domestic football.

Methods

Research was conducted through interviewing. For this purpose, a questionnaire consisting of 30 questions (4 closed and 26 open-ended questions) was designed.

Results with discussion

Beside general discontent with the results of domestic football, respondents consider the interference of the political elite in the management of the football clubs and the violence in the stadiums in Serbia as the main reasons why they began to support foreign football clubs. Respondents are the members of organized supporters' groups that support foreign football clubs and they gather in the cafes where they can watch football matches. Certain number of respondents underlines humanitarian actions that were organized or will be organized by their supporters' group. Most of the respondents practice sport recreationally for many years.

Conclusions

The results of this pilot survey that was designed primarily as the research of explorative character indicate the potential social importance of subculture of supporters of foreign football clubs. This subculture was characterized not only by adherence to certain football club, but also by awareness regarding the importance of humanitarian activities for the community and by awareness regarding healthy lifestyles (recreational sport). We need further research of this subculture on a larger sample as well as the comparative research of this subculture and subculture of supporters of domestic football clubs in Serbia.

Key words: subculture, supporters, football clubs

References

1. Koković, D. (2010). Društvo, nasilje, sport. Novi Sad: Mediterran Publishing.
2. Radenović, S.(2014). Sport i društvo – Sociologija sa sociologijom sporta. Sociologija sporta. Beograd: FSFV.

KVALITET ŽIVOTA DECE I OMLADINE ŠKOLSKOG UZRASTA

Ružena Popović¹; Evdokia Samouilidou²; Milan Dolga³

¹ Fakultet sporta i fizičkog vaspitanja, Univerzitet u Nišu, Srbija

² Školski savetnik za Fizičko vaspitanje, Region Severno Egejskog Ostrva, Grčka

³ "Smart-Line" Agencija za Multivariajantnu Analizu, Novi Sad, Srbija

Uvod

Osnovni predmet ove studije je kratak pregled kvaliteta života dece školskog uzrasta, viših razreda, sa aspekta mogućnosti primene fizičkog vaspitanja kod dece sa zdravstvenim tegobama i prikaz trenutnog stanja kod dečaka i devojčica različitog kulturnog porekla. Razumevanjem koncepta neujednačenog razvoja i zdravstvenog stanja stvara se preduslov za realizaciju telovežbenog procesa i moguću integraciju u proces fizičkog vaspitanja, prema strukturi zdravstvenih nedostataka.

Metode

U ovom kratkom pregledu je prikazana uporedna analiza koja ukazuje na pozitivna iskustva nekih zemalja, sagledanih kao razvijene (Grčka) ili nedovoljno razvijene (Srbija) u pogledu: Institucionalnog obezbeđenja fizičkog vaspitanja (FV) i principi inkluzije u FV. Osim uporednog prikaza pozitivnih iskustava, analizirani su rezultati primene upitnika, koji ispituje stavove učenika u pogledu integracije u proces FV u našoj zemlji i Grčkoj. Upitnik je konstruisan za procenu fizičkog i psiho-socijalnog zdravlje dece, oba pola. Procena kvaliteta života je sprovedena na tri nivoa. Prvi nivo su stavke/ajtemi, dati u obliku tvrdnji/stavova. Na drugom nivou stavke se posmatraju kao čestice u okviru sub-segmenata (skala) koje pokrivaju različite dimenzije zdravlja i kvaliteta života. Sirovi skorovi svih skala (kojih ima 11) transformišu se u standardizovane, sa mogućom vrednošću od 0-100, što olakšava interpretaciju rezultata. Treći je nivo ukupnog fizičkog i psihosocijalnog zdravlja.

Rezultati i diskusija

1. *Skala fizičkog funkcionisanja* obuhvata tri važne dimenzije: samobrigu, mobilnost i aktivnosti koje iziskuju veće napore; 2. *Skala ostvarivanja socijalne uloge* procenjuje u kojoj meri fizičko zdravlje remeti svakodnevne školske aktivnosti sa drugovima; 3. *Skala globalnog zdravlja* subjektivno procenjuje prošlo, sadašnje i buduće zdravlje, kao i podložnost bolestima; 4. *Skala telesnog bola* meri intenzitet i učestalost bola, kao jednog od indikatora fizičkog zdravlja; 5. *Skala emocionalnog uticaja na roditelje* procenjuje zdravlje deteta i stepen do kog se roditelj oseća fizički i emocionalno povređen; 6. *Skala ostvarivanja socijalne uloge, u* zavisnosti od emocionalnog stanja i ponašanja; 7. *Skala samoprocene* uključuje tri esencijalne komponente: socijalnu sigurnost, školski uspeh i samopoštovanje; 8. *Skala mentalnog zdravlja* meri učestalost pozitivnih i negativnih stanja; 9. *Skala ponašanja* uključuje četiri dimenzije: agresiju, delinkvenciju, impulsivnost i socijalnu odbačenost; 10. *Skala porodičnih aktivnosti i povezanosti* procenjuje nivo ograničenja koji porodica doživljava zbog zdravstvenih tegoba deteta; 11. *Skala promena u zdravlju* - registruju promene u zdravlju u odnosu na prethodnu godinu.

Zaključak

Analiza podataka ukazuje na specifične polne razlike u mogućnosti primene fizičkih aktivnosti kod dece sa zdravstvenim tegobama, sa posebnim prikazom stanja kod dečaka i devojčica različitog kulturnog i socijalnog porekla u Srbiji (region Niš) i Grčkoj (Region Severno Egejskog Ostrva).

Ključne reči: Kvalitet života; Upitnik; Samoprocena; Likertova skala; Školska deca

Literatura

1. Kvirgić, S. (2001). *Kvalitet života školske dece i omladine*. Beograd: Zadužbina Andrejević, TODRA.
2. Taras, H. (2005). Physical activity and student performance at school. *Journal of School Health*, 75(6), 214-218.

QUALITY OF LIFE IN SCHOOL-AGE CHILDREN AND YOUTH

Ružena Popović¹; Evdokia Samouilidou²; Milan Dolga³

¹ Faculty of Sport and Physical Education, University of Nis, Serbia

² Ministry of Education, Department of Creta, Athens, Greece

³ "Smart-Line" Agency for Multivariate Data Analysis, Novi Sad, Serbia

Introduction

The main objective of this study is short survey on quality of life of upper elementary school-age children from the aspect of possibilities of physical education application in children with health problems and the current status in boys and girls of diverse cultural backgrounds. Understanding the concept of impaired health is a precondition for the realization of the training process and possible integration in the process of physical education, according to the structure of health disadvantages.

Method

In this short survey is provided the comparative analysis which shows the positive experiences of some countries considered as developed (Greece) or less developed (Serbia) in terms of: Institutional providing physical education (PhE) for health weakened and the principles of inclusion in PhE. Besides the concordance of positive experience are analyzed results of the questionnaire, which examines the attitudes of school-age students in the integration process of PhE in home country (Serbia) and Greece. The questionnaire was designed to assess the physical and psychosocial health of children of both sexes. Quality of Life assessment is performed at three levels. The 1st level are items that are given in the form of a statement. At the 2nd level and item-like particles are observed in the sub-segments that cover different dimensions of health and quality of life. The raw scores of each scale are transformed into standardized with a possible value of 0-100, which facilitates the interpretation of the results. The 3rd level is about total physical and psychosocial health.

Results with discussion

The *scale of physical functioning* includes three important dimensions: self-care, mobility and activities that require more efforts; The *scale implementation of social roles* assesses the extent to which physical health interfere with everyday school activities with friends; The *scale of global health* evaluate past, present and future health and susceptibility to disease; The *scale of bodily pain* measure the intensity and frequency of pain as one of the indicators of physical health; The *scale of emotional impact on the parents* estimates health of the child and the degree to which a parent feels physically and emotionally affected; The *scale implementation of social roles*, depending on the emotional state and behavior; *Self-rating scale* includes three essential components: social security, academic skills and self-esteem; The *scale of mental health* measure the frequency of positive and negative states; *Scale of behavior* include four dimensions of behavior: aggression, delinquency, impulsivity, and social rejection; The *scale of family activities and family cohesion* assess the level of constraints for families experiencing child health; The *scale of change in health* register changes in health over the previous year.

Conclusion

Analysis of data point out on specific differences in possibility of physical activity application in children with medical conditions, with special overview of boys and girls from diverse cultural and social backgrounds, in Serbia (region of Nis) and Greece (region of Creta).

Key words: Quality of Life; Questionnaire; Self-evaluation; School-age children

References

1. Kvrđić, S. (2001). *Kvalitet života školske dece i omladine*. Beograd: Zadužbina Andrejević, TODRA.
2. Taras, H. (2005). Physical activity and student performance at school. *Journal of School Health*, 75(6), 214-218.

REKLAMIRANJE INVALIDNOSTI - FER-PLEJ ILI PRLJAVA IGRA

Tea Pirs¹; Danica Pirs²; Esad Beširović³; Sofija Tripagnastopoulos⁴

¹Filozofski fakultet, Novi Sad, Srbija

^{2,3}Fakultet sporta, Niš, Srbija

⁴Filološki fakultet, Barselona, Španija

Uvod

Bezbroj vladinih i dobrotvornih organizacija kao i medijskih kuća troše ogromne količine resursa držeći se premise da je putem medija moguće edukovati i stvarati kulturne vrednosti i stavove. Autori društvenih teorija učenja, medijskih prikaza i teorija zavisnosti podržavaju tu premisu kao što to čini i literatura o rehabilitaciji.

Metode

Metodom Pola Hanta identifikuje se 10 stereotipa koje mediji koriste da predstave osobe sa posebnim potrebama svrstavajući ih u kategoriju: jedno ili patetično, predmet radoznalosti /nasilja, zlokobno/zlo, super bogalj, dobar za atmosferu, smešan, svoj najgori neprijatelj, kao teret, kao ne-seksualno, nije u stanju da učestvuje u svakodnevnom životu.

Rezultati sa diskusijom

U svetu oglašavanja rezultati ovog istraživanja ukazuju na to da slike ljudi sa posebnim potrebama čine veći deo ukupnog reklamnog okruženja nego što je to bio slučaj u 2001. godini, uprkos teškoćama u vezi sa kontekstualnim elementima u oglašavanju i javnom zagovaranju građanskih parnica.

Zaključak

Ako uporedimo stopu AI oglašavanja, kao deo ukupnog oglašavanja u medijskom okruženju, sa procentom odraslih klasifikovanih kao osobe sa posebnim potrebama u ukupnoj američkoj populaciji, osobe sa posebnim potrebama su nedovoljno zastupljene (1,7% iz ove studije u poređenju sa 12% prema Kompendijumu za osobe sa posebnim potrebama iz 2009. god). Ako ravnopravna zastupljenost jeste cilj, taj cilj nije ostvaren. Ako prihvatanje upotrebe prikazivanja osoba sa posebnim potrebama u oblasti reklamiranja proizvoda kao deo reklamne industrije jeste cilj, onda je učinjen značajan napredak. Tako bismo mogli tvrditi da se ljudsko ponašanje ipak vraća svojoj imanentnosti, i da se advertajzing osoba sa posebnim potrebama može označiti kao fer-plej ponašanje.

Ključne reči: oglašavanje osoba sa posebnim potrebama, sport, fer plej ponašanje, nesportsko ponašanje, stereotipi.

Literatura

1. Saito, S and Ishiyama, R. (2005). Disability and Society 20(4), 437-451,
2. Scope. (2001). Portrayal of disabled people.

DISABILITY ADVERTISING - FAIR PLAY OR FOUL PLAY

Tea Pirs1; Danica Pirs2; Esad Besirovic3; Sophia Tripagnastopoulos4

¹Faculty of Philosophy, Novi Sad, Serbia

^{2,3} Faculty of Sport, Nis, Serbia

⁴ Faculty of Philology, Barcelona, Spain

Introduction

A myriad of government organizations, charities, advocacy groups and media organizations are expending enormous amounts of resources following the premise that media are a powerful educator for cultural values and attitudes. Social learning theory, cultivation and media dependency theory all support that premise as does the rehabilitation literature.

Methods

Paul Hunt method identified 10 stereotypes that the media use to portray disabled people these being categorized as pitiable or pathetic, an object of curiosity/violence, sinister/evil, super cripple, as atmosphere, laughable, his/her own worst enemy, as a burden, as non-sexual, unable to participate in daily life.

Results with discussion

In a world of advertising the results of this study suggest that images of people with disabilities comprise a bigger part of the overall advertising environment than they were in 2001 despite the difficulties associated with contextual elements in an ad and the public outrage/civil suits.

Conclusion

If we compare the appearance rate for AI advertising, as part of the total advertising environment, to the percentage of adults classified as disabled in the total U.S. population based, people with disabilities are very much under-represented (1.7% from this study as compared to 12% according to the 2009 Disability Compendium). If equal representation is the goal, we are not there yet. If acceptance of the use of disabled portrayals in general product advertising on the part of the advertising industry is the goal, then much progress has been made. Thus we could claim that human behavior revisiting was finally successful and disability advertising could be labeled as a fair play.

Key words: disability advertising, sport, fair play, foul play, stereotypes.

References

1. Saito, S and Ishiyama, R. (2005). Disability and Society 20(4), 437-451,
2. Scope. (2001). Portrayal of disabled people.

ANKSIOZNOST I TAKMIČARSKO SAMOPOUZDANJE KOD SPORTISTA SA I BEZ INVALIDITETA

Goran Kasum¹; Marijana Mladenović²

¹ Fakultet sporta i fizičkog vaspitanja, Beograd, Srbija

² Fakultet za fizičku kulturu i menadžment u sportu, Beograd, Srbija

Uvod

Psihološki faktori koji u takmičarskoj situaciji posebno mogu da utiču na postignuće su, kognitivna i somatska anksioznost i takmičarsko samopouzdanje. Cilj ovog istraživanja bio je da se ispita da li se sportisti sa invaliditetom razlikuju od sportista bez invaliditeta u pogledu anksioznosti i samopouzdanja u takmičarskoj situaciji.

Metod

U istraživanju je učestvovalo 70 ispitanika, 18 sa invaliditetom i 52 bez invaliditeta, starosti od 14 do 60 godina, oba pola. Primenjen je upitnik Competitive State Anxiety Inventory II. Podaci su obrađeni deskriptivnom statistikom i analizom varijanse (ANOVA), u statističkom programu SPSS 22.

Rezultati sa diskusijom

Rezultati pokazuju da se sportisti sa invaliditetom i sportisti bez invaliditeta razlikuju u pogledu kognitivne anksioznosti (veću kognitivnu anksioznost pokazuju sportisti sa invaliditetom: $F=8,180$; $p<0,01$) i takmičarskog samopouzdanja (veće samopouzdanje pokazuju sportisti bez invaliditeta: $F=5,052$; $p<0,05$), dok u odnosu na nivo somatske anksioznosti značajnih razlika nema ($F=2,984$; $p<0,09$). Postoji veliki broj istraživanja koja su ispitivala psihološko stanje sportista sa invaliditetom u situaciji takmičenja, a nalazi su vrlo različiti i uglavnom ukazuju da značajnijih razlika u odnosu na sportiste bez invaliditeta nema ili da su razlike u domenu somatske anksioznosti i samopouzdanja (Bačanac i sar, 2014; Campbell & Jones, 1997). Ovo istraživanje ističe značaj kognitivne anksioznosti.

Zaključak

Potrebno je ispitati potencijalnu specifičnost kognitivne anksioznosti kod sportista sa invaliditetom i faktora kojikoji je uslovljavaju.

Ključne reči: kognitivna anksioznost, somatska anksioznost, samopouzdanje, invaliditet

Literatura

1. Bačanac, Lj., Milićević-Marinković, B., Kasum, G. & Marinković, M. (2014). Competitive anxiety, self-confidence and psychological skills in top athletes with and without disability. *Facta Universitatis: Series Physical Education and Sport*, 12(2), 59-70.
2. Campbell, E. & Jones, G. (1997). Precompetition anxiety and self-confidence in wheelchair sports participants. *Adapted Physical Activity Quarterly*, 14, 95-107.

ANXIETY AND COMPETITIVE SELF-CONFIDENCE AMONG ATHLETES, WITH OR WITHOUT DISABILITIES

Goran Kasum¹; Marijana Mladenović²

¹University in Belgrade, Faculty of Sport and Physical Education, Belgrade, Serbia

² University Singidunum, Faculty of Physical Culture and Sport Mangemet, Belgrade, Serbia

Introduction

Cognitive and somatic anxieties and competitive self-confidence are some of the factors that can significantly affect achievement in competition settings.

The aim of this research is to investigate whether the athletes with disabilities differ from those without, in terms of anxiety and self-confidence, in competitive settings.

Method

The research was conducted on a sample of 70 athletes, 18 with and 52 without disabilities, aged from 14 to 60, both males and females.

A questionnaire used for the sample was Competitive State Anxiety Inventory II. The data were processed through descriptive statistics and analysis of variance (ANOVA), in a statistical program SPSS 22.

Results with discussion

The results indicate that there are differences between athletes with and without disabilities, in terms of cognitive anxiety ($F=8,180$; $p<0,006$) and competitive self-confidence ($F=5,052$; $p<0,028$). Whereas when it comes to somatic anxiety, research shows no significant difference ($F=2,984$; $p<0,089$).

Extensive research on psychological state of athletes with disabilities in competition settings has already existed. The results vary and mainly indicate that there are no significant differences in comparison to athletes without disabilities. Some indicate that the main differences are in the domain of somatic anxiety and self-confidence (Bačanac i sar, 2014; Campbell & Jones, 1997). This research emphasizes the importance of cognitive anxiety.

Conclusion

It is necessary to examine the potential specificity of cognitive anxiety in athletes with disabilities and the factors that condition it.

Key words: cognitive anxieties somatic anxieties, competitive self-confidence, disability

References

1. Bačanac, Lj., Milićević-Marinković, B., Kasum, G. & Marinković, M. (2014). Competitive anxiety, self-confidence and psychological skills in top athletes with and without disability. *Facta Universitatis: Series Physical Education and Sport*, 12(2),59-70.
2. Campbell, E. & Jones, G. (1997). Precompetition anxiety and self-confidence in wheelchair sports participants. *Adapted Physical Activity Quarterly*, 14, 95-107.

KONSTRUKCIJA SKALE STAVOVA PREMA FIZIČKOM VASPITANJU

Ana Orlić¹; Ana Gromović¹; Dušanka Lazarević¹; Snežana Radisavljević Janić¹

¹Fakultet sporta i fizičkog vaspitanja, Beograd, Srbija

Uvod

Stavovi učenika prema fizičkom vaspitanju (FV) predstavljaju jedan od najvažnijih faktora uključivanja učenika u nastavu i fizičke aktivnosti van škole. Imajući ovo u vidu, veoma je važno posedovati kvalitetne instrumente za njihovo merenje. Cilj istraživanja bio je da se konstruiše skala za merenje stavova učenika ranog adolescentnog perioda prema fizičkom vaspitanju.

Metod

Uzorak je činilo 547 učenika osnovnih (6. i 7. razred) i srednjih (1. i 2. razred) škola. U preliminarnom istraživanju prikupljeno je 124 stavki, od kojih su na osnovu ekspertске procene izbačene stavke koje su sličnog sadržaja, dvosmislene, nejasne ili previše specifične. Konačni instrument sastojao se od 57 petostepenih stavki Likertovog tipa, od koji je polovina bila formulisana u pozitivnom, a polovina u negativnom smeru. Pored toga, dodatnim upitnikom prikupljeni su podaci o polu, oceni iz FV i treniranju. Za eksternu validaciju korišćena je skala za ispitivanje akademskog self-koncepta u oblasti fizičkog vaspitanja.

Rezultati sa diskusijom

Analizom glavnih komponenti uz promaks rotaciju je izdvojeno 4 faktora koji objašnjavaju 45% varijase. Na osnovu matrice sklopa ovi faktori su interpretirani kao *nezadovoljstvo – zadovoljstvo*, *anksioznost – odsustvo anksioznosti*, *odsustvo aktiviteta – aktivitet* i *negativan – pozitivan stav prema nastavniku*. Dodatna analiza je pokazala da se iz navedenih skala dobija jedan faktor višeg reda koji objašnjava 67% varijanse, što ukazuje na jedinstvenost merenog konstrukta. Pokazano je da skala ima veoma dobre metrijske karakteristike: reprezentativnost (KMO = .99), pouzdanost (Cronbach Alfa = .95) i homogenost (H2 = .54). Korelacija između skale i akademskog self-koncepta je pozitivna i umerena, $r = .65$, što ukazuje da skala ima eksternu validnost. Pored toga, pokazano je da je skala povezana sa ocenom iz FV, polom učenika i treniranjem.

Zaključak

Na osnovu dobijenih rezultata može se zaključiti da Skala stavova učenika prema FV predstavlja pouzdan i validan instrument i da se može preporučiti za korišćenje u daljim istraživanjima.

Ključne reči : stavovi, skala, učenici, fizičko vaspitanje

Literatura

1. Subramaniam, P. R., & Silverman, S. (2007). Middle school students' attitudes toward physical education. *Teaching and Teacher Education*, 23(5), 602-611.
2. Zeng, H. Z., Hipscher, M., & Leung, R. W. (2011). Attitudes of high school students toward physical education and their sport activity preferences. *Journal of Social Sciences*, 7(4), 529-537.

CONSTRUCTION OF SCALE OF ATTITUDES TOWARDS PHYSICAL EDUCATION

Ana Orlić¹; Ana Gromović¹; Dušanka Lazarević¹; Snežana Radisavljević Janić¹

¹Faculty of Sport and Physical Education, Belgrade, Serbia

Introduction

Students' attitudes towards physical education (PE) are one of the most important factors of students' involvement in PE classes and physical activities outside school. Having this in mind, it is very important to possess quality instruments for their measurement. The aim of the research was to design a scale measuring attitudes of the students of early adolescent age towards physical education.

Method

The sample consisted of 547 students of elementary (6th and 7th grade) and secondary (1st and 2nd grade) schools. 124 items were gathered in the preliminary research, out of which, based on expert assessment, items of similar content, ambiguous, unclear or too specific were dropped. The final instrument comprised 57 five-degree Likert type items, half of which were formulated in positive and the second half were in negative direction. Moreover, the data on gender, PE mark and training were collected by an additional questionnaire. For external validation, a scale for assessment of academic self-concept in physical education was used.

Results with discussion

By the analysis of main components with promax rotation, 4 factors were selected which explained 45% of variance. Based on the matrix composition these factors were interpreted as *satisfaction – dissatisfaction*, *anxiety – absence of anxiety*, *absence of activity – activity* and *negative – positive attitude towards teacher*. Additional analysis showed that the said scales provide one factor of higher order which explains 67% of variance, which indicates the uniqueness of the measuring construct. It was shown that the scale has very good measuring features: representativeness (KMO = .99), reliability (Cronbach Alfa = .95) and homogeneity (H2 = .54). The correlation between the scale and academic self-concept is positive and moderate, $r = .65$, which indicates the external validity of the scale. Additionally, it was shown that the scale is linked to the PE mark, students' gender and training.

Conclusion

Based on the obtained results it can be concluded that the scale of students' attitudes towards physical education is a positive and valid instrument and can be recommended for use in further research.

Key words : attitudes, scale, skala, students, physical education

References

1. Subramaniam, P. R., & Silverman, S. (2007). Middle school students' attitudes toward physical education. *Teaching and Teacher Education*, 23(5), 602-611.
2. Zeng, H. Z., Hipscher, M., & Leung, R. W. (2011). Attitudes of high school students toward physical education and their sport activity preferences. *Journal of Social Sciences*, 7(4), 529-537.

ISTRAŽIVANJE STAVOVA VASPITAČA I RODITELJA O ZNAČAJU FIZIČKE AKTIVNOSTI U PREVENCIJI VRŠNJAČKOG NASILJA

Natasa Sturza Milić¹; Tanja Nedimović²; Aleksandar Stojanović³

¹ Visoka škola strukovnih studija za vaspitače "Mihailo Palov" Vršac

² Visoka škola strukovnih studija za vaspitače "Mihailo Palov" Vršac

³ Učiteljski fakultet u Beogradu

Uvod

U društvu u kojem živimo nasilje je veoma rasprostranjeno. Budući da je problem vršnjačkog nasilja sve prisutniji i u v.o. ustanovama, sve je veća potreba za istraživanjima koja se bave ovom problematikom, a sa ciljem da se dobiju relevantni podaci koji bi pomogli prevenciji ovakvog ponašanja. Fizička aktivnost (FA) doprinosi povećanju kvaliteta života dece i odraslih (zdravlja, samopoštovanja, socijalnih odnosa) i utiče na razvoj različitih aspekata razvoja. Naučne studije pokazuju da je FA značajno sredstvo u prevenciji vršnjačkog nasilja. Predmet ovog istraživanja bio je ispitivanje stavova vaspitača i roditelja o značaju FA u prevenciji vršnjačkog nasilja na predškolskom uzrastu.

Metod

Primenom posebno konstruisanog upitnika na uzorku od 142 vaspitača i 137 roditelja, ispitano je 12 varijabli koje su bile usmerene na ispitivanje stavova o značaju FA u prevenciji vršnjačkog nasilja. Većina skorova (kreće se u rasponu od 4.33 do 4.95 (vaspitači) i od 3.72 do 4.76 (roditelji) na petostepenoj skali Likertovog tipa (od 1 - nije značajno do 5 – veoma je značajno).

Rezultati i diskusija

Analizom dobijenih rezultata može se uočiti da je FA prepoznata kao značajno sredstvo u borbi protiv vršnjačkog nasilja. Primenom T testa za ispitivanje razlika između stavova vaspitača i roditelja uočava se da u sledećim varijablama postoji statistički značajna razlika, i to, u korist vaspitača: *FA je važna za zdravlje dece* ($t = 3.612, p = .000$); *FA je važna za razvoj socijalne interakcije* ($t = 2.531, p = .017$); *Redovna FA smanjuje nasilno ponašanje kod dece* ($t = 2.257, p = .025$); *Deca su manje nasilna posle FA* ($t = 3.734, p = .000$).

Zaključak

U ovom istraživanju, FA je prepoznata kao značajno sredstvo prevencije vršnjačkog nasilja. Analizom stavova vaspitača otvara se potreba njihove dodatne senzibilizacije i edukacije kada je u pitanju primena svakodnevnih FA i njenih oblika u prevenciji vršnjačkog nasilja. Budući da vaspitači u odnosu na roditelje značajnije prepoznaju FA kao sredstvo prevencije vršnjačkog nasilja, roditelje bi trebalo u većoj meri senzibilisati primenom različitih programa i strategija koje FA preporučuju kao sredstvo prevencije nasilja kod dece.

Ključne reči: fizička aktivnost, vršnjačko nasilje, vaspitači, roditelji

Literatura

1. Nedimović, T., Biro, M. (2013). Ko su žrtve vršnjačkog nasilja? *Zbornik instituta za pedagoška istraživanja*, 45 (1), 150-168.
2. Nedimović, T. (2014). *Agresivnost i vršnjačko nasilje – drugo dopunjeno izdanje*. Visoka škola strukovnih studija za obrazovanje vaspitača. Vršac.

RESEARCH OF THE PRESCHOOL TEACHERS' AND PARENT'S OPINION ON THE IMPORTANCE OF PHYSICAL ACTIVITY FOR THE PREVENTION OF PEER VIOLENCE

Natasa Sturza Milic¹; Tanja Nedimovic²; Aleksandar Stojanovic³

¹ Preschool Teacher Training College „Mihailo Palov“ Vrsac, Serbia

² Preschool Teacher Training College „Mihailo Palov“ Vrsac, Serbia

³ Teacher Training Faculty in Belgrade

Introduction

In the society in which we live violence is common. Since the problem of peer violence is becoming ever more present in the educational institutions the need for research in this area is also growing, with the goal to gather relevant data which would help in the prevention of such behavior. Physical activity (PA) contributes to the increase in life quality for both children and adults (health, self-confidence, social relationships) and influences the development do different aspects of child development. Scientific studies show that PA is an important means in the prevention of peer violence. The subject of this research is the study of preschool teachers' and parents' opinion on the importance of PA for the prevention of peer violence at the preschool age.

Method

By implementing a specially constructed questionnaire on a sample of 142 preschool teachers and 137 parents, 12 variables directed towards the study of the importance of PA for the prevention of peer violence were examined. Most of the scores (which move in the range from 4.33 to 4.95 (preschool teachers) and from 3.72 to 4.76 (parents)) were on the five level Likert type scale (from 1 – it is not important to 5 it is very important).

Results with discussion

By analyzing the gathered results it was observed that PA was recognized as an important means against peer violence. By implementing the t-test for analyzing differences between preschool teachers and parents it was observed that a significant difference exists in the following variables in favor of the preschool teachers: *PA is important for the children's health* ($t = 3.612, p=.000$); *FA is important for the development of social intelligence* ($t = 2.531, p=.017$); *Regular FA decreases violent behavior in children* ($t = 2.257, p=.025$); *Children are less violent after FA* ($t = 3.734, p=.000$).

Conclusion

In this research, FA was recognized to be an important means for the prevention of peer violence. From the preschool teachers' opinion analysis a need for additional sensitization and education when it comes to implementing every day PA and its forms in the prevention of peer violence has arisen. Since preschool teachers rate higher the importance PA as a means of peer violence prevention in comparison to parents, parents should be sensitized to the application of different programs and strategies which are recommended as a means of peer violence prevention.

Key words: physical activity, peer violence, preschool teachers, parents

References

1. Nedimović, T., Biro, M. (2013). Ko su žrtve vršnjačkog nasilja? *Zbornik instituta za pedagoška istraživanja*, 45 (1), 150-168.
2. Nedimović, T. (2014). *Agresivnost i vršnjačko nasilje – drugo dopunjeno izdanje*. Visoka škola strukovnih studija za obrazovanje vaspitača. Vršac.

THE INFLUENCE OF MOTOR ABILITIES ON SOCIOMETRIC STATUS OF THE GROUP AT MALE STUDENTS OF 12 YEARS OLD

Marjan Malcev¹

¹“SS. Curil and Methodius” University in Skopje, R.Macedonia,
St. Kliment Ohridski” Faculty of Pedagogy Skopje

Introduction

All students look for their place within each formal or informal group, trying to elevate their social status to a higher level (Berkovic 1989).The following individual goals emerge on the basis of the presented issue and the subject of the research.

1. To determine the physical abilities of the students.
2. To determine the social status of the students in their class – social group.
3. To determine the influence of the motor abilities on the social status of the individuals in the group.

Methods

Sample-The sample of respondents consists of 100 male at the age of 12 (+, - 6 months). We used two anthropological variables, five motor variables and twelve socials variables. Method of data processing-The central and dispersive statistical parameters were calculated for each motor variable: arithmetic mean (AS); standard deviation (SD); the assessment of the distribution of the results-skewness (Sk); the homogeneity of the results-kurtosis (Ku), (Min); (Max). The influence of the motor abilities on the position of the individual in the group is determined by using regressive analysis.

Results with discussion

The results acquired by the application of the test for assessment of the motor abilities indicate an acceptable distribution of the data. The results acquired by the application of the test for assessment of the motor abilities indicate an acceptable distribution of the data. The results of the multiple regressive analysis indicate that there are certain influences of the motor abilities on the social status of the individual in the group.

Conclusion

The results indicate that there are certain influences of the motor abilities on the social status of the individual in the group.

Key words: accepted, group, abilities, status, data.

References

1. Berkovic,L.(1989).*Teorijske osnove fizicke culture*.NoviSad:Fakultet za fizicku kulturu.
2. Keramicev, D. (1999). *Psychology in the Physical Education and Sport*. Skopport. Skopje: Makedonska iskra.

THE SPORTS COACH AND HIS ROLE AS AN EDUCATOR OF CHILDREN AND YOUNG ADULTS

Marija Zegnal Koretić¹; Aleksandar Ivanovski²; Nevenka Breslauer³

¹Polytechnic of Međimurje in Čakovec, Croatia

²College of Sports and Health Belgrade, Serbia

³Polytechnic of Međimurje in Čakovec, Croatia

Introduction

Throughout the ages, our predecessors have recognized the importance of physical activity and its impact on both mental and overall health. The tendency to approach it professionally and educationally has always been present. By acquiring the necessary skills the individual becomes a productive member of society. Therefore, the coach's educational role is of the utmost importance. Both empiric and theoretical researches accentuate the importance of sports educational aspects, support program and their influence on scientifically professional and organizationally communication activities while working with children and young adults. (Bratanić, 1989). The aim of this research is to present the direct conclusions about the coach and his primary role as a teacher.

Method

The bibliographical method was essential for data collection, while authors' extensive professional experience enabled them to use the empirical method to analytically and structurally describe sports coach's roles and tasks.

Results with discussion

Sports education begins with the determination of ideals. At the same time, keeping in mind children sensitive age, a coach must avoid expecting the perfection. The coach's task is not only to transfer her/his knowledge and experience, but also to exert herself/himself to enable young individuals to make the physical activity the constituent part of their lives and to share their positive experiences with the next, younger generation. It is crucial that the coach is competent and adaptable to a child's individual psychophysical, social, mental, and emotional characteristics. (Horga,1993).

Conclusion

The competent coach has to be a teacher who understands young adults' complex mental processes and their behavior, and to know how to recognize children developmental level indicators for certain sports activity. She/he should be able to recognize special affinities for sports, and to show children and young adults the enthusiasm for their efforts and achievements. It is of extreme importance that each teaching professional is aware of her/his accountability while working with children and young individuals. Knowledge implementation without liability can lead to manipulation and destruction.

Key words: children, coach, education

References

1. Bratanić, M. (1990), Mikropedagogija, Interakcijsko-komunikacijski aspekt odgoja, Zagreb: Školska knjiga
2. Horga, S. (1993), Psihologija sporta. Zagreb: Fakultet za fizičku kulturu

MIŠLJENJE STUDENATA O POTREBI USVAJANJA ZDRAVIH ŽIVOTNIH NAVIKA

Aleksandra Zdravković¹; Sandra S. Radenović²

¹ Medicinski fakultet Univerziteta u Beogradu, Beograd

² Fakultet za sport i fizičko vaspitanje Univerziteta u Beogradu, Beograd;

Uvod

Poznato je, da su u periodu adolescencije kod određenog broja mladih, prisutna i stanja "krize identiteta", značajna za opredeljenje u usvajanju životnog stila tokom studiranja. Istraživanje je imalo za cilj da identifikuje prisustvo pojedinih nezdravih i osvetli potrebu za usvajanjem zdravih životnih navika kod studenata, budućih učitelja i vaspitača, s obzirom na osobenosti studentskog načina života, socio-kulturno okruženje i zahteva koje pred njih postavlja buduća profesija podučavanja.

Metod

Uz primenu metode anketiranja (Survey Research) uspele smo da identifikujemo pojedine životne navike studenata. Slučajni uzorak ispitanika sačinjavao je 131 student Pedagoškog fakulteta u Vranju Univerziteta u Nišu. Korišćen je anketni upitnik, posebno konstruisan za ovo istraživanje. Osnovni indikatori za procenu studentskih životnih navika su zavisne varijable: bavljenje nekim od sportsko-rekreativnih aktivnosti u slobodno vreme, pušenje cigareta, konzumiranje alkohola i narkotika, redovna i pravilna ishrana), a nezavisne varijable su pol i studijski program koji pohađaju ispitanici (OAS za obrazovanje učitelja i OAS za obrazovanje vaspitača).

Rezultati sa diskusijom

Ispitivanjem studenata Pedagoškog fakulteta u Vranju Univerziteta u Nišu o životnim navikama u uslovima studiranja u najsiromašnijem regionu Srbije, identifikovano je prisustvo pojedinih nezdravih životnih navika. Rukovodeći se merama aktuelne zdravstvene politike (WHO, 2005) i zahtevima Bolonjske deklaracije o standardima i kvalitetu studiranja, analizirali smo podatke koji su obrađeni postupkom deskriptivne statistike. Distribucijom frekvencije potvrđeno je da većina ispitanika (63, 8%) ne upražnjava redovne sportsko-rekreativne aktivnosti i da u tome prednjače studentkinje sa smerom za obrazovanje učitelja (35, 1%) i da upravo preferiraju sedelački način života, studenata aktivnih pušača je blizu polovine ispitanika (47,6%), od toga 29,3% studentkinja – budućih učiteljica. Zabrinjavajući je podatak da samo 23, 2% studenata uopšte ne konzumira alkohol, a od toga je 19% studentkinja sa oba smerom. Dobijeni podaci su pokazali da je studentski standard uticao na to da skoro dve trećine ispitanika i to 43,8 % studentkinja i 19,2 % studenata, sa oba smerom, procenjuju svoju ishranu kao neredovnu i nepravilnu, a skoro jedna petina ispitanika je konzumirala bar jedanput narkotike (18,3%), od toga 2,9% budućih vaspitača.

Zaključak

Na osnovu dobijenih podataka o informisanosti i potrebama studentske populacije za zdravim životnim navikama možemo zaključiti da je u edukaciji mladih o usvajanju zdravih životnih navika presudna socijalna komponenta. Ovaj rad je prilog identifikovanju potrebe o uvođenju univerzitetskih sportsko-rekreativnih aktivnosti u cilju postizanja "kapitala identiteta" studentske populacije.

Ključne reči: fizička aktivnost, zdravlje, životne navike, studenti.

Literatura

1. Jašović Gašić, M. & Lečić Toševski, D. (ed) (2014). Psihijatrija. Beograd: Medicinski fakultet Univerziteta u Beogradu.
2. Ostojić, S., Stojanović, M., Veljović, D., Stojanović, M. D., Međedović, B., Ahmetović, Z. (2009). Fizička aktivnost i zdravlje. TIMS Acta, Vol.3, 1-13. 11.

STUDENTS' OPINION ABOUT THE IMPORTANCE OF ACQUIRING HEALTHY LIFESTYLES

Aleksandra Zdravković¹; Sandra S. Radenović²

¹ Faculty of Medicine, University of Belgrade, Belgrade

² Faculty of Sport and Physical Education, University of Belgrade, Belgrade

Introduction

It is well known that in the period of adolescence some young people experience the state of “identity crisis” important for deciding upon a lifestyle during the period of studying. The aim of this research was to identify the presence of certain unhealthy lifestyles, and clarify the need for developing healthy lifestyles among students, future teachers and educators, considering the specificities of student way of life, socio-cultural environment, and the requirements presented by the future teaching profession.

Method

Using the survey research method, we managed to identify some habits of students. The random sample consisted of 131 students of the Faculty of Education in Vranje, University of Nis. A questionnaire specifically designed for this research was used. The basic indicators for assessing students' habits are dependent variables: engaging in some sort of sports or recreational activity in free time, smoking cigarettes, alcohol and narcotics consumption, regular and adequate meals, and the independent variables are the gender and study program of research participants (Undergraduate Academic Teacher Education Studies and Undergraduate Academic Studies for Preschool Teacher Education).

Results with discussion

By interviewing students of the Faculty of Education in Vranje, University of Nis, about their lifestyles in the studying conditions in the most impoverished region of Serbia, we have identified the presence of certain unhealthy lifestyles. Guided by the measures of the current health policy (WHO, 2005), and the requirements of the Bologna Declaration regarding the standards and quality of studying, we analyzed the data processed using the descriptive statistics method. It has been confirmed using frequency distribution that most of the study participants (63, 8%) do not regularly engage in sports and recreational activities, this is especially prevalent when it comes to female students from the Undergraduate Academic Teacher Education Studies (35,1%), who prefer the sedentary way of life. Close to one half of the study participants were active smokers (47,6%), 29,3% of them were female students – future teachers. It is worrisome that only 23, 2% of students do not consume alcohol at all, 19% of whom are female students from both the departments. The obtained data showed that the student standard of living caused almost two thirds of study participants i.e. 43,8 % of female students and 19,2 % of male students from both the departments to consider their diet irregular and inadequate, while almost one fifth of female study participants have consumed narcotics at least once in their life (18,3%), 2,9% of whom were future preschool teachers.

Conclusion

Based on the obtained data about the degree of being informed about and the needs of the student populace for healthy life habits, we can conclude that the social component is crucial in the education of youth about acquiring healthy lifestyles. This paper is a contribution to the identification of a need for introducing university sports and recreational activities with the aim of achieving the “identity capital” of student populace.

Key words: physical activity, health, lifestyles, students

References

1. Jašović Gašić, M. & Lečić Toševski, D. (ed) (2014). Psihijatrija. Beograd: Medicinski fakultet Univeziterta u Beogradu.
2. Ostojić, S., Stojanović, M., Veljović, D., Stojanović, M. D., Mededović, B., Ahmetović, Z. (2009). Fizička aktivnost i zdravlje. TIMS Acta, Vol.3, 1-13. 11.

PSIHOLOŠKI KORELATI UKLJUČENOSTI STUDENTKINJA U SPORT I VEŽBANJE

Dušanka Lazarević¹; Ljiljana B. Lazarević²; Snežana Radisavljević Janjić¹

¹Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja, Beograd, Srbija

²Univerzitet u Beogradu, Institut za psihologiju, Filozofski fakultet, Beograd, Srbija

Uvod

Cilj ovog istraživanja bio je da se ispita povezanost fizičke samoefikasnosti, samopoštovanja i socijalne anksioznosti zbog izgleda sa uključenosti studentkinja u sport i vežbanje.

Metod

Uzorak je činilo 155 studentkinja, prosečnog uzrasta 21 godina. Primenjene su Skala fizičke samoefikasnosti, Rozenbergova Skala samopoštovanja i Skala socijalne anksioznosti zbog izgleda. Prikupljeni su sociodemografski i podaci o uključenosti u sport i vežbanje. Za analizu podataka primenjena je Dvo-koračna klaster analiza i MANOVA.

Rezultati sa diskusijom

Klaster analiza razlikuje tri grupe ispitanica: 1) studentkinje koje se ne bave sportom i koje odlikuje najnepovoljniji profil psiholoških varijabli; 2) studentkinje koje se rekreativno bave sportom (1-2 puta nedeljno), i nešto povoljniji psihološki profil; 3) studentkinje koje se bave sportom takmičarski i rekreativno, 3-4 puta nedeljno, uz najpovoljnije psihološke profile. Kada je reč o nivou uključenosti u sport, studentkinje se razlikuju u fizičkoj samoefikasnosti, $F(2, 151) = 20.81, p < .01$, i samopoštovanju, $F(2, 151) = 4.62, p < .05$. Post-hoc testovi su pokazali da se studentkinje koje se ne bave sportom razlikuju od ostalih grupa ispitanica u pogledu fizičke samoefikasnosti i samopoštovanja. S obzirom na učestalost bavljenja fizičkim vežbanjem ispoljile su se razlike u fizičkoj samoefikasnosti, $F(3, 150) = 19.62, p < .01$, i samopoštovanju, $F(3, 150) = 6.10, p < .01$. Post-hoc analize pokazuju da kada je reč i o fizičkoj samoefikasnosti i o samopoštovanju najveće razlike postoje između studentkinja koje se ne bave sportom i ostalih grupa ispitanica. U radu se razmatraju razlike na psihološkim varijablama između ispitanica koje se u različitom stepenu bave sportom, kao i razlozi zbog kojih uticaj porasta učestalosti fizičkog vežbanja na percepciju samoefikasnosti i samopoštovanja dostiže plato.

Zaključak

Uključenost studentkinja u sportsku aktivnost je pozitivno povezana sa fizičkom samoefikasnošću i samopoštovanjem. Dalja istraživanja bi trebalo da provere relacije i uticaj angažovanja u sportu i vežbanju na socijalnu anksioznost zbog izgleda.

Ključne reči: Fizička samoefikasnost, samopoštovanje, socijalna anksioznost zbog izgleda, fizička aktivnost, studentkinje.

Literatura

1. Lindwall, M., Lindgren, E-C. (2005). The effects of 6-month intervention programme on physical self-perceptions and social physique anxiety in non-physically active adolescent Swedish girls. *Psychology of Sport and Exercise*, 6, 643-658.
2. Weinberg, R. S. & Gould, D. (2007). *Foundations of sport and exercise psychology*. Champaign, IL: Human Kinetics.

PSYCHOLOGICAL CORRELATES OF FEMALE STUDENT'S ENGAGEMENT IN SPORT AND EXERCISE

Dušanka Lazarević¹; Ljiljana B. Lazarević²; Snežana Radisavljević Janjić¹

¹University of Belgrade, Faculty of sport and physical education, Belgrade, Serbia

²University of Belgrade, Institute of psychology, Faculty of philosophy, Belgrade, Serbia

Introduction

Aim of the study was to test relations between physical self-efficacy, self-esteem and social anxiety related to physique, with the level of engagement in sport and exercise.

Method

Sample consisted of 155 female students, average age 21 years. For assessment of psychological variables Physical Self-Efficacy Scale, Rosenberg's Self-Esteem scale, and Social Physique Anxiety Scale were used. In addition, socio-demographic and data about engagement in sport and exercise were collected. Data were analyzed with Two-step cluster analysis and MANOVA.

Results with discussion

Cluster analysis differs three groups of participants: 1) students not engaged in sport with the least desirable profile of psychological variables; 2) students engaged in sport recreationally 1-2 times per week with somewhat more desirable psychological profile; 3) competitors and students engaged recreationally in sport, 3-4 times per week, with the most desirable psychological profile.

When level of engagement in sport is taken as independent variable, students differ in physical self-efficacy $F(2, 151) = 20.81, p < .01$, and in self-esteem, $F(2, 151) = 4.62, p < .05$. Post-hocs indicate differences between participants not engaged in sport and other groups, in both physical self-efficacy and self-esteem. When frequency of exercising is taken as independent variable, students again differ in physical self-efficacy, $F(3, 150) = 19.62, p < .01$, and in self-esteem, $F(3, 150) = 6.10, p < .01$. Post-hocs indicate largest differences between students not engaged in sport and other groups. Paper discusses the differences in personality variables between subjects that are in varying degrees engaged in sports, as well as the reasons why the increase in the frequency of physical exercise on the perception of self-efficacy and self-esteem reaches a plateau.

Conclusion

Engagement of female students in sport activity is positively related to physical self-efficacy and self-esteem. Future studies should investigate relation and influence of engagement in sport and exercise on social anxiety related to physique.

Key words: physical self-efficacy, self-esteem, social physique anxiety, physical activity, female students.

References

1. Lindwall, M., Lindgren, E-C. (2005). The effects of 6-month intervention programme on physical self-perceptions and social physique anxiety in non-physically active adolescent Swedish girls. *Psychology of Sport and Exercise*, 6, 643-658.
2. Weinberg, R. S. & Gould, D. (2007). *Foundations of sport and exercise psychology*. Champaign, IL: Human Kinetics

PHYSICAL-COGNITIVE TECHNIQUES FOR ADULTS IN TRANSITION FROM LATE MIDDLE AGE TO EARLY OLD AGE

Marko Vidnjevič¹; Urška Gašperin²; Armin Paravlič³

¹ University of Primorska, ZRS - University Kinesiology Center, Koper, Slovenia

²University of Primorska, Faculty of Mathematics, Natural Sciences and Information Technologies, Applied Kinesiology,

³University of Primorska, Science and Research Centre, Institute for Kinesiology Research, Koper, Slovenia

Introduction

Humans are getting increasingly older as a society and exercise for the elderly is an important element in maintaining good health and physical fitness for an active and independent lifestyle (Chodzko-Zajko et al., 2009). One of the potentials of kinesiology is providing knowledge about the locomotor system and body composition using modern measuring equipment and thus facilitating various diagnoses in order to help with better treatment. Physical-cognitive exercise contributes to improvements in mobility and may prevent falls in older adults (Geržević & Dobnik, 2014). This paper presents the current status of the concept of physical and cognitive techniques (GMT), which is the first part of the longitudinal study.

Methods

We started preparing the concept of physical cognitive techniques in March 2015. In October, we performed a screening test and initiated first measurements. 17 late-middle-aged and old-aged participants (3 male, 14 female; 55-82 years old) were measured in the University Kinesiology Center. The methods used were tensiomyography (TMG), body composition analysis (Tanita MC-780U), Functional Movement Screen™ (FMS), handgrip dynamometry. A physical-cognitive and relaxation technique program was developed based on the results. The subjects then participated in the one-hour program twice weekly for a month. They also filled out a satisfaction questionnaire. Next measurements will be conducted in November and the last in December 2015.

Results with discussion

The results of the first measurements showed that the participants had poor muscle tone, muscle contraction time and handgrip strength and increased body fat percentage. However, their FMS performance was above average, compared to standard values. This way we gain the first anthropometric data of participants. The subjects expressed great satisfaction via the questionnaire and desire for the program to continue.

Conclusion

This study provided us with sufficient information about the subjects' biomechanical and physiological properties. Based on this data, we will develop an optimal physical-cognitive and relaxation technique program for the elderly.

Key words: Kinesiology interventions, aging, elderly, physical-cognitive techniques

References:

1. Chodzko-Zajko, W. J., Proctor, D. N., Fiatarone Singh, M. A., Minson, C. T., Nigg, C. R., Salem, G. J. & Skinner, J. S. (2009). American College of Sports Medicine position stand. Exercise and physical activity for older adults. *Medicine and Science in Sports and Exercise*, 41 (7), 1510-1530.
2. Geržević M. & Dobnik M. (2014). Gibalno-kognitivna vadba: praktična delavnica. Retrieved 24. August 2015 from: <http://www.sinapsa.org/eSinapsa/stevilke/2014-7/107/Gibalno-kognitivna%20vadba:%20prakti%C4%8Dna%20delavnica>.

SESIJA 2 / SESSION 2

Istraživačko-metodološki aspekti efekata primene
fizičkih aktivnosti u sportu

*Research-methodological aspects of the effects of
physical activity application in sport*

POUZDANOST I KONKURENTNA VALIDNOST PARAMETRA MAKSIMALNE SILE DOBIJENOG IZ LINEARNE RELACIJE SILA-BRZINA

Saša Đurić¹; Milena Živković¹; Aleksandar Nedeljković¹

¹Fakultet sporta i fizičkog vaspitanja, Beograd, Srbija

Uvod

Prilikom testiranja mehaničkih osobina mišića, kod višezglobnih pokreta često se primenjuje linearna relacija sila-brzina (Jaric, 2015). U dosadašnjim istraživanjima, pouzdanost i konkurentna validnost parametra maksimalne sile (F_0) dobijenog iz pomenute relacije, veoma su nekonzistentne. Nije poznato da li trenažni proces ima uticaja na konkurentnu validnost. Cilj studije je da ispita konkurentnu validnost F_0 pri izbačaju tega sa grudi pre i nakon treninga, kao i njegovu pouzdanost. Pretpostavlja se da će konkurentna validnost pouzdanost i biti visoke.

Metod

Istraživanje je longitudinalnog karatera. Uzorak ispitanika činilo je 24 muškarca podeljenih u dve grupe, eksperimentalnu i kontrolnu. Eksperimentalni protokol podrazumevao je pretest, 8 nedelja treninga i posttest. Treninzi su izvođeni pri „gravitacionom“ opterećenju (rastegnute gume vuku šipku na dole), dok su u pretestu i posttestu korišćeni tegovi (gravitacija + inercija) za dobijanje 1RM-a, kao i 8 nivoa opterećenja (30, 37, 44, 51, 58, 65, 72, 79 % od 1RM-a) za dobijanje linearne relacije sila-brzina. Za utvđivanje pouzdanosti i konkurentne validnosti korišćena je Pirsonova korelacija i t-test za nezavisne uzorke.

Rezultati sa diskusijom

Korelacija je u svim slučajevima bila visoka ($r > 0,94$), a t-test za nezavisne uzorke pokazao je da nema značajnih razlika između F_0 i 1RM-a ($p > 0,05$). Dobijeni rezultati ukazuju na veoma visoku pouzdanost i konkurentnu validnost F_0 , što je u skladu sa prethodnim istraživanjima (Sreckovic et al., 2015). Takođe, konkurentna validnost je ostala visoka i nakon sprovedenog trenažnog procesa kod eksperimentalne grupe ($r = 0,94$).

Zaključak

Parametar maksimalne sile dobijen iz linearne relacije sila-brzina pri izbačaju tega sa grudi, može se pouzdano i validno koristiti u trenažnoj praksi za procenu mehaničkih svojstava mišića ruku i ramenog pojasa.

Ključne reči: izbačaj sa grudi, trening, 1RM

Literatura

1. Jaric, S. (2015). Force-velocity Relationship of Muscles Performing Multi-joint Maximum Performance Tasks. *International journal of sports medicine*, 36(9), 699-704.
2. Sreckovic, S., Cuk, I., Djuric, S., Nedeljkovic, A., Mirkov, D., & Jaric, S. (2015). Evaluation of force-velocity and power-velocity relationship of arm muscles. *European journal of applied physiology*, 115, 1779-1787.

RELIABILITY AND CONCURRENT VALIDITY OF THE MAXIMUM FORCE PARAMETER OBTAINED FROM THE LINEAR FORCE-VELOCITY RELATIONSHIP

Saša Đurić¹; Milena Živković¹; Aleksandar Nedeljković¹

¹Faculty of sport and physical education, Belgrade, Serbia

Introduction

Testing of the mechanical properties of the muscles, in multijoint movements, is often based on linear force-velocity relationship (Jaric, 2015). In previous research, reliability and concurrent validity of the maximum force parameter (F_0) obtained from the mentioned relationship, are very inconsistent. It is not known whether the training process influence concurrent validity. The aim of the study is to examine concurrent validity of the F_0 assessed at bench press throws before and after training process, as well as its reliability. It is assumed that reliability and concurrent validity will be high.

Method

It was a longitudinal type of a study. Participants sample consisted of 24 males divided into two groups, experimental and control. The experimental protocol included pretest, 8 weeks of the training and posttest. Training sessions were conducted with the “gravity” type of load (stretched rubber bands pulling the bar downwards), while weight plates attached on the bar (gravity + inertia) was used in pretest and posttest to assess 1RM and 8 magnitudes of the load (30, 37, 44, 51, 58, 65, 72, 79 % of 1RM) for obtaining linear force-velocity relationship. To determine the reliability and concurrent validity, Pearson’s correlation analysis and independent sample t-test was applied.

Results and discussion

Correlation was high in all cases ($r > 0.94$), and independent sample t-test showed no significant differences between F_0 and 1RM ($p > 0.05$). The results indicate very high reliability and concurrent validity of F_0 , which is in line with previous studies (Sreckovic et al., 2015). Also, concurrent validity remained high after conducted training process at experimental group ($r = 0.94$).

Conclusion

Maximum force parameter obtained from force-velocity relationship at bench press throws, can be reliably and validly used in the training practice for assessing the mechanical properties of the muscles of arms and shoulders.

Key words: bench press throws, training, 1RM

References

1. Jaric, S. (2015). Force-velocity Relationship of Muscles Performing Multi-joint Maximum Performance Tasks. *International journal of sports medicine*, 36(9), 699-704.
2. Sreckovic, S., Cuk, I., Djuric, S., Nedeljkovic, A., Mirkov, D., & Jaric, S. (2015). Evaluation of force-velocity and power-velocity relationship of arm muscles. *European journal of applied physiology*, 115, 1779-1787.

RELACIJA SILA-BRZINA U RUTINSKIM TESTIRANJIMA MIŠIĆA NOGU: EVALUACIJA PARAMETARA MAKSIMALNE SILE

Milena Živković¹; Saša Đurić¹; Dejan Suzović, Aleksandar Nedeljković¹

¹Fakultet sporta i fizičkog vaspitanja, Beograd, Srbija.

Uvod

Mišićna sila se može proceniti direktnim ili indirektnim putem. Testovi bazirani na indirektnoj proceni (funkcionalni testovi) su približniji prirodnim načinima kretanja, jednostavniji i ekonomičniji za izvođenje, pa je njihova primena od velikog značaja. Cilj ovog rada je ispitivanje povezanosti parametara maksimalne sile korišćenjem testova baziranih na indirektnoj proceni sa maksimalnom mišićnom silom procenjenom direktnim putem. Pretpostavlja se da će parametri maksimalne sile između testova za indirektnu procenu visoko korelirati, kao i da će njihova povezanost sa maksimalnom silom kod direktnog merenja biti visoka.

Metod

Uzorak ispitanika činilo je 12 muškaraca (22.1 ± 3.4 god.). Direktno merenje maksimalne sile (MVC) opružaća nogu sprovedeno je u izometrijskim uslovima, dok su za indirektnu procenu sile korišćeni vertikalni skok sa počučnjem bez zamaha ruku (VS) i kratki Vingejt test (BT) na bicikl ergometru. Kod testova VS i BT dobijena linearna F-V relacija je izvedena na osnovu pet nivoa spoljašnjeg opterećenja iz kojih je dobijen parametar maksimalne sile. Za utvrđivanje povezanosti između maksimalnih sila kod sprovedenih testova primenjena je Pirsonova korelacija.

Rezultati sa diskusijom

Povezanost između svih testova bila je visoka i značajna (od 0.59 do 0.987). Rezultati pokazuju da parametri sile dobijeni iz F-V relacije međusobno visoko koreliraju, kao i sa MVC. Dobijeni rezultati su u skladu sa dosadašnjim istraživanjima (Driss et al., 2002; Ćuk et al., 2014).

Zaključak

Nalazi ukazuju na to da se parametri maksimalne sile dobijeni indirektnim putem mogu validno primeniti u rutinskom testiranju. Oba primenjena funkcionalna testa mogu se podjednako koristiti u praksi, u zavisnosti od dostupne opreme.

Ključne reči: MVC, bicikl ergometar, vertikalni skok sa počučnjem

Literatura

1. Driss, T., Vandewalle, H., Le Chevalier, J-M., Monod, H. (2002). Force-Velocity relationship on cycle ergometer and knee-extensor strength indices. *Can J Appl Physiol*, 27 (3), 250-262.
2. Ćuk, I., Marković, M., Nedeljković, A., Ugarković, D., Kukulj, M., Jarić, S. (2014). Force-velocity relationship of leg extensors obtained from loaded and unloaded vertical jumps. *Eur J Appl Physiol*, 114 (8), 1703-1714.

THE FORCE-VELOCITY RELATIONSHIP IN ROUTINE TESTING OF LEG MUSCLES: EVALUATION OF MAXIMUM FORCE PARAMETERS

Milena Živković¹; Saša Đurić¹; Dejan Suzović; Aleksandar Nedeljković¹

¹ Faculty of sport and physical education, Belgrade, Serbia.

Introduction

The muscular force can be estimated directly or indirectly. Tests based on an indirect estimate of force (functional tests) are more natural, easier and economical to perform, wherefore their application is of a great significance. The aim of this paper is to investigate the correlation between parameters of maximal force using tests based on the indirect estimation with maximal muscle force estimated directly. It is assumed that parameters of maximal force between tests for indirect estimation will highly correlate, as well as that their correlation with maximal force at direct measurement will be high.

Methods

The sample consisted of 12 men (22.1 ± 3.4 yr.). Direct measurement of maximum force (MVC) for knee extensor was conducted under isometric conditions; while for indirect evaluation of the force, countermovement jump (CMJ) and short Wingate test (CY) on a bicycle ergometer were used. For tests CMJ and CY linear F-V relation was performed on the basis of five levels of external load from which parameters of maximal force were derived. To establish the correlation between maximum forces in applied tests, Pearson correlation was conducted.

Results with discussion

The correlation between all tests was high and significant (0.59 to 0.987). The results showed that parameters of maximal force obtained from the linear F-V relation highly correlate with each other, as well as with the MVC. The results are in accordance with previous research (Driss et al., 2002; Cuk et al., 2014).

Conclusion

This finding indicates that the parameters of maximum force obtained in an indirect way can be validly applied in routine testing. Both applied functional tests may be equally used in practice, depending on availability of equipment.

Keywords: MVC, cycle ergometer, countermovement jump

References

1. Driss, T., Vandewalle, H., Le Chevalier, J-M., Monod, H. (2002). Force-Velocity relationship on cycle ergometer and knee-extensor strength indices. *Can J Appl Physiol*, 27 (3), 250-262.
2. Čuk, I., Marković, M., Nedeljković, A., Ugarković, D., Kukulj, M., Jarić, S. (2014). Force-velocity relationship of leg extensors obtained from loaded and unloaded vertical jumps. *Eur J Appl Physiol*, 114 (8), 1703-1714.

RAZLIKE U PERIFERNIM I SUPRASPINALNIM ADAPTACIJAMA NAKON TRI TIPRA AKUTNOG IZOMETRIJSKOG TRENINGA JAČINE

Nikola J. Majstorović¹; Olivera M. Knezević²; Milan B. Jelić²; Slađan Milanović²; Saša R. Filipović²; Dragan M. Mirkov¹

¹Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja, Beograd, Srbija

²Univerzitet u Beogradu, Institut za medicinska istraživanja, Beograd, Srbija

Uvod

Poznato je da različiti trenažni stimulus izazivaju različite adaptacije u mišićnoj funkciji, pri čemu se rane promene smatraju posledicom neuralnih adaptacija. Iako "hronični" voljni izometrijski (ISO), odnosno trening sa elektrostimulacijom (EST) mogu dati slične rezultate, uloga supraspinalnih mehanizama nakon akutnog treninga nije u potpunosti istražena. Cilj ovog istraživanja bio je da se uporede akutni efekti tri tipa treninga na maksimalnu (MVC) i eksplozivnu jačinu (RFD) m. quadriceps femoris-a (QF), kao i na moguće promene u ekscitabilnosti primarnog motornog korteksa (M1).

Metod

12 zdravih, fizički aktivnih ispitanika (starosti 22.3 ± 2.8 godine) imali su tri tipa unilateralnog treninga (EST, EST+ISO, ISO) za QF, sa razmakom od 2 nedelje između svakog. Trening se sastojao od 40 izometrijskih kontrakcija (60-65 %MVC), sa pauzom od 20 s između uzastopnih kontrakcija. Primenom transkranijalne magnetne stimulacije pri 20 % MVC evocirani su motorni potencijali (MEP) na osnovu kojih je procenjena ekscitabilnost M1. MEP i MVC su mereni pre-, odmah- i 30 minuta nakon treninga.

Rezultati i diskusija

MVC i RFD bili su značajno niži odmah- i 30 minuta nakon EST i EST+ISO treninga ($p < 0.001$), dok ISO nije imao uticaj na funkciju QF. Promene u MVC i RFD nakon EST i EST+ISO bile su praćene povećanom ekscitabilnošću M1 ($p < 0.05$), dok nakon ISO teninga nije bilo nikakvih promena u MEP. Dobijeni rezultati pokazali su da EST i EST+ISO trening dovode do većeg perifernog zamora, ukazujući da su uglavom bile angažovane brze motorne jedinice (inače zamorljivije od sporih), što bi moglo biti uzrok uočenog povećanja ekscitabilnosti M1.

Zaključak

Dok ISO trening nije imao nikakav akutni efekat, EST i EST+ISO su podstakli i periferne i supraspinalne adaptacione mehanizme, čak i pri nižim intenzitetima stimulacije. Dobijeni nalazi mogu biti posebno značajni za bolje razumevanje neurofizioloških mehanizama koji se nalaze u osnovi EST, što je važno za njegovu primenu u treningu i rehabilitaciji.

Ključne reči: Fmax, RFD, neuromišićna električna stimulacija; transkranijalna magnetna stimulacija, plasticitet

Literatura

1. Hortobagyi, T., Maffiuletti, N. A. (2011). Neural adaptations to electrical stimulation strength training. *European Journal of Applied Physiology*, 111:2439–2449.
2. Tillin, N., Folland, J. P. (2014). Maximal and explosive strength training elicit distinct neuromuscular adaptations, specific to the training stimulus. *European Journal of Applied Physiology*, 114:365–374.

Zahvalnica: Studija je delom finansirana sa projekata Ministarstva prosvete, nauke I tehnološkog razvoja Republike Srbije (#175012; #175037).

DIFFERENCES IN PERIPHERAL AND SUPRASPINAL ADAPTATIONS FOLLOWING THREE TYPES OF ACUTE ISOMETRIC STRENGTH TRAINING

Nikola J. Majstorović¹; Olivera M. Knezevic²; Milan B. Jelić²; Slađan Milanović²; Saša R. Filipović²; Dragan M. Mirkov¹

¹University of Belgrade, Faculty of Sport and Physical Education, Belgrade, Serbia

²University of Belgrade, Institute for Medical Research, Department of Neurophysiology, Belgrade, Serbia

Introduction

Based on the principle of specificity, different training stimuli induce distinct adaptations in muscle function, with early changes underpinned by neural adaptations. Whilst long-term voluntary (ISO) and electrostimulation training (EST) might be expected to elicit similar responses, the role of supraspinal mechanisms in acute response to these stimuli is fairly unknown. The aim of this study was to investigate the acute effects of three types of training on maximum voluntary contraction (MVC) and explosive strength (RFD) of quadriceps femoris muscle (QF), as well as changes in primary motor cortex (M1) excitability.

Methods

12 healthy and physically active subjects (age: 22.3 ± 2.8 years) underwent three types of acute unilateral isometric training (EST, EST+ISO, ISO) for QF, each consisting of 40 contractions (60-65 %MVC) separated by 20s rest. M1 excitability was measured via motor evoked potential (MEP) amplitudes elicited using Transcranial Magnetic Stimulation during a 20% MVC of QF. MEPs and MVC were assessed prior to-, immediately after, and 30 minutes following the training.

Results with discussion

MVC strength and RFD were significantly decreased both immediately and 30 minutes following EST and EST+ISO ($p < 0.001$), while ISO no influence on QF muscle function. Furthermore, the observed changes in MVC and RFD after EST and EST+ISO were accompanied by an increased M1 excitability ($p < 0.05$), with no changes following ISO training. The obtained results indicate that EST and EST+ISO training resulted in more peripheral fatigue, suggesting that fast-twitch motor units (more fatigable than slow-twitch) were mainly activated which could be responsible for the observed increase in M1 excitability.

Conclusion

While ISO training resulted in no acute effects, EST and EST+ISO initiated both peripheral and supraspinal adaptation mechanisms even at lower stimulation intensities. This could be of particular importance for better understanding of neurophysiological mechanisms behind EST when used for training and rehabilitation purposes.

Keywords: Fmax, RFD, neuromuscular electrical stimulation; transcranial magnetic stimulation, motor plasticity

References

1. Hortobagyi, T., Maffiuletti, N. A. (2011). Neural adaptations to electrical stimulation strength training. *European Journal of Applied Physiology*, 111:2439–2449.
2. Tillin, N., Folland, J. P. (2014). Maximal and explosive strength training elicit distinct neuromuscular adaptations, specific to the training stimulus. *European Journal of Applied Physiology*, 114:365–374.

Acknowledgment: This study was partly funded by grants from the Ministry of Education, Science and Technological Development of Republic of Serbia (#175012; #175037).

METRIJSKE KARAKTERISTIKE MERNIH INSTRUMENATA ZA UTVRĐIVANJE EKSPLOZIVNE SNAGE MIŠIĆA

*Saša Bubanj¹; Dušan Filipović¹; Mladen Živković¹; Ratko Stanković¹; Borislav Obradović²;
Tijana Purenović¹*

¹Fakultet sporta i fizičkog vaspitanja, Univerzitet u Nišu, Srbija

²Fakultet sporta i fizičkog vaspitanja, Univerzitet u Novom Sadu, Srbija

Uvod

Osnovni cilj istraživanja bio je da se utvrde valjanost i pouzdanost, tenziometrijske platforme HBO (Nemačka) i akcelerometra Myotest (Švajcarska), i ujedno kvantifikuju parametri eksplozivne snage donjih ekstremiteta, fudbalera srednješkolškog uzrasta.

Metod

Istraživanje je sprovedeno na uzorku od 16 fudbalera srednješkolškog uzrasta. Upotrebom tenziometrijske platforme, utvrđene su vrednosti sledećih varijabli eksplozivne snage donjih ekstremiteta: 1) MSRPODS_T i 2) MSRPODS_R (maksimalna sila reakcije podloge na prvom i ponovljenom merenju u fazi odskoka, izražena u N), 3) MSRPDOS_T i 4) MSRPDOS_R (maksimalna sila reakcije podloge na prvom i ponovljenom merenju u fazi doskoka, izražena u N), 5) UBRZODS_T i 6) UBRZODS_R (ubrzanje tela na prvom i ponovljenom merenju u fazi odskoka, izraženo u m/s²) i 7) UBRZDOS_T i 8) UBRZDOS_R (ubrzanje tela na prvom i ponovljenom merenju u fazi doskoka, izraženo u m/s²). Upotrebom bežičnog akcelerometra, utvrđene su vrednosti sledećih varijabli eksplozivne snage donjih ekstremiteta: 9) VISSKOK_T i 10) VISSKOK_R (visina skoka na prvom i ponovljenom merenju, izražena u cm), 11) SNAGASKOK_T i 12) SNAGASKOK_R (snaga prilikom skoka na prvom i ponovljenom merenju, izražena u W/kg), 13) SILASKOK_T i 14) SILASKOK_R (sila prilikom skoka na prvom i ponovljenom merenju, izražena u N/kg) i 15) BRZSKOK_T i 16) BRZSKOK_R (brzina prilikom skoka na prvom i ponovljenom merenju, izražena u cm/s). U cilju statističke obrade dobijenih podataka upotrebljen je paket SPSS version 11, a dobijeni rezultati suprikazani deskriptivnom statistikom. Valjanost je ispitivana faktorskom analizom, dok je pouzdanost testirana Test-retest metodom, kao i Cronbach-ovim α -koeficijentom.

Rezultati sa diskusijom

U odnosu na valjanost izdvojena su dva faktora koja objašnjavaju ukupno 69,87% varijanse svih merenja. U odnosu na pouzdanost, rezultati obe metode ukazuju da je i kod akcelerometra i kod tenziometrijske platforme prisutna visoka pouzdanost.

Zaključak

Ustanovljeno je da u okviru dijagnostičke opreme, tenziometrijska platforma HBO i akcelerometar Myotest, pri utvrđivanju vrednosti eksplozivne snage ispitanika prilikom vertikalnog skoka, pružaju validne i pouzdane rezultate. U odnosu na tenziometrijsku platformu, Myotest nudi pogodnosti u pogledu prenosivosti, ekonomičnosti i rukovanja. Ovi rezultati mogu da pomognu u planiranju i programiranju budućih faza trenažnog procesa fudbalera srednješkolškog uzrasta iz Niša.

Кључне речи: Тензиометријска платформа, акцелерометар, метријске карактеристике, експлозивна снага мишића, фудбалери.

Литература

1. Casartelli, N., Müller, R., & Maffiuletti, N.A. (2010). Validity and reliability of the Myotest accelerometric system for the assessment of vertical jump height. *Journal of Strength and Conditioning Research*, 24(11), 3186–3193.
2. Ostojić, S.M., Stojanović, M., & Ahmetović, Z. (2010). Analiza anaerobne sposobnosti i vertikalne skočnosti u testovima snage (Vertical jump as a tool in assessment of muscular power and anaerobic performance). *Medicinski preglad*, 63 (5-6), 371-375. In Serbian

METRIC CHARACTERISTICS OF MEASURING INSTRUMENTS FOR THE DETERMINATION OF EXPLOSIVE MUSCLE STRENGTH

Saša Bubanj¹; Dušan Filipović¹; Mladen Živković¹; Ratko Stanković¹; Borislav Obradović²; Tijana Purenović¹

¹Faculty of Sport and Physical Education, University of Niš, Serbia

²Faculty of Sport and Physical Education, University of Novi Sad, Serbia

Introduction

The main aim of this research was to determine validity and reability of tensiometric platform HBO (Germany) and accelerometer Myotest (Switzerland), as well as to quantify the variables of explosive strength of the lower extremities in football players of high school age.

Method

Testing had been done in 16 football players of highschool age. Using tensiometric platform, values of the following variables of explosive strength of the lower extremities had been determined: 1) MSRPODS_T and 2) MSRPODS_R (maximum ground reaction force on the test and re-test measurement at the take off, in N), 3) MSRPDOS_T and 4) MSRPDOS_R (maximum ground reaction force on the test and re-test measurement at the landing, in N), 5) UBRZODS_T and 6) UBRZODS_R (body acceleration on the test and re-test measurement at the take off, in m/s²), 7) UBRZDOS_T and 8) UBRZDOS_R (body acceleration on the test and re-test measurement at the landing, in m/s²). Using wireless accelerometer, values of the following variables of explosive strength of the lower extremities had been determined: 9) VISSKOK_T and 10) VISSKOK_R (jump height on the test and re-test measurement in cm), 11) SNAGASKOK_T and 12) SNAGASKOK_R (jump power on the test and re-test measurement, in W/kg), 13) SILASKOK_T and 14) SILASKOK_R (jump force on the test and re-test measurement in N/kg), 15) BRZSKOK_T and 16) BRZSKOK_R (jump velocity on the test and re-test measurement in cm/s). For the purpose of statistical analysis of the data obtained, SPSS version 11 had been used, and the results are presented by descriptive statistics. Validity was assessed by Factor Analysis, while Reliability of measuring instruments was tested by Test-Retest method, as well as by Cronbach's α -coefficient.

Results with discussion

In relation to validity there were two factors extracted which explain a total of 69.87% of the variance of all measurements. In relation to reliability, results suggest high reliability in both accelerometers and tensiometric platforms, although somewhat lower in accelerometer.

Conclusion

It was found that diagnostic equipment, tensiometric platform HBO and accelerometer Myotest, that were used in determination of the explosive strength during vertical jump, provide valid and reliable results. Compared to tensiometric platform, Myotest offers benefits in terms of portability, economy and handling. These results can help in the planning and programming of future phases in the training process of secondary school age players from Niš.

Key words: Tensiometer platform, accelerometer, psychometric properties, explosive muscle strength, football

References

1. Casartelli, N., Müller, R., & Maffiuletti, N.A. (2010). Validity and reliability of the Myotest accelerometric system for the assessment of vertical jump height. *Journal of Strength and Conditioning Research*, 24(11), 3186–3193.
2. Ostojić, S.M., Stojanović, M., & Ahmetović, Z. (2010). Analiza anaerobne sposobnosti i vertikalne skočnosti u testovima snage (Vertical jump as a tool in assessment of muscular power and anaerobic performance). *Medicinski pregled*, 63 (5-6), 371-375. In Serbian

STATIČKO I DINAMIČKO RASTEZANJE KAO PRIPREMA ZA SPRINTERSKO TRČANJE

Goran Bošnjak²; Vladimir Jakovljević²; Gorana Tešanović²; Ilona Mihajlović³; Slaven Kršić¹

¹Profesor fizičkog vaspitanja i sporta

²Fakultet fizičkog vaspitanja i sporta, Univerzitet u Banjoj Luci, BiH

³Fakultet sporta i fizičkog vaspitanja, Univerzitet u Novom Sadu, Srbija

Uvod

U sprinterskom trčanju mišići moraju da ubrzaju tijelo u horizontalnom smjeru i da savladaju silu gravitacije u vertikalnom smjeru (Stefanović i Bošnjak, 2011). Prije izvođenja sprinterskog trčanja, primjenom specifičnih vježbi potrebno je sportistu dovesti u fiziološko stanje koje će mu poboljšati sportsku uspješnost i omogućiti da izvede svoju aktivnost na najvišem mogućem nivou (Elam, 1986). Tim vježbama se pripremaju mišići, tetive i ligamenti koji su najaktuelniji u vježbanju (Koprivica, 2002). Cilj ovog istraživanja bio je da se uporede moguće razlike u rezultatu postignutom u testovima za procjenu brzine nakon primjene dvije metode rastezanja (dinamičko i statičko rastezanje), radi utvrđivanja koja od navedenih metoda može da doprinese izvođenju sprinterskog trčanja na najvišem mogućem nivou.

Metod

Istraživanje je provedeno na uzorku od 20 ispitanika muškog pola, starosti 20 godina (± 6 mjeseci), koji su bili podijeljeni u tri grupe – dvije eksperimentalne i jedna kontrolna grupa (sa prvom eksperimentalnom grupom primijenjena je dinamička metoda rastezanja, sa drugom statička metoda rastezanja, a kod kontrolne grupe nije primijenjena niti jedna metoda rastezanja prije izvođenja testova. Procjena nivoa motoričke sposobnosti brzine izvršena je na osnovu rezultata postignutih u testovima na 20m, 40m i 60m iz niskog, visokog i letećeg starta, mjenjenih foto-čelijama marke ERGO tester. Za analizu osnovnih statističkih podataka primijenjena je deskriptivna statistika, T-test za zavisne i T-test za nezavisne uzorke.

Rezultati sa diskusijom

Nakon provedenih statističkih procedura utvrđeno je da se na finalnom mjerenju pokazala statistički značajna razlika (na nivou $p < 0.05$) između eksperimentalne grupe 1 i eksperimentalne grupe 2 u intervalu od -2.23 do -4.06 za testove trčanja na 20m, od -4.40 do -5.50 za testove trčanja na 40m i od -3.27 do -4.09 za testove trčanja na 60m, u korist eksperimentalne grupe 1. Takođe, analiza na finalnom mjerenju između eksperimentalne grupe 1 i kontrolne grupe pokazala je da se vrijednost nezavisnog t testa kretala u intervalu od -2.39 do -2.95 za testove trčanja na 20m, od -2.67 do -3.82 za testove trčanja na 40m i od -3.82 do -3.92 za testove trčanja na 60m. Ove vrijednosti su pokazale statistički značajnu razliku na nivou ($p < 0.05$) u korist eksperimentalne grupe 1. Na osnovu ovih rezultata može se konstatovati da su ispitanici nakon primjene dinamičke metode rastezanja postigli bolje rezultate u odnosu na ispitanike koji su primjenjivali statičko rastezanje i ispitanike koji nisu primjenjivali metode rastezanja.

Zaključak

Uporedbom rezultata postignutih u testovima za procjenu brzine, nakon primjene dvije metode rastezanja (dinamičko i statičko rastezanje), u ovom istraživanju se pokazalo da dinamička metoda razvoja fleksibilnosti može da doprinese izvođenju sprinterskog trčanja na najvišem mogućem nivou, što je samo potvrdilo ranija istraživanja koja su se bavila sličnom tematikom.

Ključne riječi: statičko rastezanje, dinamičko rastezanje, sprintersko trčanje

Literatura

1. Alter, M. (1996). Science of Flexibility. Human Kinetics
2. Amiri-Khorasani M, Kellis E. (2013) Static vs. Dynamic Acute Stretching Effect on Quadriceps Muscle Activity during Soccer Instep Kicking. Journal of Human Kinetics. 2013 Dec 31;39:37-47. doi: 10.2478/hukin-2013-0066.

STATIC AND DYNAMIC STRETCHING AS PREPARATION FOR SPRINT RUNNING

Goran Bošnjak²; Vladimir Jakovljević²; Gorana Tešanović²; Ilona Mihajlović³; Slaven Kršić¹

¹Professor of physical education and sport

²Faculty of physical education and sport, University of Banja Luka, Bosnia and Herzegovina

³Faculty of physical education and sport, University of Novi Sad, Serbia

Introduction

ust to accelerate body in horizontal direction and to overcome the force of gravity in vertical direction (Stefanović and Bošnjak, 2011). Before performing of sprint running, by using a specific exercises is necessary to bring athlete in a physiological condition in which he will enhance sports performance and allow to carry out his activity at the highest level (Elam, 1986). These exercises prepare the muscles, tendons and ligaments which are the most current in exercise (Koprivica, 2002). The aim of this study was to compare a possible differences in results achieved in tests for assessing of rate after application of two methods of stretching (dynamic and static stretching), in order to determine which of above mention methods can contribute to performance of sprint running at the highest level.

Method

The study was conducted on sample of 20 male respondents, 20 years old (\pm 6 months), which were divided into three groups - two experimental and one control group (with the first experimental group was applied dynamic method of stretching, with another static method of stretching, and, with control group was not applied any one method of stretching before performing tests. Assessment of level of motor abilities of speed, was done on basis of results achieved in tests on 20m, 40m and 60m from the low, high and flying start, measured by photocell ERGO tester brand. To analyze basic statistical data was applied descriptive statistics, T-test for dependent and T-test for independent samples.

Results with discussion

After statistical procedures, has been established that on final measurements has shown statistically significant difference ($p < 0.05$) between experimental group 1 and experimental group 2 in range of -2.23 to -4.06 for tests running on 20m, from -4.40 to -5.50 for tests running on 40m and from -3.27 to -4.09 for tests running on 60m, in favor of experimental group 1. Also, analysis of final measurement between experimental groups 1 and control group, has shown that value of an independent T test has ranged from - 2.39 -2.95 for tests running on 20m, from -2.67 to -3.82 for tests running on 40m and from -3.82 to -3.92 for tests running on 60m. These values showed a statistically significant difference at the level ($p < 0.05$) in favor of the experimental group 1. Based on these results we can conclude that respondents after application of dynamic stretching methods achieve better results compared to those who applied static stretching and respondents who did not apply methods of stretching.

Conclusion

By comparing results achieved in tests for assessment of speed, after application of two methods of stretching (dynamic and static stretching), in this study was shown that dynamic method of development flexibility can contribute to performance of sprint running at the highest level, which is only confirmed earlier research that dealt with similar themes.

Keywords: static stretching, dynamic stretching, sprinting

References

1. Alter, M. (1996). Science of Flexibility. Human Kinetics
2. Amiri-Khorasani M, Kellis E. (2013) Static vs. Dynamic Acute Stretching Effect on Quadriceps Muscle Activity during Soccer Instep Kicking. Journal of Human Kinetics. 2013 Dec 31;39:37-47. doi: 10.2478/hukin-2013-0066.

POVEZANOST EKSPLOZIVNE SNAGE I TELESNOG SASTAVA RUKOMETAŠA STAROSTI 14-16 GODINA U ZAVISNOSTI OD IGRAČKE POZICIJE

Jelena Vukosavljević¹; Saša Bubanjić¹; Danijela Živković¹; Veselin Jakovljević¹; Milan Stojić¹; Katarina Nejić¹

¹Fakultet sporta i fizičkog vaspitanja, Niš

Uvod

Na uzorku od 30 rukometaša rukometnog kluba "Sloga" iz Kraljeva, starosti 14 do 16 godina, sprovedeno je istraživanje transversalnog karaktera sa ciljem da se kod ispitanika na različitim igračkim pozicijama utvredi: 1) status eksplozivne snage gornjih i donjih ekstremiteta, kao i telesni sastav igrača, 2) korelacija statusa eksplozivne snage sa statusom telesnog sastava.

Metod

U svrhu procene telesnog sastava korišćen je analizator bioimpedanse "Omron BF511", a za procenu eksplozivne snage akcelometar "Myotest". U obradi dobijenih podataka korišćen je statistički paket "SPSS version 13.". Statistički značajna razlika između navedenih statusa utvrđena je ANOVA metodom, dok je za utvrđivanje povezanosti između navedenih statusa korišćena Korelaciona analiza.

Rezultati sa diskusijom

Rezultai korelacije eksplozivne snage i telesnog sastava su pokazali da kod igrača na poziciji pivota postoje značajne pozitivne korelacije između varijabli Body fat i Velocity ($p \leq 0,015$), kao i Muscle i Velocity ($p \leq 0,022$), slične rezultate su dobili u svom istraživanju i Sporaš i sar. (2010). Kod igrača na krilnim pozicijama između varijabli BMI i Power ($p \leq 0,014$), Velocity i BMI ($p \leq 0,030$), kao i Body fat i Power ($p \leq 0,010$), ovako dobije rezultate Matthys et al. (2013) u svom istraživanju objašnjava principima selekcije u rukometu. Korelacija između statusa eksplozivne snage donjih ekstremiteta i telesnog sastava utvrđena je kod igrača na bekovskim pozicijama i to između varijabli Muscle i Velocity ($p \leq 0,049$), kod igrača na krilnim pozicijama i to između varijabli BMI i Velocity ($p \leq 0,042$), a kod igrača koji igraju na poziciji golmana utvrđena je negativna korelacija između BMI i Velocity ($p \leq 0,033$). Svrhoj (2006) je u svom istraživanju dobio slične rezultate i on ovu negativnu korelaciju kod golmana objašnjava činjenicom da su oni dosta statični u igri i u samom trenaznom procesu.

Zaključak

Rezultati istraživanja ukazuju na potrebu posvećivanja veće pažnje specifičnim fizičkim priprema pojedinaца ovog uzrasta u odnosu na igračku poziciju u timu i to na način da se kod: 1) krila – poboljša sprinterska sposobnost i skočnost; 2) bekova – poboljša sprinterska sposobnost i skočnost; 3) pivota – poboljša skočnost i eksplozivna snaga; 4) golmana – smanjenje procenta masnoće u organizmu i poboljšati eksplozivnu snagu bočnim kretanjima, stavovima (golmanskim) i dubinskim izlascima.

Ključne reči: eksplozivna snaga, telesna kompozicija, vertikalni skok i myotest.

Literatura

1. Foretić, N., Uljević, O., & Rogulj, N. (2010) Antropometric characteristics of handball players aged 12 and 14. In *Unapređenje kvaliteta života i djece i maldivh*. Hrvatska znanstvena bibliografija i MZOS-SVIBOR.
2. Čavala, M. (2012). Morfološke, motoričke i psihosocijalne karakteristike mladih rukometašica različite igračke kvalitete i pozicije / dissertation . Split: Kineziološki fakultet

CORRELATION EXPLOSIVE STRENGTH AND BODY COMPOSITION HANDBALL PLAYERS AGED 14-16 DEPEND OF PLAYING POSITIONS

*Jelena Vukosavljević¹; Saša Buban¹; Danijela Živković¹; Veselin Jakovljević¹; Milan Stojić¹;
Katarina Nejić¹*

¹Faculty of Sport and Physical Education, Niš

Introduction

In a sample of 30 handball players, age 14 to 16 years, team "Sloga" from Kraljevo conducted research of transversal character with an aim to, within respondents on different playing positions, determine :1) the status of explosive strength upper and lower extremities, as well as the status of body composition; 2) correlation between explosive power status and the status of body composition.

Method

In order to assess the status of the body composition, bioimpedance "Omron BF511" analyzer was used, and to assess the status of explosive power, accelerometer "Myotest". For processing data, statistical package "SPSS version 13." was used. Statistically significant difference between the status was determined by ANOVA method, and to determine the relationship between such status used for correlation analysis.

Results with discussion

The results showed regarding the status of correlation of explosive strength of upper limbs and physical composition status, among players at the position pivot significant positive correlations are founded between variables Body fat and Velocity ($p \leq ,015$), and Muscle and Velocity ($p \leq ,022$). Among players on wing positions, a significant positive correlations between the variables of BMI and Power ($p \leq ,014$), Velocity and BMI ($p \leq ,030$), and Body fat and Power ($p \leq ,010$) was determined Matthys et al. (2013) . The correlations between the status of explosive power of the lower extremities and the status of body compositions was determined by players on back positions and between variables and Muscle and Velocity ($p \leq ,049$), with players on the wing positions between variables Body fat and Velocity ($p \leq ,042$), while the goalkeeper was no significant negative correlation between the variables of BMI and Velocity ($p \leq ,033$), Svrhoj (2006).

Conclusion

The results indicate the need to pay greater attention to specific physical preparation of individuals in this age group, related to playing position in the team and in a way to: 1) the wing – to improve jumping ability and sprinting ability 2) guards – to improve jumping ability, explosive power and speed rubble, 3) pivot – to improve static strength of the lower extremities, 4) goalkeeper - reducing the percentage of fat in the body and improve the explosive strength by lateral movements, positions (goalkeeper) and deep outs.

Key words: Explosive strength, body composition, vertical jump, myotest.

References

1. Foretić, N., Uljević, O., & Rogulj, N. (2010) Antropometric characteristics of handball players aged 12 and 14. In *Unapređenje kvaliteta života i djece i malidih*. Hrvatska znanstvena bibliografija i MZOS-SVIBOR.
2. Čavala, M. (2012). Morfološke, motoričke i psihosocijalne karakteristike mladih rukometašica različite igračke kvalitete i pozicije / dissertation . Split: Kineziološki fakultet

ANALIZA TAKMIČARSKE AKTIVNOSTI VRHUNSKIH KIK BOKSERA U OKVIRU MEĐUNARODNIH TAKMIČENJA

Feđa Pišćević¹; Dejan Gavrilović¹; Milivoj Dopsaj¹

¹ Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja

Uvod

Analiza takmičarske aktivnosti je osnovni način za utvrđivanje takmičarske efikasnosti sportista. Osnovni cilj ovog rada je analiza takmičarske aktivnosti vrhunskih kik boksera, što je i realizovano na 10 mečeva (5 mečeva Evropskog prvenstva (Bilbao - Španija 2014) i 5 mečeva Evropskog kupa (Beograd 2014 i 2015)) u ženskoj i muškoj konkurenciji.

Metod

Prikupljanje podataka je izvršeno analizom snimaka finalnih borbi. Uzorak ispitanika se sastojao od 20 takmičara vrhunskog nivoa u ženskoj konkurenciji - dve kategorije (60 i 65 kg.) i u muškoj konkurenciji - tri kategorije (63,5; 71 i 91 kg.).

Rezultati sa diskusijom

Rezultati u konkurenciji muškaraca su pokazali podelu ručnih i nožnih tehnika, te je broj udaraca rukom na Evropskom kupu bilo 40.09% dok je na broj udaraca rukom na Evropskom prvenstvu bilo 38.16 % od ukupnog broja udaraca. Preostali procenti zauzimaju udarci nogama, na Evropskom kupu 59.04% i na Evropskom prvenstvu 61.83%. Posmatrani odnos između aktivnog i pasivnog vremena na Evropskom kupu je 50.23% pasivnog dok je ostali procenat 49.77% aktivno vreme runde. Na Evropskom prvenstvu u Bilbaou pasivno vreme čini 26.63 % dok je aktivni deo znatno duži nego što je slučaj na Evropskom kupu i traje 73.37%. Rezultati u konkurenciji žena su pokazali podelu ručnih i nožnih tehnika, te je broj udaraca rukom na Evropskom kupu bilo 40.56 % dok je na broj udaraca rukom na Evropskom prvenstvu bilo 40.67 % od ukupnog broja udaraca. Preostali procenti zauzimaju udarci nogama, na Evropskom kupu 59.04% i na Evropskom prvenstvu 59.33. Posmatrani odnos između aktivnog i pasivnog vremena na Evropskom kupu je 57.36% pasivnog dok je ostali procenat 42.64 % aktivno vreme runde. Na Evropskom prvenstvu u Bilbaou pasivno vreme čini 26.63 % dok je aktivni deo znatno duži nego što je slučaj na Evropskom kupu i traje 73.37%.

Zaključak

Rezultati su pokazali da u odnosu na muškarce, ne postoji rezlika u sumarnom broju poentirajućih udaraca ručnim tehnikama, dok je kod poentirajućih udaraca nožnim tehnikama, sumom svih udaraca, aktivne i pasivne faze borbe utvrđena značajna ralika između analiziranih takmičenja. U odnosu na žene, značajna razlika je utvrđena između svih analiziranih varijabli. Na osnovu dobijenih rezultata se može zaključiti da kvalitetniji nivo takmičenja uslovljava da kik bokseri budu pripremljeni za veću aktivnost tokom meča i za intenzivniju upotrebu tehnika koje ostvaruju više bodova, odnosno za nožne tehnike.

Ključne reči: analiza borbe, efikasnost udaraca, aktivno vrememeča, pasivno vreme meča, kik boks

Literatura

1. Blagojević, M., Vučković, G., Dopsaj, M. (2009). Specijalno fizičko obrazovanje I – Osnovni nivo, Beograd: Kriminalističko-policijska akademija.
2. Pamac K., Mudrić M., Ćirković M. (2011). Segmenti takmičarske aktivnosti srpskih karate reprezentativaca na Svetskom prvenstvu u Beogradu 2010. i Međunarodna naučna konferencija „Efekti primene fizičke aktivnosti na antropološki status dece, omladine i odraslih“, Zbornik radova, Fakultet sporta i fizičkog vaspitanja, Beograd, str. 190-195

ANALYSIS OF THE COMPETITIVE ACTIVITIES OF TOP KICK BOXERS IN INTERNATIONAL COMPETITIONS

Feđa Pišćević¹; Dejan Gavrilović¹; Milivoj Dopsaj¹

¹Faculty of Sport and Physical Education, University of Belgrade

Introduction

Analysis of competitive activities is a basic way to determine the efficiency of competitive athletes. The main objective of this paper is to analyze the competitive activities of top kick boxers, which was implemented in 10 matches (5 matches of the European Championship (Bilbao - Spain 2014) and 5 matches of the European Cup (Belgrade 2014 and 2015)) in the women's and men's competition.

Method

Data collection was performed by analyzing recordings of the final battle. The sample consisted of 20 elite-level athletes in the women's competition - two categories (60 and 65 kg.) And in the men's competition - the three categories (63.5, 71 and 91 kg.).

Results with discussion

Results in the men's division showed a hand and foot techniques, and the number of punches at the European Cup was 40.09%, while the number of punches at the European Championship was 38.16% of the total number of strokes. The remaining percentages take kicks at the European Cup 59.04% and 61.83% European Championship. The observed relationship between active and passive time in the European Cup was 50.23% passive while the remaining percentage of 49.77% uptime round. At the European Championships in Bilbao passively weather makes 26.63%, while the active part considerably longer than is the case at the European Cup, and takes 73.37%. Results in the women's division showed a hand and foot techniques, and the number of punches at the European Cup was 40.56%, while the number of punches at the European Championship was 40.67% of the total number of strokes. The remaining percentages take kicks at the European Cup and 59.04% at the European championship 59.33 The observed relationship between active and passive time in the European Cup was 57.36% passive while the remaining percentage of 42.64% uptime round. At the European Championships in Bilbao passively weather makes 26.63%, while the active part considerably longer than is the case at the European Cup, and takes 73.37%.

Conclusion

The results showed that compared to men, there is difference in the number of cumulative poentirajućih strokes hand techniques, while the poentirajućih strokes leg techniques, the sum of all stripes, active and passive phases of the struggle was no significant difference between the analyzed event. In comparison to women, a significant difference was found between all of the variables analyzed. Based on these results we can conclude that a higher quality level of competition causes the kick-boxers are prepared for higher activity during a match and for more intensive use of techniques that earn more points, and for kicks.

Key words: analysis of the fight, efficiency strokes, vrememeča active, passive during the match, kick boxing

References

1. Blagojevic, M. Vuckovic, G., Dopsaj, M. (2009). Special Physical Education I - Basic level, Belgrade Police Academy.
2. Pemac K. Mudrić M. Cirkovic M. (2011). Segments of competitive activity of karate Serbian national team at the World Championships in Belgrade in 2010 and the International Scientific Conference,, Effects of physical activity on the anthropological status of children, youth and adults ,, Proceedings of the Faculty of Sport and Physical Education, Belgrade, p. 190-195

ANALIZA TAKMIČARSKE AKTIVNOSTI RVAČA SLOBODNIM STILOM NA PRVIM EVROPSKIM OLIMPIJSKIM IGRAMA 2015. GODINE

Marković Milan¹; Dopsaj Milivoj¹

¹Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja, Beograd, Srbija

Uvod

Rezultati koji opisuju takmičarsku aktivnost sportista spadaju u pokazatelje koji direktno odlikavaju vezu između procesa pripreme i takmičarskih rezultata. Predmet ovoga rada je istraživanje takmičarske aktivnosti rvača slobodnim stilom na Prvim Evropskim Olimpijskim igrama 2015. godine. Glavni cilj ovog rada je sagledavanje specifičnosti tehničko-taktičkog delovanja vrhunskih rvača slobodnim stilom.

Metod

Kao uzorak istraživačkog rada analizirane su 146 borbi, tj. 6 olimpijskih od ukupno 8 težinskih kategorija realizovanih na takmičenju. Prikupljanje podataka, u ovom istraživanju transverzalnog karaktera, je izvršeno analizom zvaničnih izveštaja i video materijala borbi, koji su kasnije obrađeni deskriptivnom metodom. Rad pripada kategoriji prirodnog ne eksperimentalnog istraživanja, ali ima karakteristike i fundamentalnog i primenjenog istraživanja, jer obezbeđuje inovaciju znanja koje se može praktično primeniti.

Rezultati sa diskusijom

Grubo dobijeni rezultati pokazuju da je u prvoj rundi ostvareno 762, dok u drugoj 594 boda. Od ukupnog broja ostvarenih bodova, 1011 je realizovano u stojci, dok svega 262 boda u parteru, a 83 boda kroz neuspešne čelendže i pasivni način vođenja borbe. Uočavamo da dominiraju akcije za 2 boda (468), znatno manje akcije za 1 bod (149), a najmanje najatraktivnija bacanja (47). Od ukupnog broja realizovanih akcija, najzastupljenije su dolasci na leđa, zahvati u parteru i izguravanja iz kruga borilišta.

Zaključak

U zaključku ovog istraživanja konstatujemo, da izmena pravila u rvanju nije imala pozitivan efekat na veću primenu najatraktivnijih tehnika, ali da je ova promena povoljno uticala na to da borba postane zanimljivija za posmatrača, što se posebno ogleda kroz atraktivnije vođenje borbe, češće kažnjavanje pasivnosti, veći broj ostvarenih bodova i raznovrsniji načina ostvarivanja pobede.

Ključne reči: rvanje, slobodni stil, takmičarska aktivnost.

Literatura

1. Tünnemann, H. (2013). Evolution and adjustments for the new rules in wrestling. *International Journal of Wrestling Science*. 3(2), 94-104.

ANALYSIS OF FREESTYLE WRESTLERS' COMPETITIVE ACTIVITY ON THE FIRST EUROPEAN OLYMPIC GAMES 2015

Marković Milan¹; Dopsaj Milivoj¹

¹University of Belgrade, Faculty of Sports and Physical Education, Belgrade, Serbia

Introduction

Results that describe competitive activity of athletes belong to indicators that directly depict the relationship between the process of preparation and competitive results. The subject of this work is the research of freestyle wrestlers' competitive activity on the First European Olympic Games 2015. The main goal of this work is the overview of the specificity of technical-tactical actions of freestyle wrestlers.

Method

As a sample of the research, 146 fights have been analysed, i.e. 6 out of the total of 8 Olympic categories that were realized on the competition. Collecting of the data in this transverse research has been carried out by analysing the official reports and video materials of the fights, which have been later on processed by applying the descriptive method. The work belongs to the category of natural research, not experimental one, but it does have characteristics of fundamental, as well as applied research as it provides the innovation of knowledge that can be applied practically.

Results with discussion

Roughly obtained results show that 762 points were scored in the first round, whereas in the second round 594 points. Out of the total number of scored points, 1011 were realized in standing position, whereas only 262 points in parterre, and 83 points through unsuccessful challenges and the passive way of fight conduction. It can be seen that actions that carry 2 points (468) were most dominant, significantly less dominant were the actions that carry 1 point (149), and the least dominant were the most attractive throws (47). Out of the total number of realized actions, the most used ones were landings on the back, actions in parterre and pushouts.

Conclusion

In conclusion of this research, we can state that the change of rules in wrestling did not have a positive effect on the higher usage of the most attractive techniques, but that this change has favourably had an impact on making the fight more interesting to spectators, which especially reflected in the more attractive way of fight conduction, frequently penalized passiveness, higher number of scored points and diversity of ways of winning the fight.

Key words: wrestling, freestyle, competitive activity.

References

1. Tünnemann, H. (2013). Evolution and adjustments for the new rules in wrestling. *International Journal of Wrestling Science*. 3(2), 94-104.

RAZLIKE MOTORIČKIH SPOSOBNOSTI KARATISTA JUNIORSKOG UZRASTA PREMA SPECIJALIZACIJI

Branko Aleksić¹; Vladimir Timotijević¹; Miloš Mudrić¹; Srećko Jovanović¹; Dejan Suzović¹

¹Fakultet sporta i fizičkog vaspitanja, Univerzitet u Beogradu

Uvod

Postizanje vrhunskih rezultata u karateu zavisi od interakcije morfoloških karakteristika i motoričkih sposobnosti. U zavisnosti od specijalizacije i podele na takmičare u borbama i katama moguće je uočiti razlike u morfološkim karakteristikama (Fritzchel & Raschka 2007) kao i u motoričkim sposobnostima bitnim za ostvarenje uspeha u takmičenju (Koropanovski i sar. 2011). Cilj ovog rada je da se utvrde razlike između motoričkih sposobnosti kog karatista juniorskog uzrasta u odnosu na takmičarsku specijalizaciju.

Metode

Istraživanje je sprovedeno na uzorku 44 karatista juniora, podeljenih na takmičare u borbama (25) i katama (19). Prosečan uzrast ispitanika bio je 13.5 ± 2.3 , odnosno 14.9 ± 2.3 godina, visina tela 164.7 ± 15.7 , odnosno 160.9 ± 9.5 cm i masa tela 54.61 ± 0.6 , odnosno 51.7 ± 9.8 kg za takmičare u borbama odnosno katama. Podaci motoričkih sposobnosti dobijeni su primenom EUROFIT baterije testova i testova Republičkog zavoda za sport. Rezultati su obrađeni deskriptivnom statistikom (srednja vrednost i standardna devijacija) i komparativnom statistikom (jednostruka ANOVA).

Rezultati sa diskusijom

Rezultati motoričkih sposobnosti pokazali su da takmičari u katama imaju bolje rezultate u testu za procenu frekvencije pokreta (TAPR) na nivou značajnosti $p < 0.05$, $F = 5.71$. Jednonožni stavovi koji se koriste u katama, kao i stavovi i specifično kretanje nogama, uticali su na bolje rezultate takmičara u katama u testu za procenu ravnoteže (RAVN) na nivou značajnosti $p < 0.01$, $F = 9.20$, odnosno u testovima za procenu brzinske snage muskulature nogu (SJ, CMJ, CMJZ), na granici značajnosti ($p = 0.09-0.14$; $F = 2.23-3.12$).

Zaključak

Na osnovu dobijenih rezultata može se zaključiti da uočene razlike između takmičara u borbama i katama dobijene u testovima za procenu ravnoteže, frekvencije pokreta i eksplozivne snage nogu, mogu biti deo sistemskog postupka u procesu rane selekcije mladih karatista.

Ključne reči: karate, juniori, borbe, kate

Literatura

1. Fritzchel, J., Raschka, C. (2007). Sports anthropological investigations on somatotypology of elite karateka. *Anthropologischer Anzeiger*, 65(3): 317-329.
2. Koropanovski, N., Berjan, B., Bozic, P., Pazin, N., Sanader, A., Jovanovic, S., Jaric, S. (2011). Anthropometric and Physical Performance Profiles of Elite Karate Kumite and Kata Competitors. *Journal of Human Kinetics*, 30: 107-114.

DIFFERENCES OF MOTOR ABILITIES OF JUNIOR KARATEKA ACCORDING THE SPECIALISATION

Vladimir Timotijević¹; Branko Aleksić¹; Miloš Mudrić¹; Srećko Jovanović¹; Dejan Suzović¹

¹Faculty of Sport and Physical Education, University of Belgrade

Introduction

Achievement of the top results in karate sport depends of interaction of morphological characteristics and motor abilities. Depending on the specialization and division of the combat and kata competitors it is possible to notice the differences in morphological characteristics (Fritzchel & Raschka 2007) as well as the motor abilities important for competition success (Koropanovski et. al).

Methods

The survey was conducted on a sample of 44 junior karateka divided on the combat (25) and kata (19) competitors. The age of subjects was 13.5 (2.3) and 14.9 (2.3) years, body height 164.7 (15.7) and 160.9 (9.5) cm and body mass 54.6 (10.6), and 51.7 (9.8) kg for the combat and kata competitors respectively. Data for motor abilities were obtained using the EUROFIT battery of tests and tests of the Serbian Institute for Sport, important for this study. Results were analyzed by descriptive (mean and standard deviation) and comparative statistics (one-way ANOVA).

Results with discussion

Results of morphological characteristics suggest that the combat competitors are slightly taller and heavier, which could be caused by the division of the competitors in the weight category of which vary according to the weight and height of athletes. Results revealed that motor abilities of the competitors in kata are better in the test for assessing the movement frequency (TAPR) the level of significance $p < 0.05$, $F = 5.71$. One-leg stances used in kata, as well as attitudes and gestures with semi flexed legs, influenced the better results of kata competitors in the balance test (RAVN) at the significance level of $p < 0.01$, $F = 9.20$, as well as in the leg explosive strength tests (SJ, CMJ, CMJZ), borderline significant ($p = 0:09$ to $0:14$; $F = 2:23$ to $3:12$).

Conclusion

Combat competitors are taller and heavier than the kata competitors (Fritzchel & Raschka 2007) due to the specific weight categories in the fighting. The observed differences between the combat and kata competitors obtained in balance tests, movement frequency, explosive leg strength, can be used in the early selection of young karateka.

Key words: *karate, juniors, borbe, kate karate, juniors, fighting, kata*

References

1. Fritzchel, J., Raschka, C. (2007). Sports anthropological investigations on somatotypology of elite karateka. *Anthropologischer Anzeiger*, 65(3): 317-329.
2. Koropanovski, N., Berjan, B., Bozic, P., Pazin, N., Sanader, A., Jovanovic, S., Jaric, S. (2011). Anthropometric and Physical Performance Profiles of Elite Karate Kumite and Kata Competitors. *Journal of Human Kinetics*, 30: 107-114.

UTICAJ DVOMESEČNE PAUZE U TRENINGU NA MOTORIČKE SPOSOBNOSTI ODOJKAŠICA UZRASTA 13 I 14 GODINA

Goran Nešić¹; Nikola Majstorović¹; Zoran Savić²; Jelena Simić³

¹ Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja, Beograd, Srbija

² Univerzitet u Prištini, Fakultet za sport i fizičko vaspitanje, Leposavić, Srbija

³ Osnovna škola "Vuk Karadžić" Stepovevac, Srbija.

Uvod

Veliki broj istraživanja se bavi uticajem različitih trenažnih procesa na promene motoričkih sposobnosti, sa druge strane pauza u sezoni sportiste je fenomen koji takođe može značajno da utiče na njih. Cilj ovog istraživanja bio je da se ustanove promene u motoričkim sposobnostima, kao i antropometrijskim karakteristikama kod odbojkašica uzrasta 13-14 godina nakon pauze od 2 meseca.

Metod

Kao instrument za procenu karaktera i trajanja pauze korišćen je standardizovani IPAQ (International Physical activity questionnaire) upitnik o fizičkoj aktivnosti koji je modifikovan za potrebe ovog istraživanja. Za istraživanje su korišćeni antropometrijski parametri (telesna visina, telesna težina i BMI), a za procenu motoričkih sposobnosti uzeti su terenski testovi za procenu brzinske snage mišića opružaća nogu, brzinske snage mišića ruku, repetativne snage, brzinske izdržljivosti i agilnosti (skok u dalj iz mesta, obaranje čunjeva, bacanje medicinke iz ležećeg položaja, ležanje-sed za 30s i dokoraci u 3m).

Rezultati sa diskusijom

Na osnovu analiza dobijenih rezultata, uočene su, posle dvomesečne pauze u treningu, značajne razlike u antropometrijskim osobinama: telesna visina, telesna masa i BMI, na nivou značajnosti $p < 0,05$. Takođe primećene su značajne razlike u 3/5 motoričkih sposobnosti i to u brzinskoj snazi mišića opružaća nogu, brzinskoj snazi mišića ruku i brzinskoj izdržljivosti, dok nije bilo značajne razlike u agilnosti i repetitivnoj snazi.

Zaključak

Kod odbojkašica, pauza u treningu u trajanju od 2 meseca selektivno utiče na promene u motoričkim sposobnostima. Agilnost i repetitivna snaga, kao jedne od specifičnih sposobnosti za ovu sportsku granu su ostale gotovo nepromenjene, odnosno pauza na njih nije imala značajan uticaj.

Ključne reči: pauza, motoričke sposobnosti, odbojkašice.

Literatura

1. Nesic, G., Sikimic, M., Ilic, V. and Stojanovic, T. (2011). Play structure of top female volleyball players: explorative factorial approach. *Br J Sports Med* ;45:6 541.
2. Nesic, G., Ilic, D., Majstorovic, N., Grbic, V., and Osmankac, N. (2013) Training effects on general and specific motor skills on female volleyball players 13-14 years old. *SportLogia*, vol. 9, issue 2, str. 201-216.

THE IMPACT OF A TWO MONTH BRAKE FROM TRAINING ON MOTOR ABILITIES IN 13 TO 14 YEARS OLD FEMALE VOLLEYBALL PLAYERS

Goran Nešić¹; Nikola Majstorović¹; Zoran Savić²; Jelena Simić³

¹ University of Belgrade, Faculty of sport and physical education, Belgrade, Serbia

² University of Prishtina, Faculty of sport and physical education, Leposavić, Serbia

³ Elementary school "Vuk Karadžić" Stepovevac, Serbia.

Introduction

Numerous studies explore the influence of different training processes on changes in motor abilities, on the other hand brake in the athletes season is the phenomenon which could also have a significant impact on motor abilities. The aim of this study was to investigate changes in motor abilities, as well as anthropometric characteristics of female volleyball players 13-14 years old following the 2 months brake.

Method

The instrument used for the assessment of brake characteristics and duration was standardized IPAQ (International Physical activity questionnaire) questionnaire, modified for the purposes of this study. Anthropometric parameters (body height, body mass, BMI) were used for this research, as well as field tests for the motoric abilities assessing explosive strength of leg extensor muscles, speed and strength of arm muscles, repetitive strength, endurance in speed, and agility (long jump, felling cones, medicine ball throw from prone position, crunches in 30 seconds, and 3m sidesteps).

Results with discussion

Based on the analysis of the obtained results, differences were observed in anthropometric characteristics: body height, body mass, and BMI, with the level of significance of $p < 0,05$. Significant differences were also observed in 3/5 of motor abilities: explosive strength of leg extensor muscles, strength of arm muscles, and endurance in speed, while no significant differences were observed in variables assessing agility, and repetitive strength.

Conclusion

A two month brake from training had selective influence on changes in motor abilities in female volleyball players. Agility, and repetitive strength, as some of volleyball specific abilities remained almost unchanged, respectively brake didn't have significant impact on them.

Keywords: brake, motor abilities, female volleyball players.

References

1. Nestic, G., Sikimic, M., Ilic, V. and Stojanovic, T. (2011). Play structure of top female volleyball players: explorative factorial approach. *Br J Sports Med* ;45:6 541.
2. Nestic, G., Ilic, D., Majstorovic, N., Grbic, V., and Osmankac, N. (2013) Training effects on general and specific motor skills on female volleyball players 13-14 years old. *SportLogia*, vol. 9, issue 2, str. 201-216.

TAKTIČKA EFIKASNOST REPREZENTACIJA OSVAJAČA SVETSKOG PRVENSTVA U FUDBALU 2010. I 2014. GODINE

Aleksandar Janković¹; Bojan Leontijević¹; Miloš Pejović¹

¹ Fakultet Sporta i Fizičkog Vaspitanja, Beograd, Srbija

Uvod

Pobednici Stetskih prvenstava u fudbalu su vrlo često nosioci novih trendova u razvoju fudbalskog sporta. Cilj ovog rada je da analizom takmičarske aktivnosti, na taktičkom planu, reprezentacija osvajača poslednja dva Stetska prvenstva u fudbalu, otkriju sredstva taktike koja donose vrhunske rezultate i da se na taj način, eventualno, predvidi novi pravac u razvoju fudbalskog sporta, posmatrano iz prostora taktike.

Metod

Analizom je obuhvaćeno taktičko ispoljavanje reprezentacija koje su osvojile poslednja dva Svetska prvenstva 2010. godine (reprezentacija Španije) i 2014. godine (reprezentacija Nemačke). Svaka od reprezentacija na turniru odigrala je po sedam utakmica. U predhodno oformljen protokol posmatranja, metodom notacije, analizirani su svi napadi koji su završeni udarcem na gol protivnika. Struktura uspešno izvedena napada procenjavana je u odnosu na: preciznost i vrstu realizovane napadačke aktivnosti, zonu započinjanja akcije, načina realizacije završnog dodavanja (asistencije) i udaljenosti od gola sa koga je upućen udarac na gol. Razlike u taktičkom ispoljavanju testirane su neparametrijskim statističkim procedurom Hi-kvadrat i Man-Vitni U testom.

Rezultati sa diskusijom

Rezultati dobijeni ovim istraživanjem pokazali su da je reprezentacija Španije postala Svetski prvak 2010. godine sa značajno većim brojem uspešno izvedenih napada (prosečno 15,5) ali sa manjom efikasnosti (1,1 gol po utakmici) u odnosu na Nemačku 2014 (2,6). Obe reprezentacije imale su podjednaku raspodelu kontinuiranih, brzih i napada iz prekida (60%, 20%, 20%), kao i procentualno jednak broj napada započetih iz zone odbrane, manevra i napada. Reprezentacija Nemačke svoje napada završavala je, u najvećoj meri, ubacivanjem lopte sa bočnih pozicija, dok su Španci napadačke akcije uglavnom završavali individualnim probojima i dubinskim dodavanjima. Uočena je značajno veća zastupljenost udaraca sa distance kod reprezentacije Španije 2010. godine (52%).

Zaključak

Tumačenjem dobijenih rezultata može se konstatovati da postoje određene zajedničke karakteristike igre kod reprezentacija koje su ostvarile vrhunske rezultate. Takođe, na osnovu uočenih razlika u taktičkom ispoljavanju, uočavaju se ipak različiti pravci u taktičkom planu igre dve očigledno različite fudbalske škole.

Ključne reči : Fudbal, analiza igre, taktika, Svetsko prvenstvo

Literatura

1. Јанковић, А., Леонтијевић, Б., Пашић, М. и Јелушић, В. (2011). Утицај појединих нападачких средстава тактике на остварени резултат екипа учесница Светског првенства у фудбалу у Јужноафричкој републици 2010. године. Физичка култура, 65(1), 34-45.
2. Liu, H., Gomez, M., A., Lago-Penas, C. & Sampaio, J. (2015). Match statistics related to winning in the group stage of 2014 Brazil FIFA World Cup. Journal of Sports Sciences, 33 (12), 1205-1213.

TACTICAL EFFICIENCY OF THE WINNING FOOTBALL NATIONAL TEAMS AT THE 2010 AND 2014 FIFA WORLD CUP

Aleksandar Janković¹; Bojan Leontijević¹; Miloš Pejović¹

¹ Faculty of Sport and Physical Education, Belgrade, Serbia

Introduction

Football World Cup winners are often introducing new trends in the game of football. The aim of this paper is to discover, by analyzing competitive tactics-related activities of the football national teams that won the last World Cups, tactical means that contribute to top results and consequently to try to predict a new direction in development of the game of football, in the field of tactics.

Method

The analysis included tactical manifestation of the national teams that won the last two World cups – the national team of Spain in 2010 and the national team of Germany in 2014. The two national teams played seven games each. In the previously designed observation protocol, by the notation methods, all attacks that finished with a shoot at a goal were analyzed. The structure of successfully realized attack was assessed with regard to: accuracy and the type of realized attacking activity, initiation zone of the attack, way of completing the final pass (assists) and distance from the goal from which the shoot at goal was performed. The differences in tactical manifestation were tested by nonparametric statistic procedure of chi-squared test and Mann–Whitney U test.

Results with discussion

The results obtained by this research showed that the Spanish national team became the World cup winner in 2010 with significantly greater number of successfully realized attacks (on average 15.5) but with less efficiency (1.1 goal per game) compared to Germany in 2014 (2,6). Both national teams had even distribution of position, fast and attacks after the stoppage (60%, 20% and 20% respectively), as well as an equal percentage of attacks started from the defense, maneuver and attack zones. The German national team finished its attacks, to the greatest extent, by side throw-ins while the Spanish team finished its attacking actions mostly by individual penetrating and deep passes. A significantly greater frequency of the shots from distance was observed in the Spanish national team in 2010 (52%).

Conclusion

The interpretation of the obtained results could ascertain that there are certain common play features of the teams that achieved top results. Additionally, based on the observed differences in tactical manifestations, different directions in tactical plan of the game can still be identified in the two, obviously different schools of football.

Key words: Football, Game Analysis, Tactics, World Cup

References

1. Janković, A., Leontijević, B., Pašić, M. i Jelušić, V. (2011). Uticaj pojedinih napadačkih sredstava taktike na ostvareni rezultat ekipa učesnica Svetskog prvenstva u fudbalu u Južnoafričkoj republici 2010. godine. *Fizička kultura*, 65(1), 34-45.
2. Liu, H., Gomez, M.,A., Lago-Penas, C. & Sampaio, J. (2015). Match statistics related to winning in the group stage of 2014 Brazil FIFA World Cup. *Journal of Sports Sciences*, 33 (12), 1205-1213.

UPOREDNA ANALIZA TAKTIČKOG ISPOLJAVANJA FUDBALERA PARTIZANA NA UTAKMICAMA U EVROPSKIM TAKMIČENJA I SUPER LIGI SRBIJE

Bojan Leontijević¹; Aleksandar Janković¹; Nikola Ćosić¹

¹ Fakultet Sporta i fizičkog vaspitanja, Beograd, Srbija

Uvod

Srpski fudbal prolazi kroz jednu od najvećih organizacionih i rezultatskih kriza u svojoj istoriji. Potvrda ovoj konstataciji su rezultati srpskih klubova i seniorske reprezentacije u poslednjih 25 godina na međunarodnim takmičenjima. Ovaj rad ima cilj da analizira, uporedi i otkrije eventualne razlike u taktičkom ispoljavanju fudbalera Partizana u evropskim takmičenjima (kvalifikacije za UEFA Ligu Šampiona i grupna faza UEFA Liga Evrope - LŠ/LE) i Super ligi Srbije (SLS) u takmičarskoj sezoni 2014/2015.

Metod

Analizom je obuhvaćeno taktičko ispoljavanje fudbalera Partizana na ukupno deset takmičarskih utakmica u evropskim takmičenjima (LŠ/LE) i deset nasumično odabranih utakmica Super lige Srbije odigranih u istoj takmičarskoj sezoni. Prikupljanje podataka izvršeno je posredstvom Instat tehnologije koja se bavi analizom takmičarske aktivnosti u fudbalu. Taktičko ispoljavanje, u oba takmičenja, procenjivano je analizom sledećih parametara: preciznost udaraca na gol protivnika, vrste realizovanih napada, posed lopte (ukupan broj dolazaka u posed lopte, trajanje poseda, procenat poseda u odnosu na protivnika) i strukture dodavanja (broj dodavanja, uspešnost dodavanja, vrste i brzina dodavanja). Razlike u taktičkom ispoljavanju procenjivane su neparametrijskom statističkom procedurom Hi-kvadrat testom.

Rezultati sa diskusijom

Rezultati ovog istraživanja pokazali su da nema razlike u raspodeli pojedinih vrsta realizovanih napada ($p = 0.15$) i njihove preciznosti ($p = 0.65$) u dva analizirana takmičenja ali je njihova učestalost značajno veća u SLS takmičenju. Posed lopte je značajno veći u SLS takmičenju (12%), ali takođe nema razlike u raspodeli poseda lopte u odnosu na njegovo trajanje ($p = 0.27$). Struktura pas igre pokazuje da su protivnici Partizana u LŠ/LE takmičenju značajno uspešniji u ovom segmentu igre.

Zaključak

Rezultati dobijeni ovim istraživanjem pokazali su, u jednom delu razlike u taktičkom pogledu, između dva analizirana takmičenja, i kao takvi mogu se iskoristiti u definisanju smernica za pripremu srpskih klubova za naredna učešća u evropskim takmičenjima.

Ključne reči: Fudbal, analiza igre, taktika, Partizan

Literatura

1. Janković, A., Leontijević, B., Jekušić, V., Pašić, M. & Mićović, B. (2011). Influence of tactics efficiency on result in Serbian soccer Super league in season 2009/2010. *Journal of Physical Education and Sport*, 11(1), 32-41
2. Castellano, J., Casamichana, D., & Lago, C. (2012). The use of match statistics that discriminate between successful and unsuccessful soccer teams. *Journal of Human Kinetics*, 31, 139-147.

COMPARATIVE ANALYSIS OF TACTICAL MANIFESTATION OF THE FOOTBALL PLAYERS OF PARTIZAN IN THE GAMES OF EUROPEAN COMPETITIONS AND THE SERBIAN SUPERLIGA

Bojan Leontijević¹; Aleksandar Janković¹; Nikola Ćosić¹

¹ Faculty of Sport and Physical Education, Belgrade, Serbia

Introduction

Serbian football is undergoing one of the biggest organizational and result crisis in its history. The results of Serbian clubs and the senior national team at the international competition in the last twenty-five years backs up this claim. This paper is aimed at analyzing, comparing and discriminating in tactical manifestations of the football players of "Partizan" in European competitions (qualifying phases for the UEFA Champions League and group phase of the UEFA Europa League - CL/EL respectively) and the Serbian SuperLiga (SLS) in 2014/2015 competitive season.

Method

The analysis included tactical manifestation of the football players of "Partizan" at the total of ten competition matches at European competitions (CL/EL) and ten randomly chosen games of the Serbian SuperLiga played during the same competitive season. The data were collected by using the InStat technology for analyzing competitive activities in football. Tactical manifestations, in both competitions, was assessed by analyzing the following parameters: accuracy when shooting at the opponent's goal, types of realized attacks, ball possession (overall number of gaining the possession of the ball, duration of the possession, percentage of possessions compared to the opponent) and structures of the passes (number of passes, success in passing the ball, types and speed of passing). Differences in tactical manifestation were assessed by nonparametric statistic procedure of chi-squared test.

Results with discussion

The results of this research indicate that there is no difference in distribution of certain types of realized attacks ($p = 0.15$) and their accuracy ($p = 0.65$) in the two analyzed competitions but that their frequency is significantly higher in the SLS. Ball possession is significantly higher in the SLS (12%), but again, there is no difference in the distribution of ball possession with regard to its duration ($p = 0.27$). The structure of the pass game shows that Partizan's opponents in the CL/EL competitions are significantly more successful in this segment of the game.

Conclusion

The results obtained in this research showed tactical differences in one part, between the two analyzed competitions, and can be used for defining guidelines to prepare Serbian clubs for further participation in European competitions.

Key words: Football, Game analysis, Tactics, Partizan

References

1. Janković, A., Leontijević, B., Jekušić, V., Pašić, M. & Mićović, B. (2011). Influence of tactics efficiency on result in Serbian soccer Super ELague in season 2009/2010. *Journal of Physical Education and Sport*, 11(1), 32-41
2. Castellano, J., Casamichana, D., & Lago, C. (2012). The Use of match statistics that discriminate between successful and unsuccessful soccer teams. *Journal of Human Kinetics*, 31, 139-147.

POUZDANOST ANALIZE KRETANJA VRHUNSKIH FUDBALERA TOKOM UTAKMICE MERENA SOFTVERSKIM SISTEMOM ZA ANALIZU KRETANJA TRACKING MOTION BIOIRC SYSTEM

Radivoje Radaković^{1,3}; Milivoj Dopsaj²; Nenad Filipović²; Radun Vulović²; Bojan Leontijević²

¹ Istraživačko Razvojni Centar za Biomedicinski Inženjering, BIOIRC, Kragujevac, Srbija

² Fakultet Sporta i Fizičkog Vaspitanja, Beograd, Srbija

³ FK Crvena Zvezda, Beograd, Srbija

Uvod

Softverski sistemi za praćenje i analizu kretanja igrača tokom utakmica postaju sve popularnije analitičko-dijagnostičko sredstvo u modernom sportu. Cilj ovog istraživanja je da se utvrdi pouzdanost analize kretanja vrhunskih igrača izmerenog korišćenjem softverskog sistema za praćenje kretanja.

Metod

Razvijen je poseban softver za analizu kretanja. Istraživanje je sprovedeno na uzorku od 23 igrača, čije kretanje je mereno tokom 6 zvaničnih utakmica. Primjenjene su varijable za procenu varijabilnosti kretanja vrhunskih igrača tokom igre merenog softverskim sistemom (Bioirc, Kragujevac, Srbija). Parametri strukture kretanja igrača analizirani su korišćenjem deskriptivne statističke metode. Reliabilnost posmatranih varijabli ispitana je korišćenjem linearne regresione analize.

Rezultati i diskusija

Analizirani i prikazani su rezultati pouzdanosti analize kretanja vrhunskih fudbalera tokom utakmice merene softverskim sistemom za praćenje kretanja.

Dobijeni rezultati ukazuju na visok do veoma visok stepen pouzdanosti u odnosu na linije tima, tokom prvog i drugog poluvremena. Koeficijenti varijabilnosti na nivou kretanja igrača čitavog tima tokom prvog i drugog poluvremena (Kronbah $\alpha = 0.946$) su veoma visoke i zadovoljavajuće vrednosti.

Zaključak

Može se zaključiti da postoji visok nivo pouzdanosti u primeni softverskog sistema za praćenje kretanja. Sistem softverske analize je vrlo precizan analitički instrument sa preciznim parametrima upotrebljiv u metodologiji rada trenera i sportskih stručnjaka, tako da se može preporučiti u analitičkoj i dijagnostičkoj praksi u fudbalu.

Ključne reči: relijabilnost (pouzdanost), vrhunski igrači, softver, praćenje kretanja

Literatura

1. Baviskar, S. P, Ujgare, N. S. (2012). Kernel Based Object Tracking Using Mean Shift Method, IJCA Proceedings on International Conference in Computational Intelligence, New York, USA, Published by Foundation of Computer Science.
2. Radaković, R., Đurović, Ž., Prosinečki, R., Vulović, R., Peulić, A., Nikolić, Filipović, N. (2013). Opšti parametri Tracking motion analize igrača FK Crvena Zvezda tokom utakmice 4. kola kvalifikacija za Ligu Evrope 2012/13. Abstract book of: International Conference Faculty of Sport and Physical Education, B

THE RELIABILITY OF MOTION ANALYSIS AT ELITE FOOTBALL PLAYERS DURING THE MATCH MEASURED BY THE TRACKING MOTION BIOIRC SOFTWARE SYSTEM

Radivoje Radaković^{1,3}; Milivoj Dopsaj²; Nenad Filipović²; Radun Vulović²; Bojan Leontijević²

¹ Bioengineering Research and Development Center, BioIRC, Kragujevac

² Faculty of Sport and Physical Education, Belgrade

³ FC Red Star, Belgrade

Introduction.

Tracking motion analysis become a very important analytical-diagnostic means for tracking player's functionality and situation efficiency in modern soccer. The aim of this study is to determine the internal reliability volume movements in the games of top player measured using a software system Tracking Motion.

Methods

It was developed special software for tracking motion analysis. The research was conducted on a sample of 23 players, which were recorded during the 6 official matches. The variables was administered to assess internal variability of movement of top players during the game measured by Tracking Motion software system (BioIRC, Kragujevac, Serbia). Parameters movement structure were analyzed using descriptive statistical method. Reliability of monitored variables was examined using linear regression analysis.

Results with discussion

The results for the reliability of motion analysis at elite football players during the match measured by the Tracking Motion software system are shown. The coefficients of variability on a level of movement of players of the entire team during the first and the second halves (Cronbach $\alpha = 0.946$) are of very high and satisfactory values.

Conclusion

On the basis of the results of players' movement during the analyzed matches it can be concluded that there is a high level of reliability in application of Tracking Motion software system. The system of software analysis is very precise analytical instrument, with exact parameters and easy to explain and use in work methodology of coaches and sport experts, so that it could be recommended in analytical and diagnostic practice in soccer.

Key words: reliability, elite players, software, Tracking Motion

References

1. Baviskar, S. P, Ujgare, N. S. (2012). Kernel Based Object Tracking Using Mean Shift Method, IJCA Proceedings on International Conference in Computational Intelligence, New York, USA, Published by Foundation of Computer Science.
2. Radaković, R., Đurović, Ž., Prosinečki, R., Vulović, R., Peulić, A., Nikolić, Filipović, N. (2013). Opšti parametri Tracking motion analize igrača FK Crvena Zvezda tokom utakmice 4. Kola kvalifikacija za Ligu Evrope 2012/13. Abstract book of: International Conference Faculty of Sport and Physical Education, B

RAZLIKE U ISPOLJAVANJU OPŠTIH I SPECIFIČNIH MOTORIČKIH SPOSOBNOSTI ODBOJKAŠICA I NETRENIRANIH DEVOJČICA STAROSTI 15 GODINA

Zoran Savić¹; Goran Nešić²; Vladimir Grbić²,

¹ Fakultet za sport i fizičko vaspitanje Univerziteta u Prištini, Leposavić, Srbija

² Fakultet sporta i fizičkog vaspitanja Univerziteta u Beogradu, Beograd, Srbija

Uvod

Cilj ovog istraživanja je da se utvrde razlike u opštim i specifičnim motoričkim sposobnostima između odbojkašica i netreniranih devojčica uzrasta 15 godina.

Metod

Tip istraživanja je „*ex-post facto*” istraživanje, sa dve grupe ispitanika od kojih je eksperimentalna grupa uključena u trenažni proces (odbojka), a druga grupa se ne bavi fizičkom aktivnošću van časova fizičkog vaspitanja. Uzorak ispitanika činio je 60 učenica uzrasta 15 godina, pri čemu eksperimentalnu grupu čine odbojkašice OK „Radnički“ iz Beograda, a kontrolnu netrenirane učenice Prve beogradske gimnazije. Korišćena je sledeća baterija testova: za merenje antropometrijskih karakteristika - telesna masa, telesna visina i indeks telesne mase; za procenu opštih motoričkih sposobnosti - „*Sargent*”-ov test iz mesta, „*Sargent*”-ov test iz zaleta, „*X*” test, Pretklon na klupici, Bacanje medicinke, Ležanje - sed za 30 sekundi, Trčanje 20 metara; za procenu specifičnih motoričkih sposobnosti - „*Russell-lange*”-ovi testovi. Podaci su obrađeni pomoću programa SPSS 19.0, a za utvrđivanje odnosa između rezultata korišćen je *t-test* za male zavisne uzorke.

Rezultati sa diskusijom

Rezultati su pokazali da se ove dve grupe ispitanika ne razlikuju u pogledu antropometrijskih karakteristika, a da su u testovima opštih i specifičnih motoričkih sposobnosti odbojkašice pokazale bolje rezultate.

Zaključak

Treba biti oprezan prilikom uopštavanja dobijenih rezultata i izvedenih zaključaka, jer boljim rezultatima odbojkašica može doprineti i njihovo iskustvo u kretnim strukturama specifičnim za odbojku. Neminovno je da su netrenirane učenice uzrasta 15 godina, slabijeg nivoa razvijenosti motoričkih sposobnosti, pa se postavlja pitanje na koji način se to može popraviti i da li programirana nastava sa akcentom na odbojci može doprineti tome.

Ključne reči: motoričke sposobnosti, učenice, odbojkašice.

Literatura

1. Bokan, M. (2009) Motoričke sposobnosti odbojkašai testovi za njihovu procenu. *Fizička kultura*, 63, str. 116-125.
2. Šegregur, D., Kuhar, V. i Parandžik, P. (2010) Antropometrijska, motorička i funkcionalna obilježja učenika prvih razreda srednjih škola. *Hrvatski Športskomedicinski vjesnik*, 25, str. 67-74.

DIFFERENCES IN MANIFESTATION OF GENERAL AND SPECIFIC MOTOR ABILITIES OF FEMALE VOLLEYBALL PLAYERS AND NON-ATHLETES GIRLS AGED 15 YEARS

Zoran Savić¹; Goran Nešić²; Vladimir Grbić²,

¹ Faculty of Sport and Physical Education, University of Priština, Leposavić, Serbia

² Faculty of Sport and Physical Education, University of Belgrade, Serbia

Introduction

The aim of this research was to determine differences in general and specific motor abilities between female volleyball players and non-athletes girls aged 15 years.

Method

This was an „*ex-post facto*” research with two groups of respondents, the experimental group was included in training process (volleyball), while the second group was not involved in physical activity apart from physical education classes. The sample consisted of 60 female students aged 15 years, and the experimental group were female volleyball players of the volleyball club „Radnički“ from Belgrade and the control group included non-athletes girls, students of the First High School of Belgrade. The following battery of tests was used: for measurement of anthropometric features – body mass, body height and BMI; for assessment of the general motor abilities: Sargent jump test – from a static position, Sargent jump test – from running, “X” test, bend forward on a bench, Medicine ball throwing, Lay – sit 30 seconds, 20-meter running; for assessment of specific motor abilities: Russell-Lange tests. The data were elaborated in SPSS 19.0, and establishing of relation between the results we used the *t-test* for small dependent variables.

Results with discussion

The results showed that these two groups of respondents do not differentiate in anthropometric features, while volleyball players scored better at the tests of general and specific motor abilities indicated.

Conclusion

One should be careful when making generalization of the obtained results and drawn conclusions, because better results of volleyball players can be result of their experience in volleyball-specific movement structures. Inevitably, non-athletes girls aged 15 years had less developed motor abilities, and the question is whether that be improved and whether programmed instruction with stress on volleyball can contribute it.

Key words: motor abilities, female students, female volleyball players.

References

1. Bokan, M. (2009) Motoričke sposobnosti odbojkašai testovi za njihovu procenu. *Fizička kultura*, 63, p. 116-125.
2. Šegregur, D., Kuhar, V. i Parandžik, P. (2010) Antropometrijska, motorička i funkcionalna obilježja učenika prvih razreda srednjih škola. *Hrvatski Športskomedicinski vjesnik*, 25, str. 67-74.

INFLUENCE OF DIFFERENT ISOMETRIC PRELOADS ON ECCENTRIC FORCE ENHANCEMENT AND MUSCLE ACTIVITY

Nenad Djuricic¹; Daniel Hahn¹

¹Faculty of Sport Science, Ruhr-University Bochum, Germany

Introduction

While isolated muscles produce increased forces during eccentric compared to isometric contractions, this is rather rarely observed for maximum voluntary contractions and due to reduced muscle activity (EMG) this has been associated with neural inhibition. However, because of poor experimental standardization, the comparability of studies reporting opposite results is strongly limited. The purpose of this study was to investigate the influence of familiarization and different levels of isometric preloads on maximal voluntary eccentric torque production and muscle activity compared to maximal voluntary isometric contractions.

Methods

Eleven subjects attended two familiarization and one test session. On every session, voluntary isometric torque (ISO) and voluntary activation (VA) as measured by interpolation twitch technique (ITT) were obtained from knee extensors at 60° knee flexion. Maximal voluntary eccentric torque (EC) at 60° knee flexion and an angular velocity of 60°s⁻¹ was measured after overcoming different isometric preload levels (30%, 70%, 95%). Additionally, surface EMG was recorded from rectus femoris (RF), vastus lateralis (VL) and vastus medialis (VM). For analysis EC was compared with peak ISO, and also ISO at the same contraction time. Further VA during ISO was correlated to the ability of enhanced torque production during EC.

Results with discussion

Although the EC showed a trend to exceed peak ISO, the study revealed that there is no significant difference between the peak ISO and EC at 95%. However, when matched for contraction time, EC after 70% and 95% preloads exceeded corresponding ISO by 10% and 15% respectively ($p \leq 0.05$). Furthermore, EMG recordings showed no differences between EC and ISO, even when considering contraction time. Although familiarization led to an increase in VA and peak ISO ($p \leq 0.05$), eccentric force enhancement (EC/ISO) did not change. No significant correlation could be found between VA and eccentric force enhancement ($r < 0.3$).

Conclusion

Since voluntary eccentric torque production and its neural control is still a matter of debate, it is of great importance to standardize experimental conditions so that comparable results can be obtained. Although we found only slight eccentric force enhancement after 70% and 95% preloads, EMG recordings and missing correlations with VA did not point towards neural inhibition.

Keywords: Eccentric torque, EMG, Voluntary activation, preload.

References

1. Duchateau J., Baudry S.(2014). Insights into the neural control of eccentric contractions. *J Appl Physiol* 116:1418-1425.

SESIJA 3 / SESSION 3

Istraživačko-metodološki aspekti efekata primene
fizičkih aktivnosti u fizičkom vaspitanju i rekreaciji

*Research-methodological aspects of the effects of
physical activity application in PE and recreation*

PARAMETRI PLIVAČKIH SPOSOBNOSTI UČENIKA OSNOVNE ŠKOLE

Suzović Dejan¹; Savičević Dejan²

¹Fakultet sporta i fizičkog vaspitanja, Univerzitet u Beogradu

²Visoka škola strukovnih studija za vaspitače i poslovne informatičare, Sremska Mitrovica, Srbija

Uvod

Pravilan metodički pristup u odnosu na fizičko vežbanje, već u predškolskom uzrastu, podstiče pozitivan razvoj fizioloških karakteristika deteta. U ranijim istraživanjima utvrđeno je da kod učenja i usavršavanja tehnike plivanja postoji i dodatni efekat koji se manifestuje preko poboljšanja biomehaničkih aspekata plivačkih parametara (Maglischo, 2003; Dekerle, et al, 2005; Grosse, 2007).

Metod

Uzorak ispitanika činilo je 80 učenika, 36 dečaka i 44 devojčice, uzrasta 11-14 godina koja su pohađala četiri kursa obuke plivanja ukupnog trajanja 960 sati godišnje. Ispitanici su bili podeljeni u grupe: prema uzrastu, polu i plivačkim sposobnostima. Svi ispitanici su plivali 50 metara kraul tehnikom startom iz vode u bazenu dužine 50 metara. Za potrebe ovog istraživanja korišćene su sledeće varijable iz domena parametara plivačkih sposobnosti: Brzina plivanja, Dužina zaveslaja (DZ), Frekvencija zaveslaja (FZ), Brzina (BZ) i Indeks zaveslaja (IZ). Podaci su obrađeni metodom deskriptivne, komparativne (T-test) i kauzalne statističke procedure (korelaciona analiza).

Rezultati sa diskusijom

Brzina plivanja povećavala se sa uzrastom ispitanika i to znatno više kod dečaka (0,885 m/s za dečake i 0,745 m/s za devojčice), što ukazuje na povezanost i sa polom i uzrastom ispitanika ($p < 0,05$). Dužina zaveslaja (1,33 m/cik za dečake i 1,41 m/cik za devojčice) pokazale su zavisnost od uzrasta ispitanika ($p < 0,05$), ali ne i od pola, osim u uzrastu 11 i 12 godina. Nasuprot tome FZ je povećavana sa uzrastom, bez statističke značajnosti, i kod dečaka je iznosila 0,64 cik/s a kod devojčica 0,53 cik/s. Brzina zaveslaja (BZ) razlikuju se kod ispitanika oba pola pokazujući povezanost sa polom i brzinom plivanja ($p < 0,01$). Indeks zaveslaja nije se razlikovao u jedanaestoj i dvanaestoj godini, ali je imao znatno veće vrednosti kod dečaka u odnosu na devojčice u 13 i 14 godini.

Zaključak

Frekvencija zaveslaja ostaje nepromenjena od 11-14 godine, pri čemu je veća kod dečaka nego kod devojčica. Dužine zaveslaja povećavaju se sa uzrastom i ne razlikuju se između dečaka i devojčica, što ukazuje da su tehničke mogućnosti identične kod oba pola. Indeks zaveslaja, u odnosu na uzrasne i morfološke karakteristike, može da bude praktično merilo za procenu nivoa plivačkih sposobnosti.

Ključne reči: *plivanje, brzina, zaveslaj, učenici*

Literatura

1. Dekerle, J., Nesi, X., Lefevre, T., Depretz, S., Sidney, M., Marchand F.H, Pelayo P. (2005). Stoking parameters in front crawl swimming and maximal lactate steady state speed. *Int J Sports Med.*, (26) 53-58.
2. Grosse, J. S. (2007). *Water Learning*. Champaing: Human Kinetics.
- Maglischo, E.W. (2003). *Swimming fastest*. Champaing: Human Kinetics.

PARAMETERS OF SWIMMING SKILLS OF PRIMARY SCHOOL PUPILS

Suzović Dejan¹; Savičević Dejan²

¹Faculty of Sport and Physical Education, University of Belgrade

²College for Educators and Business Informatics, Sremska Mitrovica, Serbia

Introduction

Proper methodical approach, already in the preschool age, encourage positive development of physiological characteristics of the children. Learning and improvement of swimming technique has the effect of improving the biomechanical aspects of swimming parameters (Maglischo, 2003; Decker, et al, 2005; Gross, 2007).

Methods

The sample comprised 80 students, 36 boys and 44 girls, aged 11-14 years who attended four training sessions of swimming with the total duration of 960 hours per year, divided into groups according to age, gender and swimming abilities. All participants swam 50 meters freestyle start out of the water in the 50m pool. Obtained variables - Swimming speed, stroke length (SL), stroke frequency (SF) and stroke index (SI) were analyzed with descriptive, comparative discriminant (t-test), and causal (correlation analysis) statistical procedure.

Results with discussion

Swimming speed (0,885 m / s for boys and 0.745 m / s for the girls) increased with age of subjects, significantly more for boys, indicating a correlation with sex ($p < 0.05$). Length of stroke (1.33 m / cyc for boys and 1.41 m / cyc for girls) showed dependence on the age of subjects ($p < 0.05$), but not on the sex, except for the age of 11 and 12 years. SF was increased with age, with no statistical significance with values of 0.64 cyc/s for boys and 0.53 cyc/s for girls. Strokes speed vary in subjects of both subgroups, showing correlation with sex and speed of swimming ($p < 0.01$). Stroke index did not differ between the 11 and 12 year old pupils, but had significantly higher values in boys compared to girls at the 13 and 14 years.

Conclusion

Stroke frequency remains unchanged from 11-14 years, with higher values for boys than for girls. Stroke length increases with age, and did not differ between boys and girls, which indicates that the technical possibilities are identical in both sexes. The stroke index, according to age and morphological characteristics, can be practically benchmark for assessing levels of swimming ability.

Key words: *swimming, speed, stroke, pupils*

References

1. Dekerle, J., Nesi, X., Lefevre, T., Depretz, S., Sidney, M., Marchand F.H, Pelayo P. (2005). Stroking parameters in front crawl swimming and maximal lactate steady state speed. *Int J Sports Med.*, (26) 53-58.
2. Grosse, J. S. (2007). *Water Learning*. Champaing: Human Kinetics.
- Maglischo, E.W. (2003). *Swimming fastest*. Champaing: Human Kinetics.

RAZLIKE U EKPLOZIVNOJ SNAZI MIŠIĆA FUDBALERA I NESPORTISTA SREDNJEŠKOLSKOG UZRASTA

Rade Jovanović¹; Saša Bubanj¹; Mladen Živković¹; Ratko Stanković¹; Borislav Obradović²; Tanja Cvetković³

¹Fakultet sporta i fizičkog vaspitanja Univerziteta u Nišu, Srbija;

²Fakultet sporta i fizičkog vaspitanja Univerziteta u Novom Sadu, Srbija;

³Filozofski fakultet Univerziteta u Nišu, Srbija; *student master akademskih studija)

Uvod

Osnovni cilj ovog istraživanja bio je da se kvantifikuju varijable ispoljene eksplozivne snage donjih ekstremiteta fudbalera i nesportista, utvrde razlike u ispoljenoj eksplozivnoj snazi između fudbalera prema poziciji u timu, kao i između fudbalera i nesportista.

Metod

Ispitivanje je sprovedeno sa 32 ispitanika, učenika Srednje ekonomske škole iz Niša, i to sa grupom fudbalera (N=16) i nesportista koji se ne bave sportom ni profesionalno, niti rekreativno (N=16). Prosečna starost ovih ispitanika bila je 15±0,79 godina (Mean±Std.Dev.). Antropometrijske karakteristike procenjene su sledećim varijablama: BODYMASS (telesna masa izražena u kg), BODYHEIGHT (telesna visina izražena u cm), i BMI (indeks telesne mase). Upotrebom bežičnog akcelerometra Myotest, utvrđene su vrednosti sledećih varijabli eksplozivne snage donjih ekstremiteta: JUMPHEIGHT (visine skoka izražene u cm), JUMPPOWER (snage skoka izražene u W/kg), JUMPFORCE (sile skoka izražene u N/kg) i JUMPVELOCITY (brzine skoka izražene u cm/s). U cilju statističke obrade dobijenih podataka upotrebljen je paket SPSS version 11, a dobijeni rezultati su prikazani deskriptivnom statistikom.

Rezultati sa diskusijom

Na osnovu značajnosti t-testa može se zaključiti da statistički značajne razlike između fudbalera i nesportista postoje samo u vrednosti varijable visina skoka (JUMPHEIGHT, sig=0,000) i to u korist fudbalera. Značajne razlike ne postoje ni između samih fudbalera u odnosu na njihovu poziciju u timu.

Zaključak

Dobijeni rezultati mogu da posluže trenerima, a i samim ispitanicima u kreiranju budućeg trenažnog rada, odnosno sprovođenja odgovarajućih programa sa ciljem razvoja eksplozivne snage mišića. Ključne reči: eksplozivna snaga, mišići, fudbaleri, nesportisti, razlike.

Ključne reči: eksplozivna snaga mišića, fudbaleri, nesportisti, razlike.

Literatura

1. Bubanj, S., Okičić, T., Živković, M., Stanković, R., Bojić, I., & Bubanj, R. (2011). Differences in manifested explosive strength tested by means of the vertical jump with and without previous static stretching. *Facta Universitatis Series: Physical Education and Sport*, 9, (2), 151-159.
2. Gissis, I., Papadopoulos, C., Kalapothrakos, V. I., Sotiropoulos, A., Komsis, G., & Manolopoulos, E. (2006). Strength and speed characteristics of elite, subelite, and recreational young soccer players. *Research in Sports Medicine*, 14, 205-214.

THE DIFFERENCES IN THE EXPLOSIVE MUSCLE STRENGTH OF FOOTBALL PLAYERS AND NON-ATHLETES IN HIGH SCHOOL AGE

Rade Jovanović¹; Saša Bubanj¹; Mladen Živković¹; Ratko Stanković¹; Borislav Obradović²; Tanja Cvetković³

¹Faculty of Sport and Physical Education, University of Niš, Serbia

²Faculty of Sport and Physical Education, University of Novi Sad, Serbia

³Faculty of Philosophy, University of Niš, Serbia; *student of master academic studies)

Introduction

The main aim of this research was to quantify the variables of explosive strength of the lower extremities, to determine the differences of the manifested explosive force between the football players according to their position in the team, as well as between football players and non-athletes.

Method

Testing had been done in 32 subjects from Secondary Economics School in Nis. Out of 32 subjects, one half were football players (N=16), and other half were non-athletes (N=16). Non-athletes are not involved in sports either professionally or recreationally. The average age of these subjects was 15 years. Anthropometric characteristics had been assessed by following variables: BODYMASS (expressed in kg), BODYHEIGHT (expressed in centimeters), and Body Mass Index (BMI). Using wireless accelerometers Myotest, values of the following variables of explosive strength of the lower extremities had been determined: JUMPHEIGHT (expressed in cm), JUMPPOWER (expressed in W/kg), JUMPFORCE (expressed in N/kg) and JUMPVELOCITY (expressed in cm/s). For the purpose of statistical analysis of the data obtained, SPSS version 11 had been used, and the results are presented by descriptive statistics.

Results with discussion

Based on the significance of the t-test, one could conclude that statistically significant difference between groups of football players and non-athletes exists only in the values of JUMPHEIGHT, to the benefit of football players. Significant differences don't exist neither between football players themselves in relation to their position in the team.

Conclusion

The obtained results could be used by trainers, as well as by some examinees in creating the future training process, i.e., by conducting appropriate programs with the aim of developing explosive muscle strength. Key words: explosive strength, muscle, football players, non-athletes, differences.

Key words: explosive muscle strength, football players, non-athletes, differences.

References

1. Bubanj, S., Okičić, T., Živković, M., Stanković, R., Bojić, I., & Bubanj, R. (2011). Differences in manifested explosive strength tested by means of the vertical jump with and without previous static stretching. *Facta Universitatis Series: Physical Education and Sport*, 9, (2), 151-159.
2. Gissis, I., Papadopoulos, C., Kalapothrakos, V. I., Sotiropoulos, A., Komsis, G., & Manolopoulos, E. (2006). Strength and speed characteristics of elite, subelite, and recreational young soccer players. *Research in Sports Medicine*, 14, 205-214.

RAZLIKE U MOTORIČKIM SPOBNOSTIMA UČENIKA SREDNJIH ŠKOLA IZ GRADSKIH I SEOSKIH PODRUČJA OPŠTINE LEBANE

Bojan Mitrović¹; Miroslav Marković²; Saša Pantelić³; Katarina Herodek³

¹ Uprava za stručno obrazovanje, osposobljavanje, usavršavanje i nauku, MUP RS, Beograd, Republika Srbija,

² Zavod za unapređenje obrazovanja i vaspitanja, Beograd, Republika Srbija,

³ Univerzitet u Nišu, Fakultet sporta i fizičkog vaspitanja, Republika Srbija,

Uvod

Kontinuirano opadanje fizičke aktivnosti i vežbanja u porodici, u lokalnoj zajednici, i smanjenje mogućnosti za svakodnevno fizičko vežbanje učenika u školama predstavljaju neke od najvećih razloga zbog kojih je veliki broj mladih danas nedovoljno fizički aktivan (Hardman, 2003), što loše utiče na razvoj motoričkih sposobnosti. Cilj ovog istraživanja bio je da se utvrdi postojanje razlika u motoričkim sposobnostima učenika srednjih škola iz gradskih i seoskih sredina.

Metod

Istraživanje je sprovedeno na uzorku od 65 učenika srednjih škola sa područja opštine Lebane, prosečne starosti 15.54 ± 0.56 godine, podeljenih na dva subuzorka, učenike iz gradske sredine ($N=45$) i učenike iz seoskih sredina ($N=20$). Za utvrđivanje razlika između subuzoraka, posmatrani su rezultati EUROFIT baterije testova za procenu motoričkih sposobnosti: „flamingo“ stajanje na jednoj nozi, taping rukom, pretklon u sedu, skok u dalj, podizanje trupa za 30 sekundi, izdržaj u zgibu i povratno trčanje - 10h5m. Dobijeni podaci obrađeni su primenom statističkog programa *SPSS 20.0*, a procedure su obuhvatile deskriptivne parametre a za utvrđivanje strukture razlika između subuzoraka korišćena je Kanonička diskriminativna analiza.

Rezultati sa diskusijom

Generalno, rezultati kanoničke diskriminativne analize pokazali su da je diskriminativna funkcija motoričkih sposobnosti posmatranih subuzoraka približno srednjeg intenziteta ($CR=38.70\%$), diskriminativna jačina varijabli izrazito visoka ($Wilks'-Lambda=0.850$), objašnjeni koeficijent korelacije na sve varijable ima nisku vrednost ($Chi-sqr=9.658$), ali i da ne postoji statistički značajan doprinos diskriminaciji između subuzoraka ($r-level=0.209$). Analizom diskriminativne funkcije, pojedinačno po varijablama, ustanovljeno je da postoji statistički značajna diskriminacija između subuzoraka jedino kod pretklona u sedu u korist onih iz seoskih sredina ($Wilks'-Lambda=0.935$; $r-level=0.017$), a faktorskom strukturom izolovane diskriminativne funkcije potvrđeno je da pretklon u sedu daje najveći doprinos diskriminativnoj funkciji ($PRET = -0.584$). Može se zaključiti da su utvrđene razlike verovatno posledica različitih nivoa vežbanja tokom nastave fizičkog vaspitanja u prethodnom periodu (Mišigoj-Duraković, 2008).

Zaključak

Na osnovu rezultata istraživanja može se zaključiti da generalno ne postoje statistički značajne razlike između dva tretirana subuzorka, koji su činili učenici srednjih škola iz gradskih i seoskih sredina opštine Lebane.

Ključne reči: učenici, gradska sredina, seoska sredina, motoričke sposobnosti

Literatura

1. Hardman, K. (2003). School physical education and sport in Europe-rhetoric and reality: current and future perspectives. *Kinesiology*, 35, 97-107.
2. Mišigoj-Duraković, M. (2008). *Kinantropologija - biološki aspekti tjelesnog vježbanja*. Zagreb: Kineziološki fakultet, Hrvatska.

DIFFERENCES IN MOTOR SKILLS OF HIGH SCHOOL STUDENTS IN URBAN AND RURAL AREAS OF THE COMMUNITY OF LEBANE

Bojan Mitrović¹; Miroslav Marković²; Saša Pantelić³; Katarina Herodek³

¹ Directorate for Police Education, Training, Professional Development and Science, Ministry of Interior, Belgrade, Republic of Serbia

² Institute for the Improvement of Education, Department for Curriculum and Textbook Development, Belgrade, Republic of Serbia,

³ University of Niš, Faculty of Sport and Physical Education, Niš, Republic of Serbia,

Introduction

The continuous decline of the physical activity and exercise in the family, in the community, and the reduction of opportunities for daily physical exercise of students in schools, are some of the reasons why a large number of young people today is not sufficiently physically active (Hardman, 2003), which is detrimental to the development of their motor skills. The aim of this study was to identify the differences in motor skills of high school students coming from urban and rural areas.

Method

This survey was conducted on a sample of 65 high school students from the community of Lebane, aged 15.54 ± 0.56 , divided into two subsamples: students from urban areas ($N = 45$) and students from rural areas ($N = 20$). To determine the difference between the subsamples, the results of the EUROFIT tests battery for the evaluation of motor skills were observed: "flamingo" balance test, plate tapping, sit and reach, standing broad jump, sit ups in 30 seconds, bent arm hang and pin running 10x5m. The obtained data were processed using the statistical program SPSS 20.0, and the procedures included the descriptive parameters. For the determination of the structure of differences between the subsamples, the canonical discriminant analysis was used.

Results with discussion

Generally, results of canonical discriminant analysis showed that discriminative function of motor skills observed subsamples of approximately medium intensity ($CR=38.70\%$), discriminative power of variables was extremely high ($Wilks'-Lambda=0.850$), explained coefficient of correlation of all the variables has a low value ($Chi-sqr=9.658$), but also between subsamples there was no statistically significant contribution to discrimination

($p-level=0.209$). Individually, by variables the analysis of discriminative function, it was found that there was significant discrimination between subsamples only to sit and reach test in favor of the students from rural areas ($Wilks'-Lambda=0.935$; $p-level=0.017$) and the factor structure of the isolated discriminative function was confirmed that sit and reach test makes the largest contribution to the discriminative function ($PRET = -0.584$). It can be concluded that the determined differences are probably due to different levels of exercise during physical education classes in the previous period (Mišigoj-Durakovic, 2008).

Conclusion

Based on the results, it can be concluded that in general there are no statistically significant differences between the two treated subsamples, consisting of high school students from urban and rural areas of the community of Lebane.

Keywords: students, urban areas, rural areas, motor skill

References

1. Hardman, K. (2003). School physical education and sport in Europe-rhetoric and reality: current and future perspectives. *Kinesiology*, 35, 97-107.
2. Mišigoj-Duraković, M. (2008). *Kinantropologija - biološki aspekti tjelesnog vježbanja*. Zagreb: Kineziološki fakultet, Hrvatska.

EFEKTI PRIMENE ELEMENATA RITMIČKE GIMNASTIKE U NASTAVI FIZIČKOG VASPITANJA NA RAZVOJ STATIČKE SNAGE KOD UČENICA MLAĐEG ŠKOLSKOG UZRASTA

Andrea Aleksić¹; Dragana Aleksić¹; Jadranka Kocić¹; Slađana Stanković²

¹ Fakultet za sport i fizičko vaspitanje u Leposaviću, Univerzitet u Prištini, Kosovo i Metohija

² Pedagoški fakultet u Jagodini, Univerzitet u Kragujevcu, Srbija

Uvod

Predmet ovog istraživanja je izučavanje efekata predloženog eksperimentalnog programa nastave fizičkog vaspitanja, u trajanju od jedne školske godine, u kome elementi ritmičke gimnastike kao sredstvo fizičkog vaspitanja imaju primarnu ulogu, za transformaciju statičke snage učenica mlađih razreda osnovnih škola u Nišu. Traženje adekvatnih sadržaja nastave fizičkog vaspitanja koji će omogućiti veću efikasnost školskog fizičkog vaspitanja, odnosno optimalizaciju rada na ovom vaspitno - obrazovnom području osnovni problem ovog istraživanja.

Metod

Uzorak od 99 ispitanica, razvrstan je u dva subuzorka (eksperimentalna i kontrolna grupa). Procena statičke snage, sprovedena je pomoću sledećih mernih instrumenata: Vis u zgibu (MVIS), Izdržaj u prednosu (MIPR) i Izdržaj nogu na sanduku (MINS) (Kurelić, N. i sar., 1975). Istraživanje je longitudinalnog karaktera u trajanju od 36 nedelja u okviru koga je bilo sprovedeno vežbanje dva puta nedeljno u trajanju od 45 minuta. U okviru ekperimenta primenjene su aktivnosti opšte fizičke pripreme. Od rekvizita korišćeni su vijača, lopta, palice i obručevi. Za sve varijable, koje su predmet istraživanja, ustanovljeni su osnovni deskriptivni statistički parametri. U ovom istraživanju primenjeni su multivarijantni postupci: multivarijantna analize varijanse MANOVA i MANCOVA, a od univarijantnih postupaka primenjen su analize varijanse ANOVA, ANCOVA i interval poverenja na razlici korigovanih sredina.

Rezultati sa diskusijom

Analize Manova i Anova pokazale su postojanje razlika između ispitivanih grupa pre početka eksperimentalnog programa. Posle neutralizacije razlika u inicijalnom merenju, između analiziranih grupa, multivarijantna analiza kovarijanse (MANCOVA) je pokazala da u finalnom merenju postoji značajna razlika, tj. postoji značajna razlika u efikasnosti eksperimentalnog programa na transformaciju ispitivanog motoričkog prostora statičke snage. Na osnovu intervala poverenja i upoređivanjem korigovanih srednjih vrednosti rezultata eksperimentalnih i kontrolne grupe, možemo zaključiti da je eksperimentalni program efikasno sredstvo za transformaciju motoričke sposobnosti statičke snage.

Zaključak

Eksperimentalni program sa elementima ritmičke gimnastike efikasan je kao sredstvo kojim se može uticati za transformaciju dve od tri varijable motoričkog prostora statičke snage. Koeficijent urođenosti statičke snage je .50, na osnovu koga možemo zaključiti da su primenjene adekvatne metode i sredstva, koja su sistematski stimulisala razvoj statičke snage ispitanica eksperimentalne grupe, poštujući biološka i funkcionalna svojstva organizma ispitanica.

Ključne reči : istraživanje, osnovna škola, eksperimentalni program, ritmička gimnastika, statička snaga

Literatura

1. Aleksić, D. (2010). *Efekti primene gimnastičkih sadržaja u nastavi fizičkog vaspitanja na transformaciju nekih antropoloških sposobnosti i karakteristika kod učenica mlađeg školskog uzrasta*. Neobjavljena doktorska disertacija, Novi Sad: Fakultet sporta i fizičkog vaspitanja, Univerzitet u Novom Sadu.
2. Kocić, J. (2003). *Uticao sistematskog vežbanja ritmičke gimnastike i plesova na neke antropološke dimenzije kod učenika mlađeg školskog uzrasta*. Neobjavljena doktorska disertacija, Leposavić: Fakultet za fizičku kulturu, Univerzitet u Prištini.

EXAMINATION OF EFFECTS OF RHYTHMIC GYMNASTICS TEACHING OF PHYSICAL EDUCATION ON STATIC STRENGTH OF 3TH & 4TH GRADE PUPILS OF ELEMENTARY SCHOOLS

Andrea Aleksić¹; Dragana Aleksić¹; Jadranka Kocić¹; Slađana Stanković²

¹ Faculty of Sport and Physical Education, Leposavic, University of Pristine, Kosovo, Serbia

² Faculty of Pedagogy in Jagodina, University of Kragujevac, Serbia

Introduction

The subject of this research is to study the effects of the proposed experimental program of physical education classes, for a period of one year, in which the rhythmic gymnastics as a means of physical education have the primary role in the transformation of static strength student younger grades of elementary schools in Nis. Seeking adequate physical education curriculum that will enable greater efficiency of school physical education, and optimization work on this educational field the basic problem of this research.

Method

A sample of 99 subjects, classified in two samples (experimental and control group). The battery for the evaluation of static strength consists of the following tests: MVIS, MIPR, MINS (Kurelić, N. et al., 1975). The study was longitudinal character for a period of 36 weeks within which the exercise was carried out twice a week for 45 minutes. As part of the experiment were applied activities of general physical training. In classes were used rope, ball, stick and hoop. For all the variables, which are the subject of investigations, established the basic descriptive statistical parameters. In this study, multivariate methods: multivariate analysis of variance MANOVA and MANCOVA, and applied univariate analyzes of variance ANOVA, ANCOVA and the interval of entrust.

Results with discussion

Analysis Manova and Anova showed the existence of differences between the groups before the start of the experimental program. After neutralizing the difference in the initial measurement, the analyzed groups, multivariate analysis of covariance (MANCOVA) showed that in the final measure, there is a significant difference. There was significant difference in the effectiveness of the experimental program on the transformation of the test motor space static strength. Based on the confidence interval and comparing the corrected mean values of the experimental and control groups, we conclude that the experimental program an effective tool for the transformation of static strength.

Conclusion

Experimental program with elements of rhythmic gymnastics is effective as a means that can affect the transformation of two of the three variables of motor space static strength. The coefficient inherent static strength is .50, based on which we can conclude that they are applied appropriate methods and means, which are systematically stimulate the static strength of the experimental group, while respecting the biological and functional properties of the respondent.

Key words: research, elementary school, teaching effects, rhythmic gymnastics, static strength

References

1. Aleksić, D. (2010). *Efeki primene gimnastičkih sadržaja u nastavi fizičkog vaspitanja na transformaciju nekih antropoloških sposobnosti i karakteristika kod učenika mlađeg školskog uzrasta*. Neobjavljena doktorska disertacija, Novi Sad: Fakultet sporta i fizičkog vaspitanja, Univerzitet u Novom Sadu.
2. Kocić, J. (2003). *Uticaj sistematskog vežbanja ritmičke gimnastike i plesova na neke antropološke dimenzije kod učenika mlađeg školskog uzrasta*. Neobjavljena doktorska disertacija, Leposavić: Fakultet za fizičku kult

ZNAČAJ UKLJUČIVANJA DEVOJČICA MLAĐEG ŠKOLSKOG UZRASTA U REKREATIVNI PROGRAM RITMIČKE GIMNASTIKE

Slobodanka Dobrijević¹; Lidija Moskovljević¹; Ivana Milanović¹

¹Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja, Beograd, Srbija

Uvod

Motoričke sposobnosti predstavljaju veoma značajan faktor u razvoju deteta, jer utiču kako na biološki, tako i na psihološki i socijalni aspekt njihovog života. Cilj ovog istraživanja je bio da se ispita na kom nivou su motoričke sposobnosti i neki antropometrijski parametri mladih ritmičarki, u poređenju sa kriterijumskim referentnim vrednostima populacije devojčica istog uzrasta.

Metod

Ovo istraživanje je transversalnog karaktera, sprovedeno na uzorku od 34 zdrave devojčice, uzrasta 3. razreda (N=18) i 4. razreda (N=16), koje rekreativno treniraju ritmičku gimnastiku. Istraživanjem je obuhvaćeno 9 varijabli, 3 za procenu fizičkog rasta i telesnog sastava i 6 za procenu motoričkog statusa. Mere fizičkog rasta i sastava tela koje su korišćene su: telesna visina (TV), telesna masa (TM) i Indeks telesne mase (BMI). Testovi za procenu motoričkih sposobnosti (Milanović i Radisavljević Janić, 2015) su: Ležanje-sed za 30 sekundi (LS30) - za procenu repetitivne snage, Skok udalj iz mesta (SuD) - za procenu eksplozivne snage nogu, Ponovljeno trčanje na 20 m sa progresivnim povećavanjem brzine - "šatl ran" (SR) - za procenu kardiorespiratorne izdržljivosti, Pretklon u sedu (PuS) - za procenu pokretljivosti, Čunasto trčanje 4 x 10 m (4x10) - za procenu agilnosti, Izdržaj u zgibu (IuZ) - za procenu izdržljivosti u snazi. Za poređenje dobijenih rezultata sa kriterijumskim referentnim vrednostima populacije devojčica istog uzrasta korišćen je t-test sa jednim uzorkom (One sample test).

Rezultati sa diskusijom

Rezultati pokazuju da devojčice koje se bave ritmičkom gimnastikom imaju značajno manji BMI od svojih vršnjakinja u oba subuzorka. U većini testova motoričkih sposobnosti mlade ritmičarke ostvarile su bolje rezultate. Značajno bolje rezultate mlade rimičarke 3. razreda ostvarile su u testovima SuD, SR, PuS, 4x10, a 4. razreda u testovima LS30, SuD, PuS, 4x10. Najizraženije razlike u rezultatima, u korist mladih ritmičarki, su u testovima eksplozivne snage i pokretljivosti, zatim agilnosti i repetitivne snage, jer su ove motoričke sposobnosti od velikog značaja za uspešnost u ritmičkoj gimnastici. Značajne razlike u kardiorespiratornoj izdržljivosti u korist ritmičarki, ukazuju na to da se prosečne devojčice veoma malo kreću, pa i nespecifično kretanje za razvoj ove sposobnosti, kakva je ritmička gimnastika, može dovesti do njenog poboljšanja.

Zaključak

Usmerena fizička aktivnost dece, u vidu bavljenja rimičkom gimnastikom, od samo dva sata nedeljno pozitivno utiče na razvoj većine motoričkih sposobnosti devojčica, kao i na njihov telesni sastav. Većina motoričkih sposobnosti mladih ritmičarki nalazi se u zoni iznad prosečnih kriterijumskih referentnih vrednosti za navedeni uzrast devojčica.

Ključne reči: mlade ritmičarke, motoričke sposobnosti, BMI

Literatura

1. Caspersen, C.J., Pereira, M.A., & Curran, K.M. (2000). Changes in physical activity patterns in the United States, by sex and cross-sectional age. *Medicine and Science in Sports and Exercise*, 32(9), 1601–9.
2. Milanović, I., Radisavljević, J.S (2015): Praćenje fizičkih sposobnosti učenika osnovne škole u nastavi fizičkog vaspitanja, Beograd: Fakultet sporta i fizičkog vaspitanja

Zahvalnica. Rad je deo projekta „Efekti primenjene fizičke aktivnosti na lokomotorni, metabolički, psihosocijalni i vaspitni status populacije Republike Srbije“ (br.III 47015), čiju realizaciju finansira Ministarstvo prosvete i nauke Republike Srbije (2011-2015)

THE IMPORTANCE OF INVOLVING YOUNGER SCHOOL AGE GIRLS IN THE RECREATIONAL PROGRAM OF RHYTHMIC GYMNASTICS

Slobodanka Dobrijević¹; Lidija Moskovljević¹; Ivana Milanović¹

¹University of Belgrade, Faculty of sport and physical education Belgrade, Serbia

Introduction

Motor abilities represent a very important factor in child development because they influence the biological, as well as the psychological and social aspect of their life. The aim of this research was to determine what level the motor abilities and some physical parameters of young rhythmic gymnasts are compared to the the young girl population criterion referenced standards of the same age.

Method

This is a cross sectional study, conducted on a sample of 34 healthy girls who train rhythmic gymnastics at recreational level, age group from 3rd grade (N=18) and 4th grade (N=16) of primary school. There are 9 variables in this research, of which 3 to estimate physical growth and body composition, and 6 variables to estimate the level of motor abilities. Body height (TV), body weight (TM), and body mass index (BMI) were used as a measure of physical growth and body composition. Motor ability tests used in this research (Milanović i Radisavljević Janić, 2015) are: sit ups in 30 seconds (LS30) - to estimate repetitive strength, long jump (SuD) – to estimate explosive strength, 20m endurance – Shuttle run (SR) – to estimate cardiorespiratory endurance, sit and reach (PuS) – to estimate flexibility, running 4x10m (4x10) –to estimate agility, bent arm hang (IuZ) – to estimate muscles endurance. T-test with one sample (One sample test) was used to compare results with the young girl population criterion referenced standards of the same age.

Results with discussion

Results show that girls who trained rhythmic gymnastics have a significantly less BMI compared to peers in both subsamples (for group-3rd grade, for group-4th grade,). In most motor tests, young rhythmic gymnasts achieved better results. Young rhythmic gymnasts from the 3rd grade group achieved significantly better results in tests SuD, SR, PuS, 4x10, while gymnasts from the 4th grade group achieved significantly better results in tests LS30, SuD, PuS, 4x10. The most pronounced differences in results in favor of young rhythmic gymnasts were noticed in the results of explosive strength and flexibility tests, and subsequently in the agility and repetitive strength tests, because of the importance these abilities have for rhythmic gymnastics performance. Significant differences in cardiorespiratory endurance, in favor of rhythmic gymnasts, indicate that the average girls are very sedentary and consequently nonspecific activity for the development of this ability, like rhythmic gymnastics, can lead to its improvement.

Conclusion

Guided physical activity in children, such as practicing rhythmic gymnastics, even for only two hours per week, has a positive impact on the development of most motor abilities, as well as on their body composition. Most of the motor abilities of young rhythmic gymnasts are in the zone above average criterion referenced standards of the same age.

Key words: young rhythmic gymnasts, motor abilities, BMI

References

1. Caspersen, C.J., Pereira, M.A., & Curran, K.M. (2000). Changes in physical activity patterns in the United States, by sex and cross-sectional age. *Medicine and Science in Sports and Exercise*, 32(9), 1601–9.
2. Milanović, I., Radisavljević, J.S (2015): Praćenje fizičkih sposobnosti učenika osnovne škole u nastavi fizičkog vaspitanja (Monitoring of the physical abilities of elementary school students in physical education, In serbian) Beograd: Fakultet sporta i vizičkog vaspitanja

Acknowledgement: *The paper is a part of the research done within the project of the Ministry of Education, Science and Technological Development of Republic of Serbia: „Effects of applied physical activity in locomotion, metabolic, psychosocial and educational status of the population of R.Serbia“. No. III47015 (2011-2015).*

EFEKTI RAZLIČITIH VRSTA PLESOVA NA KOORDINACIJU U RITMU

Sanja Mandarić¹; Zorana Miljkovac²; Lidija Moskovljević¹; Milinko Dabović¹

¹Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja, Beograd, Srbija¹

²Plesni klub „Vračar“, Beograd, Srbija²

Uvod

Plesove kao koordinacijski složenu vrstu fizičke aktivnosti, karakterišu raznovrsni pokreti koji se izvode različitom brzinom, a koja je često određena muzičkim tempom i ritmom, kao i okreti koji se izvode na različite načine u različitim položajima tela. U radu se ukazuje, koliko specifični plesni treninzi, koraci, tehnika i koreografija, imaju uticaja na koordinaciju u ritmu plesača sportskog plesa, modernog baleta i narodnog plesa.

Metod

Istraživanje je sprovedeno na uzorku 92 ispitanice starosti 14-17 godina, podeljene u tri eksperimentalne i jednu kontrolnu grupu. Prvu eksperimentalnu grupu (E1) činile su plesačice sportskog plesa (N=23). Drugu eksperimentalnu grupu (E2) činile su plesačice modernog baleta (N=23), dok su treću eksperimentalnu grupu (E3) činile plesačice narodnog plesa (N=23). Kontrolnu grupu (K) su sačinjavale učenice drugog razreda srednje škole (N=23), koje se ne bave ni jednom vrstom plesa. U istraživanju su primenjeni sledeći testovi za procenu koordinacije u ritmu: neritmičko bubnjanje, bubnjanje nogama i rukama, i poskoci u ritmu. Rezultati su obrađeni osnovnim deskriptivnim i komparativnim statističkim procedurama.

Rezultati sa diskusijom

Najbolje rezultate na svim testovima imale su plesačice modernog baleta, a najslabiji su bili rezultati u kontrolnoj grupi. Na testu neritmičko bubnjanje, značajne razlike ($p=.005$) utvrđene su jedino između grupa E2 i K. Na testu poskoci u ritmu, značajno se razlikuju grupe E2 i K ($p=.000$), kao i E1 i K ($p=.005$). Međutim, značajno uspešnije na ovom testu bile su ispitanice grupe E2 od ispitanica grupe E3 ($p=.037$). Na testu bubnjanje nogama i rukama, značajno se razlikuju sve eksperimentalne grupe u poređenju sa kontrolnom grupom, dok između eksperimentalnih grupa, nije bilo značajnih razlika.

Zaključak

Na osnovu dobijenih rezultata može se zaključiti da različite vrste plesova imaju uticaj na koordinaciju u ritmu, i to pre svega moderan balet, što je bilo i očekivano. Naime, moderan balet shodno prirodi plesnih struktura, u najvećoj meri može uticati na razvoj koordinacije u ritmu, u odnosu na sportski i narodni ples, u kojima dominantnu ulogu imaju pokreti donjih ekstremiteta.

Ključne reči: sportski ples, moderan balet, narodni ples, koordinacija u ritmu

Literatura

1. Ramović Dragunić, P. (2011). Konstrukcija i validacija testova za procenu koordinacije u ritmu. Split: Kineziološki fakultet.
2. Srhoj, Lj. (2002). Effect of motor abilities on performing the hvar folk dance Cicilion in 11 year-old girls. Collegium Antropologicum, 26 (2), 539-543.

EFFECTS OF DIFFERENT DANCES TO THE COORDINATION IN RHYTHM

Sanja Mandaric¹; Zorana Miljkovac²; Lidija Moskovljevic¹, Milinko Dabovic¹

¹University of Belgrade, Faculty of Sports and Physical Education, Belgrade, Serbia¹

²Dance Club „Vracar“, Belgrade, Serbia²

Introduction

Dances, as a complex coordination type of physical activity, are characterised with different movements which are performed in different speed, often determined by pace and rhythm of music, as well as spins which are performed in different ways using different body positions. This paper indicates how specific dance trainings, steps, technique and choreography have influence on coordination in the rhythm of sport dance, modern ballet and folk dance dancers.

Method

The research was conducted on a sample which consisted of 92 subjects aged 14 to 17 years old, which were divided into three experimental and one control group. First experimental group (E1) consisted of sport dance dancers (N=23). Second experimental group (E2) consisted of modern ballet dancers (N=23), while third experimental group consisted of folk dance dancers (N=23). Control group (K) consisted of the second-grade students of secondary school (N = 23), which were not engaged in any type of dance. The following tests for the assessment of coordination in rhythm were used in this research: drumming without the rhythm, drumming with feet and hands and jumps into the rhythm. The results were analyzed through basic descriptive and comparative statistical procedures.

Results with discussion

Modern ballet dancers had the best overall results, and the control group had the worst. In the drumming without the rhythm test, significant differences ($p=.005$) were determined only between E2 and K groups. In the jumps into the rhythm test, significant differences were between E2 and K groups ($p=.000$), as well as between E1 and K groups ($p=.005$). However, in the same test, significantly more effective were subjects in E2 group than subjects in E3 group ($p=.037$). In the drumming with feet and hands test, all three experimental groups were significantly different compared to the control group, while between experimental groups there was no significant difference.

Conclusion

Based on the gained results, it can be concluded that different types of dances have effect on the coordination in rhythm, most of all- modern ballet, as was expected. Namely, modern ballet, based on the nature of dance structure, has the biggest effect on development of the coordination in rhythm, compared to sport and folk dance in whom the movements of lower extremity have dominate part.

Key words: dance sport, modern dance, folk dance, coordination in rhytam

References

1. Ramović Dragunić, P. (2011). Konstrukcija i validacija testova za procenu koordinacije u ritmu. Split: Kineziološki fakultet.
2. Srhoj, Lj. (2002). Effect of motor abilities on performing the hvar folk dance Cicilion in 11 year-old girls. Collegium Antropologicum, 26 (2), 539-543.

EFIKASNOST PROGRAMA INKLUZIVNE NASTAVE TJELESNOG ODGOJA NA DJECU SA TEŠKOĆAMA U RAZVOJU- PRIMJER ŠKOLE PLIVANJA

Aldvin Torlaković¹; Arnela Borovac-Bekaj²; Faris Rašidagić³; Roman Kebat¹; Ekrem Čolakhodžić⁴

¹ Olimpijski bazen Sarajevo, Bosna i Hercegovina

² Osnovna škola "Skender Kulenović", Sarajevo, Bosna i Hercegovina

³ Fakultet sporta i tjelesnog odgoja, Univerzitet u Sarajevu, Bosna i Hercegovina

⁴ Nastavnički fakultet, Univerzitet u Mostaru, Bosna i Hercegovina

Uvod

Inkluzivna nastava podrazumjeva jednak pristup kvalitetnom odgoju i obrazovanju za svu djecu. Zapravo takav pristup odgoju i obrazovanju promoviše razvoj kompetencija za cjeloživotno učenje i učešće u demokratskom društvu (Livazović i sar., 2006). Kvaliteta realizacije ovakvog modela nastave u velikoj mjeri zavisi od dobre koordinacije sa roditeljima. U svakom slučaju nastavnik treba imati adekvatne informacije o djetetu te da li je dijete bilo ranije uključeno u program specijalnog obrazovanja, što je već konstatovano u sličnim studijama (Mešalić i sar., 2007). Cilj ovoga istraživanja bio je utvrđivanje efikasnosti programa inkluzivne nastave tjelesnog odgoja kroz vannastavne i vanškolske aktivnosti na primjeru škole plivanja.

Metode

Ispitivanje je provedeno na uzorku od 6 učenika sa teškoćama u psihomotornom razvoju (Down syndrom; Paralysis cerebrales; Hydrocephalus internus). Ispitanici su bili uključena u inkluzivnu nastavu u okviru osnovnih škola (3 djevojčice i 3 dječaka), dobi $9 \pm 0,5$ godina. Program škole plivanja trajao je 18 termina (6 sati individualne obuke - adaptacije i 12 sati rad u grupi). U ispitivanju je korištena baterija od 8 testova za procjenu nivoa kretnih sposobnosti u vodi. Za analizu rezultata inicijalnog i finalnog testiranja korišten je t-test za zavisne uzorke (differences are significant at $p < .050$).

Rezultati i diskusija

Rezultati t-testa ukazuju da je nakon realizacije programa došlo do statistički značajnih promjena kod svih primjenjenih varijabli: SUV - samostalan ulazak u vodu ($p < .001$); GRO- gnjuranje pod vodu ($p < .002$); TRO – transverzalna rotacija ($p < .001$); LRO – longitudinalna rotacija ($p < .002$); SLO – sagitalna rotacija ($p < .001$); PNS - plutanje na stomaku ($p < .002$); SNG – skok u vodu na noge ($p < .001$); SKKV – samostalno kretanje po površini vode ($p < .003$). Važno je napomenuti da je obuka neplivača jedan od specifičnih modela rada u nastavi tjelesnog odgoja. Radi se o kompleksnoj i zahtjevnoj nastavi u kojoj obično učestvuje nekoliko nastavnika tjelesnog odgoja, što je bio slučaj i u ovom istraživanju.

Zaključak

Na osnovu rezultata istraživanja, može se zaključiti da je primjenjeni program imao znatnog efekta na sve ispitanike, kako u poboljšanje psihološke adaptacije na boravak u plivalištu i njihovu socijalizaciju, tako na poboljšanje osnovnih kretnih elemenata kroz vodu. Primjena ovakvog vida nastave itekako je moguća i efikasna, naravno uz napomenu da je potrebno pažljivo dozirati dinamiku nastave (individualizacija) za dijete koje je u programu inkluzije. Također, može se zaključiti da je kvalitetno educirani kadar od ključnog značaja za realizacije sličnih programskih aktivnosti u praksi, što ukazuje na širu potrebu za dodatnom edukacijom nastavnika tjelesnog odgoja za inkluzivnu školsku nastavu.

Ključne reči: inkluzija, kretanje u vodi, proces učenja

Literatura

1. Mešalić, Š., Šakotić, N., Nikolić, M. (2007): Pristup inkluzivnoj praksi u vaspitanju i obrazovanju. Zavod za udžbenike i nastavna sredstva, Podgorica
2. Livazović, G., Alispahić, D., Terović, E. (2006). Priručnik. Inkluzivni odgoj i obrazovanje u školi. Udruženje DUGA, Sarajevo

EFFICIENCY OF THE PROGRAMME OF INCLUSIVE PHYSICAL EDUCATION IN CHILDREN WITH DISABILITIES – SWIMMING SCHOOL EXAMPLE

Aldvin Torlaković¹; Arnela Borovac-Bekaj²; Faris Rašidagić³; Roman Kebat¹; Ekrem Čolakhodžić⁴

¹ Olympic Swimming Pool Sarajevo, Bosnia and Herzegovina

² Primary school “Skender Kulenovic”, Sarajevo, Bosnia and Herzegovina

³ Faculty of Sport and Physical Education, University of Sarajevo, Bosnia and Herzegovina

⁴ Teachers Faculty, University of Mostar, Bosnia and Herzegovina

Introduction

Inclusive education refers to an equal access to quality education for all children. In fact, this approach to education promotes the development of competences for lifelong learning and participation in a democratic society (Livazović et al., 2006). The quality of the implementation of such a model of teaching depends, to a large extent, on the good coordination with parents. In any case, the teacher should have adequate information about the child and whether the child was previously included in the special education programmes, as already stated in similar studies (Mešalić et al., 2007). The aim of this research was to determine efficiency of the programme of inclusive physical education through extracurricular activities using a swimming school as an example.

Methods

Testing was conducted on a sample of 6 pupils with disabilities in psychomotor development (Down syndrome; Paralysis cereбрalis; Hydrocephalus internus). The participants were involved in inclusive teaching within elementary schools (3 girls and 3 boys), age 9 ± 0.5 years. Swimming school programme lasted for 18 periods (6 hours of individual training – adaptation and 12 hours of working in a group). In the study a battery of 8 tests was used for assessment of the level of motion capabilities in the water. A paired samples t-test was used for the analysis of the results of the initial and final test (differences are significant at $p < .050$).

Results with discussion

Results of the t-test indicate statistically significant changes in all applied variables after the implementation of the programme: SUV – entering the water on its own ($p < .001$); GRO – snorkelling under the water ($p < .002$); TRO – transverse rotation ($p < .001$); LRO – longitudinal rotation ($p < .002$); SLO – sagittal rotation ($p < .001$); PNS – floating on a belly ($p < .002$); NSG – feet jump into water ($p < .001$); SKKV – independent movement on the water surface ($p < .003$). It is important to mention that the training of non-swimmers is one of the specific working models in teaching physical education. It is a complex and demanding teaching activity, usually involving a number of physical education teachers, as was the case in this study.

Conclusion

Based on the results of the research, it can be concluded that the applied programme had a significant effect on all participants, improving psychological adaptation on spending time in the swimming pool and their socialization as well as improving basic elements of movement through water. Application of this form of teaching is very much possible and efficient, of course noting the need for a carefully dosed dynamics of teaching (individualization) for a child who is in the inclusive programme. Also, it can be concluded that a well educated and trained personnel is essential for the implementation of similar programme activities in practise, indicating a wider need for additional education of physical education teachers for inclusive school classes.

Keywords: inclusion, movement in water, learning process

References

1. Mešalić, Š., Šakotić, N., Nikolić, M. (2007): Pristup inkluzivnoj praksi u vaspitanju i obrazovanju [Access to inclusive practise in education]. Institute for textbook publishing and teaching aids, Podgorica.
2. Livazović, G., Alispahić, D., Terović, E. (2006). Priručnik [Manual]. Inkluzivni odgoj i obrazovanje u školi [Inclusive education in school]. Association DUGA, Sarajevo.

STAVOVI NASTAVNIKA FIZIČKOG VASPITANJA PREMA INKLUZIJI DECE SA RAZVOJNIM SMETNJAMA

Bojan Pejčić¹; Ana Orlić¹; Ivana Milanović¹

¹Fakultet sporta i fizičkog vaspitanja, Beograd, Srbija

Uvod

Inkluzivno obrazovanje podrazumeva uključivanje dece sa razvojnim smetnjama u sistem redovnih škola i restrukturiranje školskog sistema tako da zadovoljava obrazovne potrebe svakog učenika. Istraživanja su pokazala da stavovi nastavnika predstavljaju jedan od najvažnijih faktora uspešnog inkluzivnog obrazovanja. Cilj istraživanja bio je da se ispituju stavovi nastavnika fizičkog vaspitanja prema inkluziji dece sa razvojnim smetnjama u osnovnoj školi, kao i da se ispita povezanost stavova nastavnika sa polom, mestom u kome rade, dužinom radnog staža i stručnim usavršavanjem u oblasti inkluzivnog obrazovanja.

Metod

Uzorak je činilo 58 nastavnika fizičkog vaspitanja (40 muškaraca i 18 žena) iz Beograda ($N = 30$) i Leskovca ($N = 28$). Za merenje stavova prema inkluziji dece sa razvojnim smetnjama u nastavi fizičkog vaspitanja upotrebljen je instrument Attitude Toward Inclusive Physical Education koji se sastoji od 15 četvorestepenih tvrdnji Likertovog tipa. Pored toga, nastavnicima su postavljena pitanja o polu, iskustvu u radu sa decom sa razvojnim smetnjama, godinama radnog staža i pohađanju seminara za stručno usavršavanje posvećenih inkluziji.

Rezultati sa diskusijom

Rezultati deskriptivne statistike su pokazali da nastavnici imaju umereno pozitivne stavove prema inkluziji dece sa razvojnom smetnjama u nastavi fizičkog vaspitanja, $M = 2.64$, $SD = 0.55$. Analiza frekvenci odgovora na pojedinačna pitanja je pokazala da nastavnici podržavaju ideju inkluzije, ali da smatraju da nemaju dovoljno uslova i vremena da bi kvalitetno sproveli nastavu. T-testom za nezavisne uzorke je pokazano da nastavnici koji su imali iskustva u radu sa decom sa razvojnim smetnjama imaju pozitivnije stavove od onih koji nisu imali takvo iskustvo, $t(56) = -2.39$, $p < .05$. Rezultati t-testa su pokazali da ne postoji povezanost stava sa polom nastavnika, mestom u kome rade i pohađanjem seminara. Korelacionom analizom je pokazano da stav nastavnika nije povezan sa dužinom radnog staža i brojem dece sa razvojnim smetnjama sa kojima su radili.

Zaključak

Na osnovu dobijenih rezultata može se zaključiti da, iako nastavnici imaju umereno pozitivne stavove prema inkluziji dece sa razvojnim smetnjama u nastavi fizičkog vaspitanja, potrebno je dalje raditi na njihovom poboljšanju.

Ključne reči: inkluzija, deca sa razvojnim smetnjama, stavovi, nastavnici, fizičko vaspitanje

Literatura

1. Avramidis, E., & Norwich, B. (2002). Teachers' attitudes towards integration/inclusion: A review of the literature. *European Journal of Special Needs Education*, 17(2), 129-147.
2. Đorđić, V., Tubić, T. i Protić, B. (2014). Stavovi učitelja seoskih i gradskih škola prema inkluzivnom fizičkom obrazovanju. *Sportske nauke i zdravlje*, 4(1), 33-40.

ATTITUDES OF PHYSICAL EDUCATION TEACHERS TOWARDS INCLUSION OF CHILDREN WITH DEVELOPMENTAL DISABILITIES

Bojan Pejčić¹; Ana Orlić¹; Ivana Milanović¹

¹Faculty of Sport and Physical Education, Belgrade, Serbia

Introduction

Inclusive education implies placement of children of developmental disabilities in the system of regular schools and restructuring of the school system so as to meet the educational needs of each pupil. The research has shown that teachers' attitudes are among the most relevant factors of successful inclusive education. This research was aimed at examining the attitudes of PE teachers towards inclusion of children with developmental disabilities in elementary school, as well as to investigate the correlation of teachers' attitudes with gender, place where they work, length of service and professional training in the area of inclusive education.

Method

The sample consisted of 58 PE teachers (40 males and 18 females) from Belgrade ($N = 30$) and Leskovac ($N = 28$). For measuring the attitudes towards inclusion of children with developmental disabilities in PE classes we have used the instrument Attitude Toward Inclusive Physical Education comprising 15 items of four-degree Likert type. Additionally, the teachers were asked about gender, experience in work with children with developmental disabilities, length of service and participation in seminars for professional training dedicated to inclusion.

Results with discussion

The descriptive statistics results showed that teachers have moderately positive attitudes towards inclusive physical education for children with developmental disabilities, $M = 2.64$, $SD = 0.55$. The analysis of frequencies of replies to individual questions, showed that teachers support the idea of inclusion, but they also think that they lack conditions and time to implement it in a quality way. T-test for independent variables showed that teachers experienced in work with children with developmental disabilities have more positive attitudes than those who did not have such experience, $t(56) = -2.39$, $p < .05$. The t-test results showed that the attitude does not correlate with teachers' gender, place where they live and participation in seminars. The correlation analysis showed that teachers' attitudes are not in correlation with their length of service and the number of children with developmental disabilities they worked with.

Conclusion

Based on the obtained results it can be concluded that regardless of moderately positive attitudes of teachers towards inclusion of the children with developmental disabilities in PE classes, it still requires further improvement.

Key words: inclusion, children with developmental disabilities, attitudes, teachers, physical education

References

1. Avramidis, E., & Norwich, B. (2002). Teachers' attitudes towards integration/inclusion: A review of the literature. *European Journal of Special Needs Education*, 17(2), 129-147.
2. Đorđić, V., Tubić, T. i Protić, B. (2014). Stavovi učitelja seoskih i gradskih škola prema inkluzivnom fizičkom obrazovanju. *Sportske nauke i zdravlje*, 4(1), 33-40.

PROCENA KVALITETA I OBIMA POKRETA U FITNESSU – COREFITMAX

Duško Spasovski^{1,2}; Stanimir Stojiljković³

¹ Institut za ortopedsko-hirurške bolesti "Banjica", Beograd, Srbija

² Medicinski fakultet Univerziteta u Beogradu, Beograd, Srbija

³ Fakultet sporta i fizičkog vaspitanja Univerziteta u Beogradu, Beograd, Srbija

Uvod

Kvalitet u izvodjenju fitness vežbi veoma zavisi od ograničenja mekih tkiva: kontraktilnih (tonus mišića) i nekontraktilnih (mehanička svojstva fascija, zglobnih kapsula i ligamenata). Ovaj odnos je dvosmeran, pošto sistematsko fitness vežbanje utiče i na tonus mišića i na fleksibilnost tela. Iz tog razloga procena obima i kvaliteta pokreta u fitnessu treba da uključi obe komponente. Predstavljamo upotrebu CoreFitMax merenja uz pomoć računara, koje se koristi u planiranju fitness programa vežbanja.

Metod

CoreFitMax analiza uključuje 83 ulazne varijable: Functional Movement Screening - FMS (12 varijabli), prisustvo deformiteta ili nepravilno držanje segmenata tela (kičma, lopatice, karlica, kolena, stopala – 32 varijable), prisustvo i lokalizacija bola muskuloskeletnog sistema (21 variable) i kvalitet pokreta i hoda (28 varijabli). U obradi podataka vrši se mapiranje ulaznih varijabli na delove miofascijalnih lanaca čovekovog tela, i tako nastaju dve grupe rezultata: (1) balans mirujućeg mišićnog tonusa (MMT) za ukupno 62 značajna mišića; (2) funkcionalna lateralizacija ruke, trupa i noge.

Rezultati i diskusija

Analizirano je 13 ispitanika (8 muških) prosečnog uzrasta 37,5±7,1 godina. Prosečni FMS skor iznosio je 2,61. MMT kod 19 mišića (30,6%) bio je balansiran, kod 20 mišića (31,8%) mirujući tonus je bio povećan a kod 23 (37,6%) je bio snižen. Najviši MMT su imali rombasti mišići (5,6%), zatezač široke fascije (5,3%) i široki leđni mišić (4,7%), dok su najmanji MMT imali zavojni mišići (-3,9%), prednji zupčasti mišić (-3,7%) i unutrašnji kosi trbušni mišić (-3,1%). Nije uočena značajna lateralizacija trupa i ruke, dok je leva noga pri osloncu bila značajno više dominantna (prosečno 75%, p<0,05)

Zaključak

CoreFitMax analiza pruža podatke značajne za definisanje individualnih fitness programa i ciljeva vežbanja. Upotreba računara u obradi ovih podataka olakšava praćenje efekta vežbanja.

Ključne reči: CoreFitMax, fitness, mišićna analiza, mirujući tonus mišića

Literatura

1. Masi, A. T., Nair, K., Evans, T., Ghandour, Y. (2010). Clinical, biomechanical, and physiological translational interpretations of human resting myofascial tone or tension. *International journal of therapeutic massage & bodywork*, 3(4), 16.
2. Swanson, R. L. (2013). Biotensegrity: A Unifying Theory of Biological Architecture With Applications to Osteopathic Practice, Education, and Research—A Review and Analysis. *The Journal of the American Osteopathic Association*, 113(1), 34-52.

ASSESSMENT OF MOVEMENT QUALITY AND QUANTITY IN FITNESS – COREFITMAX

Duško Spasovski^{1,2}; Stanimir Stojilković³

¹ Institute for orthopedic-surgery diseases “Banjica”, Belgrade, Serbia

² Faculty of Medicine, University of Belgrade, Belgrade, Serbia

³ Faculty of Sport and Physical Education, University of Belgrade, Belgrade, Serbia

Introduction

Quality of exercise performance in fitness strongly depends on soft tissue restraints, both contractile (muscle tone) and noncontractile (fascial, capsular and ligamentous mechanical properties). This relation is bidirectional, since systematic fitness exercise influences both muscle tone and body flexibility. Therefore an assesment of movement quality in fitness should include both components. We present the use of CoreFitMax computer-assisted assesment method used in fitness workout planning.

Method

CoreFitMax analysis includes 83 input variables: Functional Movement Screening (12 variables) body segment deformity or poor postural alignment (spine, scapula, pelvis, knee, foot – 32 variables), presence and localization of musculoskeletal pain (21 variable), and gait and movement quality (28 variables). Data processing includes mapping of input variables to the elements of humano body myofascial chains. The two sets of results are: (1) the intrinsic balance of resting muscle tone (RMT) of 62 major muscles, and (2) functional lateralization of upper limb, trunk and lower limb.

Results with discussion

We analyzed 13 participants (8 male) with average age of 37.5 ± 7.1 years. Average FMS score was 2.61. RMT of 19 muscles (30.6%) was balanced, 20 muscles (31.8%) were tight and 23 (37.6%) were weak. Tightest muscles were rhomboidei (5.6%), tensor fasciae latae (5.3%) and latissimus dorsi (4.7%), while weakest were splenii (-3.9%), serratus anterior (-3.7%) and obliquus internus abdominis (-3.1%). We observed no lateralization of trunk and upper limb, while left leg was dominant for body support in 75% of cases ($p < 0.05$)

Conclusion

CoreFitMax analysis provides valuable data for creation of individual workout plan and exercise goals. Computer-assisted data processing enables easy monitoring of fitness exercise.

Key words : CoreFitMax, fitness, muscle analysis, resting muscle tone

References

1. Masi, A. T., Nair, K., Evans, T., Ghandour, Y. (2010). Clinical, biomechanical, and physiological translational interpretations of human resting myofascial tone or tension. *International journal of therapeutic massage & bodywork*, 3(4), 16.
2. Swanson, R. L. (2013). Biotensegrity: A Unifying Theory of Biological Architecture With Applications to Osteopathic Practice, Education, and Research—A Review and Analysis. *The Journal of the American Osteopathic Association*, 113(1), 34-52.

MOTIVACIJA ŽENA ZA GRUPNE FITNES PROGRAME

Dunja Antić¹; Dušan Mitić¹

¹Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja, Beograd, Srbija

Uvod

Na uzorku od 105 žena koje redovno vežbaju neki od grupnih fitnes programa u Beogradu 2015, ispitivana je motivacija za vežbanje i uzrast ispitanika, telesna visina, telesna masa, bračno stanje, kvalifikacija, iskustvo u vežbanju, fitnes status, nivo fizičkih sposobnosti, broj fitnes centara, raniji sportovi, raniji fitnes stilovi i broj instruktora.

Metod

Osnovni metod korišćen u istraživanju je metod teorijske analize, kao i korišćenje transversalnog preseka i komparacije neparametrijskim metodama. Kao instrument je upotrebljen upitnik MP-P od Petkovškega, sa 48 pitanja Likertovog tipa sa odgovorima na petostepenoj skali, modifikovan od strane Zagorc.

Rezultati sa diskusijom

Prosečna starost uzorka je 30 godina, sa srednjom vrednosti 169cm telesne visine i 59,43kg telesne težine. Motiv koji je najjače izražen u manifestnom prostoru je svesnost o korisnosti grupnih fitnes programa po zdravlje, a sledeći motivi su: poboljšanje telesne kondicije, smanjenje psihičke napetosti, lepša figura vitalnost, uživanje u vežbanju. U latentnom prostoru izdvojila četiri nezavisna faktora (samoaktualizacija, psihološko opuštanje, uticaj propagande i zadovoljstvo) koja objašnjavaju 62,5% celokupne varijanse sistema.

Zaključak

Došlo se do podataka da grupne fitnes programe najviše upražnjavaju žene mlađeg i srednjeg uzrasta, što se skoro poklapa sa procentom neudatih i udatih vežbačica. Uočava se pojava redovnijih vežbača kao i veliki broj početnika. Iz dobijenih rezultata (41% žena ima srednje motive, dok slabe i jake motive ima podjednak iznos od 29,5%) možemo zaključiti da su vežbačice dobro motivisane za učešće u grupnim fitnes programima.

Ključne reči: grupni fitnes programi, motivacija za vežbanje, žene.

Literatura

1. Mitić, D. (1994). Motivacija za rekreativno vežbanje kod žena u Srbiji. Istraživački rad, Beograd.

MOTIVATION OF WOMEN GROUP FITNESS PROGRAMS

Dunja Antic¹; Dusan Mitic¹

¹University of Belgrade, Faculty of Sport and Physical Education, Belgrade, Serbia

Introduction

In a sample of 105 women who have regularly practiced some of the group fitness programs in Belgrade in 2015, we investigated motivation for exercising, ages of examinees, their body height, weight, marital status, qualifications, experience in training, fitness status, level of physical ability, the number of fitness centers, the former sports, earlier fitness styles and number of instructors.

Method

The main method used in the study is the method of theoretical analysis, and the use of a transverse section of the comparison of nonparametric methods. As an instrument used was the MP-P questionnaire from Petkovsek, with 48 Likert-type questions with answers on a five-point scale, modified by Zagorc.

Results with discussion

An average age of the samples was 30 years, with middle value of 169cm body height and body weight of 59,43kg. The motive, mostly visible in the manifest space, is awareness of the usefulness of group fitness programs for health, and the following motives are improvement of the body condition, disturbance of the sense of psychological tension, due to more beautiful figure, vitality, enjoyment of exercise. While in the latent space there are four independent factors that stand out (self-actualization, psychological relaxation, the influence of propaganda and satisfaction) and explain 62.5% of the total variance of the system.

Conclusion

There is information that group fitness programs are mostly practiced by most women younger and middle aged, which almost coincides with the percentage of unmarried and married trainees and the emergence of more regular trainees as well as a large number of beginners. From the results (41% of women have secondary motives, while an equal amount of 29,5% had weak and strong motive, we can conclude that the trainees are well-motivated for participation in group fitness programs.

Keywords: group fitness programs, exercise motivation, women.

References

1. Mitic, D. (1994) Motivation for recreational exercise of women in Serbia. Research work, Belgrade.

EFEKTI PROGRAMA AKTIVNOSTI NA REKREATIVNOJ NASTAVI NA PSIHO-FIZIČKE SPOSOBNOSTI UČENIKA

Violeta Novaković¹; Saša Pantelić²

¹ Fakultet sporta i fizičkog vaspitanja, Beograd, Srbija

² Fakultet Sporta i fizičkog vaspitanja, Niš

Uvod

Znacaj ovog rada je unapredjenje programa rekreativne nastave, kod dece uzrasta od 7 do 8 godina. Usled ubrzanog tehnološkog razvoja sve je veća pojava hipokinezije pogotovo kod dece školskog uzrasta. Potrebe rekreativnih aktivnosti se nameću kao imperativ današnjice. Program se sprovodio u objektu "Srebrna Lisica", gde su deca na rekreativnoj nastavi imala mogućnost da oprobaju razne rekreativne aktivnosti. Predmet rada predstavlja analiza pozitivnih efekata programa rekreativnih aktivnosti koji je realizovan na Kopaoniku. Cilj rada predstavlja sagledavanje efekata programa i unapredjenje rekreativnih aktivnosti u okviru redovne rekreativne nastave u prirodi.

Metode

Koristila se metoda teorijske analize i bibliografska metoda prikupljanja podataka. Korišćena je iskustvena metoda analize podataka. Kao istraživačka tehnika korišćena je tehnika anketiranja i skaliranja. Na pilot uzorku od 40 ispitanika urađena je osnovna statistička obrada podataka.

Rezultati sa diskusijom

Tokom tekreativne nastave na Kopaoniku, u trajanju od 7 dana, izvršili smo anketiranje 40 učenika. Program rekreativne nastave se sastojao od velikog broja različitih aktivnosti edukativnog, rekreativnog i zabavnog karaktera. Rezultati dobijeni anketiranjem : 90% veoma vazna fizicka aktivnost, 8% vazna ,2% nije vazna. Rezultati govore da deca prihvataju navedeni program i daju pozitivne utiske o aktivnom bavljenju fizičkom aktivnošću.

Zaključak

Anketiranjem 40 ucenika dobili smo sledece rezultate: 90% veoma vazna fizicka aktovnost, 8% vazna, 2% nije vazna. Na osnovu ovog tezultata mozemo zakljuciti da je vaznost programa rekreativnih aktivnosti upravo dokazana na ovom primeru.

Ključne reči: program , rekreacija

Literatura

1. Mitić, D. (2001), „Rekreacija“, Fakultet sporta i fizičkog vaspitanja, Beograd
2. Ivanovski, A. (2010). *Animator u turizmu*, Magistarski rad, Fakultet Sporta i fizičkog vaspitanja, Beograd

EFFEKTS OF THE PROGRAM ON RECREATION ACTIVITIES CONTINUE ON THE ABILITY OF STUDENTS.

Violeta Novaković¹; Saša Pantelić²

¹ Faculty of Sport and Physical Education, Belgrade, Serbia

² Faculty of Sport and Physical Education, Niš

Introduction

The importance of this work is to improve the program recreational classes for children aged 7 to 8 years. Due to the rapid technological development is increasing human motion especially in children of school age. The needs of recreational activities is an imperative today. This research is analysis of positive effects program of recreational activities that was implemented in Kopaonik. The program was conducted in the «Silver Fox», where children are at a recreation teaching had the opportunity to try a variety of recreational activities. The aim of this work is the positive effects and promotion of recreational activities for both regular and recreational classes.

Method

Use the methods of theoretical analysis and bibliographic data collection methods. We used empirical methods of data analysis. As a research technique was used survey techniques and scaling. On a pilot sample of 40 patients was performed basic statistical data processing.

Results with discussion

During recreational classes in Kopaonik, a period of 7 days, we performed a survey of 40 students. Program recreational classes consisted of a wide variety of educational activities, recreational, and entertainment. Results obtained during the interview: 90% very important physical activity, 8% important, 2% is not important. Results indicate that children accept this program and give a positive impression on the active physical activity.

Conclusion

Interviewing 40 students we get the following results: 90% very important physical activity, 8% important, 2% is not important. On the basis of this result we can conclude that the importance of the recreational activities are proven in this case.

Key words: The program, recreation

References

1. Mitic, D. (2001), «Recreation», Faculty of Sport and Physical Education, Belgrade
2. Ivanovski, A. (2010). Animator in tourism, M.Sc., Faculty of Sport and Physical Education, Belgrade

SPECIFIČNOSTI OBUKE SKIJANJA KOD DECE

Dragiša Mladenović¹

¹Škola skijanja Kopaonik, Srbija

Uvod

Obuka skijanja kod dece je karakteristična ne samo po uslovima u kojima se izvodi i opremi koju zahteva već i po tome što se način obuke prilagođava realnim mogućnostima deteta i njegovim specifičnostima na pojedinim etapama dečjeg razvoja.

Metod

Ovaj rad je empirijskog karaktera i bazira se na teorijskim saznanjima iz oblasti psihofizičkog razvoja dece i usvajanja osnovne tehnike skijanja kod dece, i logički je doveden u sklad sa empirijskim zapažanjima autora nakon višegodišnjeg rada sa decom polaznika škole skijanja.

Rezultati sa diskusijom

Kod dece istog uzrasta postoje velike razlike u morfološkim obeležjima, motoričkim i funkcionalnim sposobnostima zbog različite brzine biološkog razvoja koje utiču na uspešnost usvajanja tehnike skijanja. Zbog toga pri obuci skijanja kod dece treba uključiti bazična motorička kretanja, filogenetski uslovljena koja su deci razvojno najbliža. Sprovođenje programa obuke kod dece je pogodnije kroz igru i grupni vid nastave. Izbor kretnih zadataka zahteva prilagođavanje specifičnostima, potrebama i sposobnostima u skladu sa uzrastom deteta. Pri izboru kretnih zadataka potrebno je voditi računa o vrsti zadataka, težini izvođenja zadatka, njihovom broju i dužini trajanja, uslovima u kojima se obuka izvodi, odgovarajućim metodama rada i korišćenju adekvatnih termina. Postoji velika razlika u specifičnom treningu između dve skijaške sezone gde zbog porasta mase i visine tela kod dece dolazi do narušavanja motoričkog programa iz prethodne sezone.

Zaključak

Program obuke skijanja kod dece treba da bude prilagođen dečjim mogućnostima i sposobnostima u skladu sa njihovim razvojem, na način koji je deci interesantan, zabavan i predstavlja im zadovoljstvo, organizovan kroz igru i grupni vid nastave.

Ključne reči: deca, obuka, skijanje, specifičnosti

Literatura

1. Bompá T.O. (2000.). Total Training for Young Champions, Champaign, IL: *Human Kinetics*.
2. Lešnik B., Žvan M. (1998). Assessing the morphologic, motoric and psychologic status of young boys in alpine skiing based on expert modelling. *Kinesiologia Slovenica*, 4(1):27-35.

SPECIFIC FEATURES OF SKIING TRAINING WITH CHILDREN

Dragisa Mladenovic¹

¹Ski school Kopaonik, Serbia

Introduction

Ski training with children is specific not only due to conditions under which it is done and the equipment it requires, but also because of the fact that the training method is adapted to actual capabilities of children and specific features in their development stages.

Method

The paper is of empirical nature and is based on theoretical findings in the field of physical and mental development of children and the adoption of basic skiing technique with children, and logically, it has been put in accord with the empirical observations of the author after a couple of years working with the children attending the ski school.

Results with discussion

With children of the same age there exist large differences in morphological features, motoric and functional abilities due to various speed of biological development which affect the mastering of ski techniques. Hence, with ski training for children basic motoric movements should be included, those are conditioned phylogenetically and closest in terms of development closest to children. Conducting ski training with children is most favorable through playing and group work. Selection of assigned movements requires adapting to specific features, needs and abilities depending on children's age. When choosing those movements it is necessary to have in mind the type of moves, how difficult the tasks are, their number and time of duration, conditions under which training is done, adequate methods and using appropriate terms. There exist a large distinction in specific trainings between two ski seasons where due to increase in mass and height of body the motoric curriculum from previous season needs to be changed.

Conclusion

Ski training program with children should be adapted to children's abilities and capabilities, in accord with their development and in a way which is interesting and fun and represents pleasure for them and is to be organized through playing and group work.

Key words: children, training, skiing, specific features

References

1. Bompa T.O. (2000.). Total Training for Young Champions, Champaign, IL *Human Kinetics*.
2. Lešnik B., Žvan M. (1998). Assessing the morphologic, motoric and psychologic status of young boys in alpine skiing based on expert modelling. *Kinesiologia Slovenica*, 4(1):27-35.

ANALIZA FAZA MENADŽMENTA U REALIZACIJI SPORTSKO REKREATIVNOG KAMPA

Bojan Ugrinić¹; Aleksandar Ivanovski²; Marija Zegnal Koretić³; Srđan Milosavljević¹

¹ Univerzitet Singidunum Beograd, Fakultet za fizičku kulturu i menadžment u sportu

² Visoka sportska i zdravstvena škola Beograd

³ Međumursko Veleučilište Čakovec

Uvod

Rad je nastao kao potreba da se primene dosadašnja znanja i iskustva tokom dugogodišnjeg rada na različitim sportsko rekreativnim aktivnostima, kao i da se analiziraju faze menadžmenta u realizaciji sportsko rekreativnog kampa. Predmet rada predstavlja ulogu i značaj četiri faze menadžmenta u analizi sportsko rekreativnog kampa kroz program animacije rekreativnih aktivnosti. Cilj rada je predstavljanje rekreativnih aktivnosti za decu, uzrasta od sedam do četrnaest godina, kroz planiranje, organizaciju, vođenje i kontrolu.

Metode

Korišćena je metoda teorijske analize i bibliografska metoda prikupljanja podataka. Od velikog značaja bila je deskriptivna metoda i iskustvena metoda analize podataka. Korišćena je tehnika anketiranja i skaliranja. Urađena je osnovna statistička obrada podataka anketiranih 500 ispitanika.

Rezultati sa diskusijom

Planiranje je najvažnija faza menadžmenta, ona određuje ciljeve organizacije i načine za njihovu realizaciju, predstavlja proces gde su se na početku realizacije sportsko rekreativnog kampa postavile aktivnosti koje su se odvijale u tri segmenta: prepodnevne, popodnevne i večernje. Da bi se planirani ciljevi ostvarili potrebno je odrediti uloge koje će pojedini delovi ili članovi organizacije obavljati, što predstavlja drugu fazu organizacije. U ovom slučaju imamo tri dela organizacije a to su priroda i zdrav život, sport, rekreacija i avantura i edukacija. Vođenje predstavlja stalnu funkciju i najvažniji aspekt menadžmenta, na čelu organizacije je osoba koja donosi odluke i upošljava članove. Kod četvrte faze kontrole je sprovedeno istraživanje na uzorku od 500 ispitanika. Rezultati nam pokazuju veoma visoke ocene, koje su dobijene sprovođenjem IV faze menadžmenta, a to su dnevne aktivnosti 97,2%, večernje aktivnosti 91,6%, organizacija 95,8%, tim animacije 97%.

Zaključak

Dobijeni rezultati nam govore da su četiri faze menadžmenta neophodne za uspešnu realizaciju rekreativnih aktivnosti ovog karaktera. Kroz analizu IV faze kontrole uvideli smo da su mnoga deca prvi put na ovakvoj vrsti sportsko rekreativnog kampa čak 66.4% i njihove impresije su na zavidnom nivou. Rezultati analize pokazuju da su sve četiri teorijski postavljene faze menadžmenta veoma interesantne za dalja istraživanja u oblasti menadžmenta sportsko rekreativnih aktivnosti.

Ključne reči: menadžment, sportsko rekreativni kamp, animacija

Literatura

1. Ivanovski, A. (2014). *Animacija programima rekreativnih aktivnosti u turizmu: doktorska disertacija*. Beograd: Fakultet sporta i fizičkog vaspitanja
2. Ivanovski, A., Mitić, D. (2012) *Animatorintourism*. Brasov: Editura Universitati Transilvania Din Brasov Monografija sa međunarodnom recenzijom

ANALYSIS OF PHASE OF MANAGEMENT IN REALIZATION OF SPORTS AND RECREATIONAL CAMP

Bojan Ugrinić¹; Aleksandar Ivanovski²; Marija Zegnal Koretić³; Srđan Milosavljević¹

¹ Singidunum University of Belgrade, Faculty of Physical Education and Sports Management

² College of Sports and Health in Belgrade

³ Medjumurje Polytechnic Čakovec

Introduction

The work of the establishment as well as the need to succumb current knowledge and experience over many years of working in various sports and recreational activities, as well as to analyze the phase of management in the implementation of sport and recreational camp. Subject of the work is the role and importance of the 4 stages of management in the analysis of sports and recreation camp program through recreation and animation. Goal is to present recreational activities for children from seven to fourteen years, through: planning, organization, management and control.

Methods

In the research were used method of theoretical analysis and bibliographic data collection methods. Of great significance was the descriptive method and empirical methods of data analysis. As a research technique were used survey techniques and scaling. On a sample of 500 respondents was carried out statistical analysis of data.

Results with discussion

Planning is the most important phase of management, it defines the organization's goals and ways of their implementation, is a process where at the beginning of the realization of sports and recreational camp set of activities that have taken place in three segments: the late morning, afternoon and evening. In order to achieve the intended objectives it is necessary to determine the role that the individual parts or members of the organization to carry out, which constitutes the second phase of the organization. In this case there are three parts of the organization and that the nature and healthy life, sport, recreation, adventure and education. Leadership is a permanent feature and the most important aspect of management at the helm of the organization is the person who makes the decision and employs members. In the fourth phase control, research was conducted on a sample of 500 respondents. Results show us very high marks, which were obtained by the implementation of the fourth phase of management, which are 97.2% daily activities, evening activities, 91.6%, 95.8% of organizations, these animations 97%.

Conclusion

The results tell us that there are four stages of management necessary for successful realization of recreational activities of this character. Through the analysis of the fourth phase of control, we realized that many children for the first time in this kind of sport and recreation camp 66.4% and their impressions are very high. The results show that all four theoretically set stage management is very interesting for further research in the field of management of sports and recreational activities.

Keywords: management, sports and recreation camp, animation

Literature

1. Ivanovski A. (2014). *Animation program and recreational activities in tourism* doctoral thesis. Belgrade: Faculty of Sport and Physical Education
2. Ivanovski, A. Mitic, D. (2012) *Animatorintourism*. Brasov: Editura Universitat Transilvania Brasov Din monograph with an international review

AKTIVNOSTI U PRIRODI U FUNKCIJI ZAŠTITE ŽIVOTNE SREDINE NA PRIMERU MAPIRANJA DIVLJIH DEPONIJA NA IZLETNIČKOJ TURI

Vladimir Miletić¹; Zorica Davidović²; Irina Juhas¹

¹Fakultet sporta i fizičkog vaspitanja, Univerzitet u Beogradu, Srbija¹

²Futura - Fakultet za primenjenu ekologiju, Univerzitet Singidunum, Beograd, Srbija²

Uvod

Boravak u zdravom okruženju je elementarno pravo svakog čoveka. Danas je to pravo privilegija pojedinaca koji mogu sebi priuštiti "deo netaknute prirode", ako se ista može naći u takvom obliku. Izuzevši područja koji su kategorisana kao: nacionalni parkovi, parkovi prirode, zaštićena prirodna dobra i sl, da li nam se uskraćuje mogućnost sprovođenja fizičke aktivnosti u zdravim sredinama? Da li prihvatiti činjenicu i jednostavno zaobići eko-probleme ili pomoći u realizaciji njihovog otklanjanja? Rad je nastao iz potrebe da se pokaže značaj i upotrebna vrednost stečenih znanja iz oblasti Aktivnosti u prirodi u vezi sa drugim društvenim delatnostima - zaštitom životne sredine. Cilj istraživanja je bio da se izvrši mapiranje divljih deponija na pešačkoj turi, kako bi nadležni po dobijanju mape mogli što jednostavnije pronaći i ukloniti eko-probleme.

Metod

U izletničkoj turi, u kojoj je učestvovalo 22 učesnika izleta, sprovedeno je namensko orijentaciono kretanje usmereno na pronalaženje i evidentiranje divljih deponija i pojedinačnog otpada. Korišćen je metod opservacije terena (maršrute) i metod digitalnog mapiranja upotrebom GPS uređaja - *Magellan Triton 300* i softvera *Navigon* instaliranom na telefonu iPhone. Takođe je konstruisan anketni list - Eko-izveštaj, u koji su učesnici ture evidentirali tražene podatke od ekološkog značaja.

Rezultati sa diskusijom

Kao rezultat istraživanja realizovanog u terenskim uslovima na turi dužine od 12 km evidentirano je 14 deponija, sa različitim sadržajima otpada ubeleženih u Eko-izveštaj. Podaci iz izveštaja uneti su u topografsku kartu uz pomoć tehnologije geografsko informacionog sistema (GIS). Izrađena mapa je predata nadležnim institucijama, čiji je zadatak dalje rešavanje evidentiranog problema, nakon čega će slediti nastavak prakse mapiranja deponija na drugim aktivnostima koje se odvijaju u prirodi, a zahtevaju čisto okruženje.

Zaključak

Nakon sprovedenog izleta sa tematikom orijentacionog kretanja, prema programu predmeta Aktivnosti u prirodi, urađena je evidencija divljih deponija na pređenom terenu i formiran Eko-izveštaj. Eko-izveštaj bi mogao biti praksa svakog posetioca prirode, na osnovu koga bi se rešavali problemi otpada koji ne pripada prirodnom okruženju. Na ovaj način se podiže nivo ekološke svesti studenata o značaju očuvanja životne sredine - prirode uopšte, uz jačanje ekološke inteligencije.

Ključne reči: izletnička tura, eko-izveštaj, topografska karta, GIS, ekološka inteligencija

Literatura

1. Jovanović, V., Đurđev, B., Srđić, Z., Stankov, U. (2012). Geografski informacioni sistemi. Singidunum, Beograd
2. Đarmati, A.Š. (2008). Menadžment otpada. Fakultet za primenjenu ekologiju - Futura, Beograd

OUTDOOR ACTIVITIES IN FUNCTION OF ENVIRONMENT PROTECTION ON EXAMPLE OF MAPPING ILLEGAL DUMPS ALONG THE HIKING TOUR

Vladimir Miletić¹; Zorica Davidović²; Irina Juhas¹

¹Faculty of Sport and Physical Education, University of Belgrade, Serbia

²Futura - Faculty of Applied Ecology, University Singidunum, Belgrade, Serbia

Introduction

Staying in a healthy environment is a fundamental right of every human being. Today it is a real privilege of individuals who can afford „part of the untouched nature,” if it can be found in such a form. Except in areas that are categorized as: national parks, nature parks, protected areas, etc., whether we denied the possibility of implementation of physical activity in a healthy environment? Whether just accept this and just bypass the eco-problems or assist in the realization of its elimination? The work arose from the need to demonstrate the importance of use values of the acquired knowledge in the field of outdoor activities in connection with other social activities - environmental protection. The aim was to carry out a mapping illegal dumps within walking tour, in order to competent authorities upon receipt of folders could easier find and remove the eco-problems.

Method

Within the hiking tour attended by 22 participants, which were tentatively earmarked movement aimed at finding and recording of illegal dumps and individual waste. We have used the method of observation field (route) and the method of digital mapping using GPS devices - Magellan Triton 300 and Navigon software installed on iPhone. It is also designed questionnaire - Eco-Report, in which participants of the tour recorded the requested data of ecological importance.

Results with discussion

As a result of research conducted in field conditions on the length of 12 km tour, there were 14 landfills with different contents of waste reported in the Eco-Report. Data from the reports are entered in the topographic map using a geographic information system technology (GIS). Made map is handed over to the competent institutions, whose task is to continue solving the problems recorded, after which will follow the continuation of the practice of mapping landfills in other activities that take place in nature and require a clean environment.

Conclusion

After completing the trip with the theme of directional movement, according to the program of the activities in nature, made a record of illegal dumps on the sliding distance field and formed the Eco-Report. Eco-report could be the practice of every visitor to nature, on the basis of which to address the problems of waste that does not belong to the natural environment. In this way, it raises the level of environmental awareness of students about the importance of preserving the environment - nature in general, with the strengthening of environmental intelligence.

Keywords: excursion tours, eco-report, topographic map, GIS, ecological intelligence

References

1. Jovanović, V., Đurđev, B., Srdić, Z., Stankov, U. (2012). Geografski informacioni sistemi. Singidunum, Beograd
2. Đarmati, A.Š. (2008). Menadžment otpada. Fakultet za primenjenu ekologiju - Futura, Beograd

THE DIFFERENCES IN THE TOTAL WEEKLY ACTIVITY AND DIFFERENCES IN ONE LESSON OF PE BETWEEN 3RD AND 4TH GRADE PUPILS OF ELEMENTARY SCHOOL

Katarina Horvat¹; Tihomir Vidranski¹; Ivana Klaričić¹; Zvonimir Tomac¹; Josip Cvenić²

¹J.J. Strossmayer University of Osijek, Faculty of Education

²J.J. Strossmayer University of Osijek, Department of Mathematics

Introduction

The current state of Physical education (PE) teaching is unsatisfactory as well as the achieved results. The most frequently mentioned of the lack of efficiency include: poor material conditions, inadequate program, insufficient involvement of teachers as well as an insufficient hours of PE. Given that in the Republic of Croatia the 3rd grade pupils attend PE three times and pupils of 4th grade 2 times a week, the aim of this study was to determine the partial difference and the difference in the total weekly activity.

Method

The study included 127 pupils of Elementary school Braće Radić, Pakrac, Croatia. The total activity of students was recorded by "Uniq" pedometer and included the number of steps that the students have taken on a particular hour of PE (1247 results). The differences in the total number of steps in one week between the pupils was determined by Mann-Whitney U test.

Results with discussion

The results showed that there are significant differences in the total weekly PE activity between 3rd and 4th grade pupils (Mann-Whitney U test $Z=3.54$, $p=0.00$) and that there are differences in activity at a particular hour of PE (1188.73:948.08). Weekly differences are attributed to the frequency of PE while differences for each individual class could possibly be attributed to the difference in chronological age of children, who as children approaching puberty reduces their physical activity (Nader et al. 2008).

Conclusion

The differences in the total weekly activity and differences in one lesson of PE between 3rd and 4th grade pupils of elementary school are determined. One more hour of PE per week can contribute to the overall level of activity. Therefore it would be helpful to have three hours of PE per week in 4th grade to decrease difference in total week activity between students of 3rd and 4th grade.

Keywords: physical activity, pedometer, number of steps

References

1. Nader, P.R., Bradley, R.H., Houts, R.M., McRitchie, S.L., O'Brien, M. (2008). Moderate to vigorous physical activity from ages 9 to 15 years. 300(3):295-305.

THE EFFECTS OF THEORETICAL CLASSES ON HEALTH RELATED FITNESS OF FEMALE STUDENTS

Josip Cvenić¹

¹Department of Mathematics, University of Osijek, Osijek, Hrvatska

Introduction

Physical and health educational field because of its importance to the harmonious development of anthropological characteristics of students is unique for its features and specificities. Slater and Tiggemann (2010) emphasize the importance of the application of theoretical lectures in physical education for the promotion of learning motion structures with understanding and development of thinking skills during the performance of activities.

Methods

The research included 84 female students who were divided into experimentally and control group. In order to realize the goals, two different programs of physical education were conducted for a period of one academic year. The only difference between the groups was that instead of the 90 minutes of practical training in the control group, the experimental group held every second class theoretical lecture for 30 minutes on a particular topic. The following tests were used for assessment health related fitness: 6 minute run, seated straddle stretch, standing broad jump, trunk lift for 60 seconds, 3-site skinfold body fat. The existence of a general variable difference between groups has been determined through the usage of two way ANOVA.

Results with discussion

The experimental group showed statistically significant differences compared to the control in some variables of health related fitness such as muscular and cardio-respiratory endurance. In rest of variables statistically significant differences not existed. Student period, as the final stage of the educational process provides a many options for intervention to change the undesirable health behavior. Therefore, different interventions are necessary in order to increase student physical activity, regular exercise and reduce sedentary behavior.

Conclusion

Results of this study indicate that experimental group with theoretical approach make statistically significant differences in health related fitness variables such as muscular and cardio-respiratory endurance.

Key words: health-related fitness, female students, theoretical lectures

References

1. Slater, A., Tiggemann, M. (2010). "Uncool to do sport": A focus group study of adolescent girls' reasons for withdrawing from physical activity. *Psychology of Sport and Exercise*, 11(6), 619-626.

SESIJA 4 / SESSION 4

Biomedicinski aspekti primene fizičke aktivnosti
Biomedical aspects of physical activity application

UPOREDNA ANALIZA MAKSIMALNE POTROŠNJE KISEONIKA KOD ŽENA PUŠAČA I NEPUŠAČA U FITNESSU

Stanimir Stojiljković¹; Goran Nerandžić²; Dušan Mitić¹; Vladimir Ilić¹

¹ Fakultet sporta i fizičkog vaspitanja, Univerzitet u Beogradu, Beograd, Srbija

² Fitnes klub Tonus, Beograd, Srbija

Uvod

Pušenje predstavlja veliki problem savremenog čoveka. Dokazana je uzročno posledična povezanost pušenja i karcinoma pluća, infarkta miokarda, hronične opstruktivne bolesti pluća i drugih kardiovaskularnih bolesti. Broj pušača u Srbiji se poslednjih godina smanjuje, ali još uvek je Srbija prema broju pušača visoko plasirana u Evropi. Pušača ima i u populaciji vežbača u fitness centrima. Može se pretpostaviti da pušenje u velikoj meri umanjuje pozitivne efekte redovne fizičke aktivnosti. Ovu pretpostavku smo pokušali da proverimo istraživanjem.

Metod

Cilj istraživanja je uporedna analiza maksimalne potrošnje kiseonika kod žena pušača i nepušača, koje redovno vežbaju u istom fitness centru, kao i povezanost maksimalne potrošnje kiseonika i intenziteta pušenja izraženog dvema varijablama (dužina pušačkog staža i broj popušenih cigareta dnevno). Istraživanjem je obuhvaćeno 30 žena prosečne starosti 29 godina, koje su bile raspoređene u dve grupe: E1 (15 žena pušača) i E2 (15 žena nepušača). Anketom su prikupljeni podaci u vezi sa navikom pušenja u grupi pušača. Maksimalna potrošnja kiseonika kod obe grupe ispitanika, procenjena je UKK testom hodanja na 2km. Statistička značajnost razlika između pušača i nepušača utvrđena je t-testom, a povezanost maksimalne potrošnje kiseonika i intenziteta pušenja utvrđena je Pirsonovim koeficijentom korelacije.

Rezultati sa diskusijom

Žene pušači su imale prosečnu maksimalnu potrošnju kiseonika $32,65 \pm 2,33 \text{ mlO}_2/\text{kg}/\text{min}$, a žene nepušači $36,64 \pm 3,52 \text{ mlO}_2/\text{kg}/\text{min}$, što predstavlja statistički značajnu razliku na nivou 0,01. Ovim je potvrđena pretpostavka da pušenje negativno utiče na efekte redovnog fizičkog vežbanja. Pirsonov koeficijent korelacije ($r = 0,40$) pokazuje da postoji slaba pozitivna povezanost između intenziteta pušenja i maksimalne potrošnje kiseonika, ali ove podatke treba uzeti sa rezervom odnosno ne treba ih tumačiti, jer značajnost koeficijenta korelacije ($P = 0,068$) govori da koeficijent korelacije nije značajan.

Zaključak

Rezultati istraživanja ukazuju da pušenje umanjuje pozitivne efekte redovne fizičke aktivnosti kod žena koje redovno vežbaju u fitness centru.

Ključne reči : pušenje, maksimalna potrošnja kiseonika, UKK test

Literatura

1. Bernaards, C., Twisk, J., Van Mechelen, W., Sbel, J. and Kempe, H. (2003). A longitudinal study on smoking in relationship to fitness and heart rate response. *Medicine and Science in Sports and Exercise*, 35 (5), 793-800.
2. Suminski, R.R., Wier, L.T., Poston, W., Arenare, B., Randles, A. and Jackson, A.R. (2009). The effect of habitual smoking on measured and predicted VO_2max . *Journal of Physical Activity & Health*, 6 (5), 667-673.

COMPARATIVE ANALYSIS OF MAXIMAL OXYGEN CONSUMPTION IN FEMALE SMOKERS AND NON-SMOKERS IN FITNESS

Stanimir Stojiljković¹; Goran Nerandžić²; Dušan Mitić¹; Vladimir Ilić¹

¹ Faculty of Sport and Physical Education, University of Belgrade, Belgrade, Serbia

² Fitnes klub Tonus, Belgrade, Serbia

Introduction

Smoking is a great problem of the modern man. A correlation was proven between smoking and lung cancer, myocardial infarction, chronic obstructive pulmonary disease and other cardiovascular diseases. The number of smokers has been reduced in Serbia in recent years, but still Serbia ranks high among the European countries according to the number of smokers. Smokers can be found also among the exercising population in fitness centres. It can be assumed that smoking reduces to the great extent the positive effects of regular physical activity. We tried to check this assumption through research.

Method

The aim of the research is to compare maximal oxygen consumption in female smokers and non-smokers, who regularly exercise in the same fitness centre, as well as connection of the maximal oxygen consumption and smoking intensity expressed in two variables (years of smoking and daily number of cigarettes smoked). The research included 30 women aged 29 on average, divided in two groups: E1 (15 female smokers) and E2 (15 female non-smokers). The data, collected by a questionnaire, referred to the smoking habits in the group of smokers. The maximal oxygen consumption in both groups of respondents, was assessed by a UKK 2-kilometer walk test. Statistical significance of differences between the smokers and non-smokers was established by the T -test, and correlation between maximal oxygen consumption and smoking intensity was established by the Pearson's correlation coefficient.

Results with discussion

Female smokers had an average maximal oxygen consumption of $32,65 \pm 2,33 \text{mlO}_2/\text{kg}/\text{min}$, and female non-smokers $36,64 \pm 3,52 \text{mlO}_2/\text{kg}/\text{min}$, which presents a statistically significant difference of 0,01. This confirms the assumption that smoking negatively affects the effect of regular physical exercising. Pearson's correlation coefficient ($r = 0,40$) shows that there is a weak positive correlation between smoking intensity and maximal oxygen consumption, but these data should be considered with care i.e. should not be interpreted, because the importance of the correlation coefficient ($P = 0,068$) shows that correlation coefficient is not significant.

Conclusion

The research results indicate that smoking reduces positive effects of regular physical activity in females regularly engaged in fitness centre exercising.

Key words: smoking, maximal oxygen consumption, UKK walk test

References

1. Benaards, C., Twisk, J., Van Mechelen, W., Sbel, J. and Kempe, H. (2003). A longitudinal study on smoking in relationship to fitness and heart rate response. *Medicine and Science in Sports and Exercise*, 35 (5), 793-800.
2. Suminski, R.R., Wier, L.T., Poston, W., Arenare, B., Randles, A. and Jackson, A.R. (2009). The effect of habitual smoking on measured and predicted VO_2max . *Journal of Physical Activity & Health*, 6 (5), 667-673.

ZASTUPLJENOST DEFORMITETA RAVNOG STOPALA KOD DECE OD 6 DO 14 GODINA U SRBIJI: SISTEMSKO PREGLEDNO ISTRAŽIVANJE

*Stefan Đorđević¹; Bojan Jorgić¹; Marko Aleksandrović¹; Igor Stanojević²;
Armin Paravlić¹*

¹ Fakultet sporta i fizičkog vaspitanja, Univerzitet u Nišu, Srbija

² Visoka škola strukovnih studija za vaspitače, Aleksinac, Srbija

Uvod

Osobe sa dijagnostikovanom deformitetom ravnih stopala su osobe čija sprega mišćnog, ligamentnog i koštanog sistema nisu u stanju da se usled dejstva spoljašnjih sila održe normalan izgled stopala. Cilj ovog naučnog rada je utvrdi zastupljenost deformiteta ravnog stopala kod dece uzrasta od 6 do 14 godina u Republici Srbiji.

Metod

Za prikupljanje dosadašnjih naučnih radova pretraživane su sledeće elektronske baze podataka: PubMed, PEDro, SCIndeks, DOAJ. Pretraživani su naučni radovi u vremenskom periodu od 2005. do 2015. godine. Da bi se naučni rad prihvatilo za konačnu analizu, bilo je potrebno zadovoljiti dva kriterijuma: da u naučnom radu postoje ispitanici kojima je vršena procena deformiteta ravnog stopala i da su ispitanici starosti od 6 do 14 godina.

Rezultati sa diskusijom

Brojni naučni radovi (365) su isključeni na osnovu unapred preciziranih kriterijuma, preostalih 10 radova ispunili su postavljene kriterijume. U naučnim radovima koje je obuhvatilo ovo istraživanje izmereno je 5015 dece. Deformitet ravnog stopala dijagnostikovano je kod 2355 deteta odnosno procentualna zastupljenost je 46,95%. Na osnovu rezultata, može se predložiti plantograf kao sredstvo za procenu deformiteta stopala, kao i Tomsonov i Čižinov metod za obradu dobijenih rezultata.

Zaključak

Naučni radovi transverzalnog karaktera ukazuju je da je stanje zastupljenosti deformiteta ravnog stopala dece uzrasta od 6 do 14 godina alarmantno veliki odnosno da skoro svako drugo dete u Srbiji ima deformitet ravno stopalo.

Ključne reči: pol, deca, deformitet, ravno stopala,

Literatura

1. Đokić Zoran, Stojanović Marija (2010). Morfološke karakteristike i posturalni status dece od 9 do 12 godina na području Sremske Mitrovice. Opšta medicina 16(1-2), 41-49.

THE REPRESENTATION OF FLAT FOOT DEFORMITY FOR CHILDREN AGES BETWEEN 6 TO 14 YEARS IN THE REPUBLIC OF SERBIA: SYSTEMATIC REVIEW STUDY

Stefan Dorđević¹; Bojan Jorgić¹; Marko Aleksandrović¹; Igor Stanojević²; Armin Paravlić¹

¹ Faculty of Sport and Physical Education, University of Nis, Serbia

² College of professionals studies educators, Aleksinac, Serbia

Introduction

People with diagnosed deformity of flat feet are persons whose team of ligament, muscular and bone systems are not able to due to external forces maintain the normal appearance of the foot. The aim of this scientific work is to determine the representation of flatfoot deformity in children aged between 6 to 14 years in Serbia.

Method

To collect the current scientific papers searched the following electronic databases: PubMed, PEDro, SCIndeks, DOAJ. The scientific works are searched in the period from 2005 to 2015. In order to accept the scientific works it was necessary to satisfy two criteria: scientific work must have subjects which was estimated flatfoot deformities and that the respondents are aged between 6 to 14 years.

Results with discussion

Many of scientific papers 365 were excluded based on precise criteria, the remaining 10 papers fulfilled the criteria. In scientific work which was included in this study were tested 5015 children. Flatfoot deformity was diagnosed in 2355 child or 46.95%. Based on the results we can suggest plantograf as a tool to assess foot deformity as well as Thomson and Čižinov method for analyzing the obtained results.

Conclusion

Scientific papers transversal character indicates that the situation of representation of flatfoot deformities in children aged between 6 to 14 years is alarmingly large that almost every second child in Serbia has a flat foot deformity.

Keywords: sex, children, deformity, flat feet.

References

1. Ђокић Зоран, Стојановић Марија (2010). Морфолошке карактеристике и постурални статус деце од 9 до 12 година на подручју Сремске Митровице. Општа медицина 16(1-2), 41-49.

STATUS STOPALA DEVOJČICA MLAĐEG ŠKOLSKOG UZRASTA

Danica Janićijević¹; Milena Mijailović¹; Dejan Ilić¹

¹Univerzitet u Beogradu, Fakultet sporta i fizičkog vaspitanja, Srbija

Uvod

Neadekvatna obuča, nedovoljna fizička aktivnost i gojaznost su faktori koji mogu uticati na pojavu različitih deformiteta stopala.

Metod

Ovo je neeksperimentalno, transversalno, kvantitativno istraživanje koje je imalo za cilj da utvrdi status stopala devojčica mlađeg školskog uzrasta koje treniraju u školi sporta „Sportikus“. Za analizu plantograma korišćen je Tomsenov metod. Uzorak je obuhvatio 28 devojčica uzrasta 7 i 8 godina. Istraživanje je sprovedeno u maju 2015. godine.

Rezultati sa diskusijom

Od ukupnog broja, 11 devojčica ima pravilno stopalo, dok 17 ima narušen svod stopala. Kada govorimo o desnom stopalu 13 ispitanica ima pravilno desno stopalo, 11 ima I stepen spuštenosti, a 4 ispitanice imaju II stepen spuštenosti stopala. Kada govorimo o levom stopalu, od ukupnog broja, 15 ispitanica ima pravilno stopalo, 11 ima I stepen spuštenosti, 2 ispitanice imaju II stepen spuštenosti. Treći stepen spuštenosti svodova stopala nije zabeležen kod ovog uzorka ispitanika. Primećeno je da postoje devojčice koje imaju jedno pravilno stopalo, a drugo sa spuštenim svodovima.

Zaključak

Rezultati istraživanja ukazuju na to da veliki broj ispitanica iz škole sporta „Sportikus“ ima narušen svod stopala, čak 60, 71% od ukupnog broja ispitanika. Ohrabrujuće je to što najveći broj njih ima prvi stepen deformiteta, ali je zabrinjavajuće to što je ovo istraživanje rađeno sa redovnim polaznicima jedne od vodećih škola sporta kod nas. Ovo znači da vežbanja koja se sprovode na treninzima nisu dovoljna preventivna mera i da je potrebno uvrstiti u trenažni proces više korektivnih vežbi.

Ključne reči: status stopala, deformitet, škola sporta “Sportikus“, mere prevencije.

Literatura

1. Koturović, Lj. , Jeričević, D. (1996). *Korektivna gimnastika* (II izdanje). Beograd: IGP „MIS SPORT“.
2. Radisavljević, M. (2001). *Korektivna gimnastika sa osnovama kineziterapije* (prerađeno i dopunjeno izdanje). Beograd: Viša škola za sportske trenere

FOOT STATUS AMONG YOUNG SCHOOL AGE GIRLS

Danica Janićijević¹; Milena Mijailović¹; Dejan Ilić¹

¹Faculty of sports and physical education, University of Belgrade, Serbia

Introduction

Inadequate shoes, lack of movement and exercise and also obesity can lead to serious foot deformities.

Method

This is a non-experimental, transversal, quantitative research which has a main goal to determine foot status among young school age children who are training at school of sport "Sporticus". For analyzing foot status Thomsen method was used. Sample of subjects included 28 girls, 7-8 years of age. Research was conducted in may 2015.

Results with discussion

Of the total number of subjects, 11 have a normally distributed arch, but 17 of them have flat foot. When it comes to right foot status, of total number, 13 have normal foot, 11 have first degree flat foot and 4 subjects have second degree flat foot. And when it comes to left foot status 15 subjects have normal foot, 11 have first degree flat foot and 2 of them have second degree flat foot. No one has third degree flat foot. It was noticed that some girls had one foot with normally distributed arch, but other foot flat.

Conclusion

Results of this research show that there are a lot of subjects from school of sports "Sporticus" who have flat foot, and the correct percentage is 60.71% of the total number. Encouraging fact is that most of them who have the first degree flat foot, but the fact that the sample of subjects are girls who are regular members of this leading school of sports in our country made us very concerned. This means that exercises on the trainings are not good way for prevention and it is highly important to implement much more corrective exercises.

Key words: foot status, deformity, school of sports "Sporticus", prevention

References

1. Koturović, Lj., Jeričević, D. (1996). *Korektivna gimnastika (Drugo izdanje)*. Beograd: IGP"MIS SPORT".
2. Radisavljević, M. (2001). *Korektivna gimnastika sa osnovama kineziterapije (prerađeno i dopunjeno izdanje)*. Beograd: Viša škola za sportske trenere

UTICAJ KONTINUIRANOG FIZIČKOG VEŽBANJA AEROBNOG TIPNA NA NIVO PROLAKTINA U KRVI TOKOM DOJENJA

Ksenija Bubnjević^{1,2}; Lela Marić¹; Stevan Grujić¹; Đorđe Kozomara¹; Mile Randelović¹

¹ Vojna akademija, Beograd, Srbija¹

² Fakultet sporta i fizičkog vaspitanja, Beograd, Srbija²

Uvod

Svetska zdravstvena organizacija preporučuje isključivo dojenje novorođenčeta prvih šest meseci. Cilj rada bio je da ispita da li kontinuirano vežbanje aerobnog tipa ima negativan uticaj na laktaciju, odnosno, na nivo prolaktina u krvi.

Metod

U studiji su učestvovala dve osobe podjednake visine, telesne mase, socijalnog statusa i obrazovanja koje su rodile prirodnim putem u razmaku od tri nedelje. Prva osoba (39 godina) nije vežbala tokom trudnoće i nakon porođaja, dok je druga osoba (33 godine) nastavila sa trčanjem lakog do umerenog intenziteta. Dve nedelje nakon porođaja merena je telesna masa, procenat masnog tkiva kao i nivo prolaktina u krvi. Obe porodilje dojile su na zahtev novorođenčeta. Na kraju svakog meseca praćene su promene prvobitno merenih parametara: telesna masa, procenat masnog tkiva, nivo prolaktina u krvi, kao i beleženje ostalih faktora koji bi mogli imati uticaj na laktaciju (kalorijski unos hranljivih materija, odmor, obim trčanja, uspešno dojenje i ostalo).

Rezultati sa diskusijom

Rezultat T testa pokazuje da ne postoji statistički značajna razlika u merenju nivoa prolaktina u krvi ($p=0,215$) između ispitanika. Visoka korelacija i statistički značajna razlika dobijena je između hormona prolaktina i telesne mase ($p=0,025$; $r=0,816$) kao i između prolaktina i proceta masnog tkiva ($p=0,008$; $r=0,888$) kod osobe koja je kontinuirano vežbala. Nepostojanje razlike između hormona prolaktina, kao i uspešna laktacija kod oba ispitanika, može se pripisati dobroj informisanosti o načinu dojenja, optimalnom režimom ishrane i pravilnim vežbanjem.

Zaključak

U ovoj studiji slučaja, kontinuirano vežbanje aerobnog tipa lakog do umerenog intenziteta nije imalo negativnog uticaja na lučenje hormona prolaktina u krvi tokom dojenja u periodu od šest meseci.

Ključne reči: prolaktin, vežbanje, dojenje

Literatura

1. Lovelady CA, Lonnerdal B, Dewey KG. Lactation performance of exercising women. Am J Clin Nutr. 1990 Jul;52(1):103-9.
2. McCrory MA, Nommsen-Rivers LA, Molé PA, Lonnerdal B, Dewey KG. Randomized trial of the shortterm effects of dieting compared with dieting plus aerobic exercise on lactation performance. Am J Clin Nutr. 1999 May;69(5):959-67.

THE INFLUENCE OF CONTINUOUS PHYSICAL EXERCISE OF THE AEROBICS TYPE UPON THE LEVEL OF PROLACTIN IN BLOOD DURING BREASTFEEDING

Ksenija Bubnjević^{1,2}; Lela Marić¹; Stevan Grujić¹; Đorđe Kozomara¹; Mile Randelović¹

¹ Military Medical Academy, Belgrade, Serbia

² Faculty of Sport and Physical Education, Belgrade, Serbia

Introduction

The World Health Organisation proposes only breastfeeding of a newborn baby during the first six months. The aim of the paper has been to research if the continuous exercise of the aerobics type has negative influence upon lactation, that is, upon the level of prolactin in blood.

Method

Two persons of a similar height, body weight, social status and education who gave birth in a natural way in the period of three weeks` difference have participated in the study. The first person (39 years old) did not practice during pregnancy and after giving birth, while the other person (33 years old) continued with light to medium intensity running exercise. Two weeks after giving birth, their weight was weighed, the level of fat as well as the level of prolactin in blood. Both women breastfed as the babies required it. At the end of each month the changes in the measured parametres were being followed: weight, the level of fat, the level of prolactin in blood, as well as other factors that could influence the lactation (the level of calories taken, rest, intensity of running, successful breastfeeding, etc).

Results with discussion

The result of the T test shows that there is no statistically significant difference between the measurement of the level of prolactin in blood ($p=0,125$) of the testees. High correlation factor and statistically significant difference have been obtained in the relation of prolactin hormone and weight ($p=0,025$; $r=0,816$) as well as in the relation of prolactin and the procentage of fat ($p=0,008$; $r=0,888$) in the person who exercised continually. The lack of difference between prolactin hormone as well as the successful breastfeeding of both women, can be attributed to their being well informed on breastfeeding, optimal nutrition and correct exercise.

Conclusion

In this case study, the continuous exercise of the aerobics type with light to medium intensity, has had no negative influence upon the production of prolactin hormone in blood during breastfeeding in the period of six months.

Key words: prolactin, exercise, breastfeeding

References:

1. Lovelady CA, Lonnerdal B, Dewey KG. Lactation performance of exercising women. *Am J Clin Nutr.* 1990 Jul;52(1):103-9.
2. McCrory MA, Nommsen-Rivers LA, Molé PA, Lonnerdal B, Dewey KG. Randomized trial of the shortterm effects of dieting compared with dieting plus aerobic exercise on lactationperformance. *Am J Clin Nutr.* 1999 May;69(5):959-67.

UTICAJ NIVOA FIZIČKE AKTIVNOSTI NA STEPEN UHRANJENOSTI ADOLESCENATA- SISTEMATSKO PREGLEDNO ISTRAŽIVANJE

Armin Paravlič¹; Rado Pišot¹, Marko Vidnjević¹; Stefan Đorđević²

¹Naučno istraživački centar, Institut za kineziološka istraživanja, Koper, Slovenija

²Fakultet sporta i fizičkog vaspitanja, Niš, Srbija

Uvod

Cilj studije bio je pregledom dosadašnje literature ispitati uticaj nivoa fizičke aktivnosti (NFA) na stepen uhranjenosti adolescenata.

Metod

Pregledom elektronskih baza podataka došlo se do istraživanja iz kojih su ekstrahovani podaci i zatim tabelarno predstavljeni na osnovu sledećih parametara: referenca, podaci o ispitanicima (broj uzorka, pol i uzrast); klasifikacija ispitanika po grupama; varijable (procena nivoa fizičke aktivnosti i uhranjenosti) i rezultati istraživanja.

Rezultati sa diskusijom

U studijama je učestvovalo 31.037 ispitanika oba pola, uzrasta od 11 do 21 godine. Rezultati pokazuju da manji NFA uzrokuje višak kilograma, odnosno dovodi do povećanja parametara telesne kompozicije i obrnuto. Upoređujući ukupan NFA, ukupno vreme provedeno u umereno intenzivnim fizičkim aktivnostima (MVPA) i ukupno vreme u aktivnostima visokog intenziteta (VPA) samo je VPA bio značajan prediktor procenta masnog tkiva ispitanika. Smanjenje aktivnosti od 10 MET-a na nedeljnom nivou povezano je sa povećanjem BMI kod devojčica za 0.14 i 0.09 kg/m². Povećanje aktivnosti za 1 sat na nedeljnom nivou za posledicu ima pad BMI za 0.13 kg/m². Svaki dodatni sat gledanja TV-a, značajno povećava vrednosti BMI i PBF za 0.42 kg/m² i 1.14% (p<0.001).

Zaključak

Nivo fizičke aktivnosti ima značajan uticaj na stepen uhranjenosti adolescenata. Odnos između NFA i stepena uhranjenosti je inverzan, što znači da su aktivniji adolescenti manje gojazni od neaktivnih i obrnuto. Pored NFA značajan uticaj na stepen uhranjenosti ima i sam karakter, odnosno intenzitet fizičkih aktivnosti koje se upražnjavaju. Takođe, za poboljšanje opšteg stanja organizma i kvaliteta života potrebno je promeniti i ostale životne navike poput ishrane, redovnog sna, smanjiti konzumaciju alkohola, cigareta i slično.

Ključne reči: fizička aktivnost, uhranjenost, telesna kompozicija, antropometrijske mere, adolescenti

Literatura

1. Larouche, R., Faulkner, G. E., Fortier, M., & Tremblay, M. S. (2014). Active transportation and adolescents' health: the Canadian Health Measures Survey. *American journal of preventive medicine*, 46(5), 507-515.
2. Grydeland, M., Bjelland, M., Anderssen, S. A., Klepp, K. I., Bergh, I. H., Andersen, L. F., ... & Lien, N. (2013). Effects of a 20-month cluster randomised controlled school-based intervention trial on BMI of school-aged boys and girls: the HEIA study. *British journal of sports medicine*, bjsports-2013.

THE IMPACT OF THE LEVEL OF PHYSICAL ACTIVITY ON THE BODY COMPOSITION PARAMETERS IN ADOLESCENTS- SYSTEMATIC REVIEW STUDY

Armin Paravlič¹; Rado Pišot¹; Marko Vidnjević¹; Stefan Dorđević²

¹Science and Research Centre, Institute for Kinesiology Research, University of Primorska, Koper, Slovenia

²Faculty of Sport and Physical Education, Niš, Serbia

Introduction

Aim of the study was to review published studies and investigate the effects of level of physical activity (LPA) on the body composition parameters in adolescents.

Method

A review of electronic databases led us to the research from which data were extracted and then presented in tables based on the following parameters: a reference, data about respondents (sample number, age and sex); Classification of participants in the group; Variables (assessed level of physical activity and nutrition) and research results.

Results with discussion

The studies were included 31,037 subjects of both sexes, aged 11 to 21 years. The results show that smaller LPA causes overweight or lead to an increase in the parameters of body composition and vice versa. Comparing the total LPA, the total time spent in a MVPA and total time in VPA, only a VPA was a significant predictor of PBF of respondents. Reducing the activity of 10 MET on the weekly level is associated with an increase in BMI in girls for 0.14 and 0.09 kg / m². Increasing activity for 1 hour on a weekly basis resulting in a decline in BMI of 0.13 kg/m². Each additional hour of TV viewing, significantly increases the value of BMI and PBF to 0.42 kg/m², and 1.14% (p <0.001).

Conclusion

The LPA has a significant impact on the BMI of adolescents. The relationship between LPA and nutritional state is inverse, which means that active adolescents were less overweight than inactive one and vice versa. In addition to the LPA a significant impact on the BMI has the character, or intensity of physical activity that are practiced. For .In addition, to improve the general condition of the body and quality of life it's necessary to change other habits such as diet, regular sleep, reduce the consumption of alcohol, tobacco, etc.

Key words: Physical activity, nutritional status, body composition, anthropometric measurements, adolescents

References

1. Larouche, R., Faulkner, G. E., Fortier, M., & Tremblay, M. S. (2014). Active transportation and adolescents' health: the Canadian Health Measures Survey. *American journal of preventive medicine*, 46(5), 507-515.
2. Grydeland, M., Bjelland, M., Anderssen, S. A., Klepp, K. I., Bergh, I. H., Andersen, L. F., ... & Lien, N. (2013). Effects of a 20-month cluster randomised controlled school-based intervention trial on BMI of school-aged boys and girls: the HEIA study. *British journal of sports medicine*, bjsports-2013.

ANALIZA TELESNOG STATUSA ODBOJKAŠICA UZRASTA OD 11 DO 14 GODINA

Dejan Ilić¹; Gligor Škripan¹; Danica Janićijević¹

¹Fakultet sporta i fizičkog vaspitanja, Beograd, Srbija

Uvod

Treba imati u vidu da postoje razlike u telesnom statusu dece koja se bave nekim sportom i dece koja se ne bave sportom, kao i da se u zavisnosti od vrste sporta kojom se bave javljaju različiti deformiteti odnosno problemi. U ovom radu je prikazan procenat devojčica koji se bave odbojkom, a koje imaju neki telesni deformitet, kao i procentualna zastupljenost detektovanih telesnih deformiteta.

Metode

Ovo je neeksperimentalno, kvantitativno istraživanje. Za potrebe pisanja ovog rada su pregledani kartoni sportskog lekara, koji je beležio detektovane telesne deformitete odbojkašica uzrasta od 11-14 godina. Informacije o ovim telesnim deformitetima su obrađene u programu Microsoft Excel 2010.

Rezultati sa diskusijom

Od 117 devojčica jedna trećina ima neki oblik deformiteta kičmenog stuba, dok 25% ima neki deformitet stopala. Izdubljene i ispupčene grudi nisu primećene ni kod jedne ispitanice, kao ni "O" noge. Primećeno je samo nekoliko slučajeva „H nogu“. Budući da mnogo različitih faktora sadejstvuju, ne možemo sa sigurnošću utvrditi tačan uzrok pojave datih deformiteta. Povećana telesna težina je svakako uticala na spuštenost svodova stopala.

Zaključak

Iako je odbojka sport koji se često preporučuje sa ciljem prevencije telesnih deformiteta, rezultati koji ukazuju da preko 50% ispitanica ima neki telesni deformitet su poražavajući. Poražavajući su najviše zbog toga što se ovde radi o fizički aktivnoj populaciji, koja se nalazi u periodu intenzivnog razvoja.

Ključne reči: telesni status, odbojka, deformiteti kičmenog stuba, deformiteti stopala

Literatura

1. Radisavljević, M. (2001). Korektivna gimnastika sa osnova kineziterapije. Beograd: Viša škola za sportske trenere.

POSTURAL STATUS ANALYSIS OF FEMALE VOLLEYBALL PLAYERS 11-14 AGE

Dejan Ilić¹; Gligor Škripan¹; Danica Janićijević¹

¹Faculty of sports and physical education, University of Belgrade, Serbia

Introduction

There are differences in postural status between children who are training some sport and the other ones who are not. Also, there are differences between active children who are training different sports. In this paper you will see the percentage of female volleyball players who have some postural deformity, and which postural deformities are most common.

Method

This is non-experimental, quantitative research. The medical records of female volleyball players age 11-14, from the sports physician has been reviewed for this research. Collected information are processed in Microsoft Excel 2010.

Results with discussion

Of total number of female volleyball players (117) one third have some deformity of spine, and 25% have some foot deformity. Sternum deformities and also X position of legs have not been noticed. We can't be sure what is the main factor who contributed to such a bad postural status of these girls. Obesity have bad influence on foot status, for sure.

Conclusion

Even though the volleyball is sport which is well-known as a sport for preventing bad posture, results shows that 50% of girls have some postural disorders, and that is very bad statistics. This results are very disturbing because we are talking about girls who are active and who are also in a period of intensive growth.

Key words: postural status, volleyball, deformities of the spine, foot deformities

References

1. Radisavljević, M. (2001). Korektivna gimnastika sa osnovama kineziterapije. Beograd: Viša škola za sportske trenere.

ŽIVOTNE NAVIKE, MORFOLOŠKI I MOTORIČKI RAZVOJ UČENIKA VOJNE GIMNAZIJE, TOKOM ČETVOROGODIŠNJEG ŠKOLOVANJA

Boris Glavač¹; Marina Djordjević Nikić²; Miloš Maksimović³; Dragan Strelčić¹; Saša Vajić¹

¹Vojna akademija, Univerzitet odbrane, Beograd, Srbija¹

²Fakultet sporta i fizičkog vaspitanja, Univerzitet u Beogradu, Srbija²

³Medicinski fakultet, Univerzitet u Beogradu, Srbija³

Uvod

Cilj ovog rada je da utvrde životne navike i kompariraju morfološke i motoričke karakteristike jedne generacije učenika Vojne gimnazije, tokom četvorogodišnjeg školovanja.

Metod

Morfološki podaci o učenicima (N 51), uzrasta 16 do 19 godina, dobijeni su na osnovu merenja aparatom InBody 720, visinomerom SECA i fleksibilnom trakom. Podaci o motoričkim sposobnostima dobijeni su na osnovu testova snage i izdržljivosti. Podaci o životnim navikama su dobijeni na osnovu ankete. Definisane su motoričke, morfološke i varijable iz oblasti životnih navika. U statističkoj analizi upotrebljena je deskriptivna statistika i ANOVA sa ponovljenim merenjem.

Rezultati i diskusija

Visina i masa tela učenika, od 16. do 18. godine, iznosila je od $178,56 \pm 6,27$ cm do $180,67 \pm 6,71$ cm i $68,91 \pm 9,49$ kg do $74,60 \pm 8,66$ kg. Mišićna masa je u istom periodu iznosila, od $34,31 \pm 3,88$ kg do $37,67 \pm 3,84$ kg, a procentualni iznos masti od $11,39 \pm 5,06$ % do $11,28 \pm 5,10$ %. Učenici su u 16. godini uradili $7,88 \pm 4,54$ zgibova, a 18. godini $11,36 \pm 4,17$ zgibova. Tokom školovanja od četiri godine verifikovano je povećavanje morfoloških i motoričkih karakteristika.

Zaključak

Očigledno, da je u toku četvorogodišnjeg školovanja došlo do akceleracije morfoloških i motoričkih karakteristika kod učenika. Pretpostavka je da su u okviru biološkog potencijala adolescenata, organizacioni uslovi internatskog načina života, odnosno životne navike, kao i nastavni proces u okviru časova fizičkog vaspitanja, uticali na promenu dimenzija tela u pozitivnom smeru, kao i na poboljšavanje motoričkih sposobnosti.

Cljučne reči: Učenici, Vojna gimnazija, motoričke sposobnosti, morfološke karakteristike

Literatura

1. Glavač, B., Dopsaj, M., Djordjević-Nikić, M., Maksimović, M., Marinković, & M., Nedeljković, J. (2015). Changing body structure components and motor skills in Military High School students within one year. *Vojnosanitetski pregled*, 72(8), 677–82.
2. Djordjević-Nikić, M., Dopsaj, M., & Vesković, A. (2013). Nutritional and physical activity behaviours and habits in adolescent. *Vojnosanitetski pregled*, 70(6), 548–54.

LIFESTYLE HABITS, DEVELOPMENT OF MORPHOLOGICAL CHARACTERISTICS AND MOTOR ABILITIES IN THE MILITARY HIGH SCHOOL STUDENTS DURING FOUR YEARS OF STUDY

Boris Glavač¹; Marina Djordjević Nikić²; Miloš Maksimović³; Dragan Strelčić¹; Saša Vajić¹

¹Military Academy, University of Defense, Belgrade, Serbia ¹

²Faculty of Sport and Physical Education, University of Belgrade, Serbia ²

³School of Medicine, University of Belgrade, Serbia ³

Introduction

The purpose of this study is to determine the lifestyle habits and compare morphological characteristics and motor abilities of a generation of students of the Military High School, during the period of four years.

Method

Measurement data relating to morphological characteristics of students (N 51), aged 16 to 19, were obtained using InBody 720, altimeter SECA and flexible tape. Data on motor abilities were obtained from the muscular strength and endurance tests. Data on lifestyle habits were obtained from the survey. Motor, morphological and lifestyle variables have been defined. The statistical analysis used descriptive method and ANOVA with repeated measurements.

Results with discussion

Height and body mass of students, aged 16 to 18, was from 178.56 ± 6.27 cm to 180.67 ± 6.71 cm and 68.91 ± 9.49 kg to 74.60 ± 8.66 kg. Muscle mass in the same period was from 34.31 ± 3.88 kg to 37.67 ± 3.84 kg, and the percentage of the fat was from $11.39 \pm 5.06\%$ to $11.28 \pm 5.10\%$. At the age of 16, students did 7.88 ± 4.54 pull-ups, and at the age of 18, 11.36 ± 4.17 pull-ups. During four years of study, the increase in morphological characteristics and motor abilities was verified.

Conclusion

It is obvious that during four years of study, there was acceleration of morphological characteristics and motor abilities in students. The assumption is that, in the framework of the biological potential of adolescents, boarding lifestyle, as well as the learning process within the classes of physical education, influenced on the positive change in the size of the body, as well as the improvement of motor skills.

Key words: students, Military High School, motor abilities, morphological characteristics

References

1. Glavač, B., Dopsaj, M., Djordjević-Nikić, M., Maksimović, M., Marinković, & M., Nedeljković, J. (2015). Changing body structure components and motor skills in Military High School students within one year. *Vojnosanitetski pregled*, 72(8), 677–82.
2. Đordjević-Nikić, M., Dopsaj, M., & Vesković, A. (2013). Nutritional and physical activity behaviours and habits in adolescent. *Vojnosanitetski pregled*, 70(6), 548–54.

PLANTAR PRESSURES IN SIMULATED TENNIS MOVEMENTS AT DIFFERENT SURFACES

Mourtzios Christos¹; Athanailidis Ioannis²; Kellis Eleftherios¹

¹Aristotle university of Thessaloniki. Greece

²Democritus university of Thrace. Greece

Introduction

Analysis of plantar pressures during sport movement performance can provide significant information to athletes and coaches regarding sport performance and plantar loads. Tennis is a sport that is played in different surfaces. Therefore, the terrain is a critical factor that determines both the bounce of the ball, and how the player moves on the court.

Method

The purpose of this study was to examine the plantar pressure in two different surfaces of tennis courts (green set - synthetic grass) when performing a sequence of two basic tennis movements, service and return in combination with forehand and backhand strokes.

Results with discussion

The results showed that vertical ground reaction force in fast surface was higher in both movements, Girard, Ficher, Fourchet, Micalef & Millet 2007. Further, a higher pressure was recorded in toes region for all strokes. For right-handed athletes, when performing the tennis serve, the higher loadings were recorded in the right foot area, while during the return movement the left foot displayed higher vertical ground reaction forces whilst the right foot displayed higher plantar pressure values. During the tennis serve, the time to maximum loadings was recorded in the right third and in the left fourth metatarsal area on the contrary of what support Eckl et al 2011.

Conclusion

That finding could help to improve the performance of tennis athlete's and the choice of surface with lower pressures.

Key words: Plantar pressures, tennis movements, different surfaces.

References

1. Girard, Ficher, Fourchet, Micalef & Millet 2007. Effect of the playing surface on plantar pressures and potential injuries in tennis. *British journal of sports medicine*, 41(11), 2007
2. Eckl, M., Kornfeid, Ph., Baca, A. 2011. A comparison of plantar pressures between two different playing surfaces in Tennis. *International conferences in biomechanics sports*. koeln. Germany. 2011.

POSTER SESIJA/ POSTER SESSION

DODACI ISHRANI U PREVENCIJI I LEČENJU MIŠIĆNE ATROFIJE

Saša Semeredi¹, Valdemar Štajer¹, Tatjana Jezdimirović^{1,2}, Sergej Ostojić^{1,3}

¹ Fakultet sporta i fizičkog vaspitanja, Univerzitet u Novom Sadu, Novi Sad

² Fakultet za sport i turizam, EDUCONS Univerzitet, Novi Sad

³ Medicinski fakultet Univerziteta u Beogradu, Beograd

Uvod

Mišićna atrofija se definiše kao gubitak mase skeletnih mišića usled smanjenja njihove veličine i obima. Ovaj proces je najčešće posledica starenja, kardio-metaboličkih oboljenja, i/ili nedostatka fizičke aktivnosti uzrokovane povredama koje zahtevaju duži period mirovanja (Bowen, Schuler, i Adams, 2015). Nekoliko mera se može preduzeti u cilju sprečavanja ili usporavanja gubitka mišićne mase, a trening sa opterećenjem je prepoznat kao efikasan način da se poveća i sačuva obim mišića (Drescher, Konishi, Ebner, i Springer, 2015).

Metod

Izvršili smo pregled naučne literature i prikupili smo dosadašnja saznanja o efektima različitih dijetetskih suplemenata koji se koriste u prevenciji i tretiranju mišićne atrofije.

Rezultati sa diskusijom

Proteini surutke, leucin, beta-hidroksi-beta-metilbutirat, kreatin-monohidrat i testosteron se često koriste u prevenciji i tretiranju mišićne atrofije. Dijetetski suplementi mogu biti od koristi u procesu povećanja i očuvanja mišićne mase, a nekoliko dodataka ishrani pokazalo je pozitivne efekte kada su korišteni zasebno ili u kombinaciji sa vežbanjem.

Zaključak

Nekoliko dijetetskih suplemenata pokazalo je pozitivne efekte u prevenciji i tretiranju mišićne atrofije.

Ključne reči: Mišićna masa, Sarkopenija, Ishrana, Proteini surutke, Leucin

Literatura

1. Bowen, T. S., Schuler, G., i Adams, V. (2015). Skeletal muscle wasting in cachexia and sarcopenia: molecular pathophysiology and impact of exercise training. *J Cachexia Sarcopenia Muscle*, 6, 197–207.
2. Drescher, C., Konishi, M., Ebner, N., i Springer, J. (2015). Loss of muscle mass: Current developments in cachexia and sarcopenia focused on biomarkers and treatment. *Int J Cardiol*, 202, 766-772.

DIETARY AGENTS IN THE MANAGEMENT OF MUSCLE WASTING

Saša Semeredi¹; Valdemar Štajer¹; Tatjana Jezdimirović^{1,2}; Sergej Ostojić^{1,3}

¹ Faculty of Sport and Physical Education, University of Novi Sad, Novi Sad, Serbia

² Faculty of Sport and Tourism, EDUCONS University, Novi Sad, Serbia

³ University of Belgrade School of Medicine, Belgrade

Introduction

Muscle wasting or muscle atrophy is usually defined as a decrease in the skeletal muscle size and volume. This process is usually triggered by aging, cardiometabolic diseases, and/or lack of physical activity resulting from an injury or trauma which requires prolonged rest (Bowen, Schuler, & Adams, 2015). Several measures to counteract muscle wasting are available, with resistance exercise and diet recognized as efficient ways to recover or preserve muscle volume (Drescher, Konishi, Ebner, & Springer, 2015).

Methods

We reviewed the scientific literature and summarized the current state of knowledge regarding the effectiveness of different dietary agents in the management of muscle wasting.

Results with discussion

Whey protein, leucine, beta-hydroxy-beta-methylbutyrate, creatine monohydrate and testosterone were frequently used for muscle wasting prevention and treatment. Dietary supplements might help in muscle wasting management, when used solely or co-administered with exercise.

Conclusion

Several dietary agents demonstrated beneficial effects for muscle wasting.

Keywords: Muscle mass, Sarcopenia, Nutrition, Whey protein, Leucine

References

1. Bowen, T. S., Schuler, G., & Adams, V. (2015). Skeletal muscle wasting in cachexia and sarcopenia: molecular pathophysiology and impact of exercise training. *J Cachexia Sarcopenia Muscle*, 6, 197–207.
2. Drescher, C., Konishi, M., Ebner, N., & Springer, J. (2015). Loss of muscle mass: Current developments in cachexia and sarcopenia focused on biomarkers and treatment. *Int J Cardiol*, 202, 766-772.

AUTONOMNI NERVNI SISTEM I GOJAZNOST: AKTUELNA STANOVIŠTA

Tatjana Jezdimirović^{1,2}; Saša Semeredi²; Valdemar Štajer²; Sergej Ostojic²

¹Fakultet za sport i turizam, EDUCONS Univerzitet, Sremska Kamenica, Srbija

²Fakultet sporta i fizičkog vaspitanja, Univerzitet u Novom Sadu, Novi Sad

³ Medicinski fakultet Univerziteta u Beogradu, Beogra

Uvod

Autonomni nervni sistem (ANS) je deo nervnog sistema koji kontroliše nevoljne aktivnosti, kao što su srčana frekvencija, mišićna kontraktilnost ili disanje (Vrijkotte et al., 2015; Rossi et al., 2015).

Metode

Načinjen je pregled aktuelne literature i sumirane trenutne činjenice o povezanosti pojedinih indikatora ANS povezanih sa vežbanjem i parametera telesne strukture.

Rezultati i diskusija

Stepen delovanja ANS je povezan sa trenutnim nivoom stresa. Odgovori ANS na spoljašnji stres (kao što su vežbe) su veoma složeni, pa tako intenzitet, obima i/ili vrsta vežbi mogu igrati važnu ulogu u tom odgovoru. S druge strane, višak telesne masti je povezan sa izmenjenom autonomnom funkcijom pa se čini da su odgovori ANS izazvani vežbanjem kod gojaznih osoba pogoršani, odnosno i parasimpatičke i simpatičke aktivnosti smanjene kod gojazne dece i odraslih. Monitoring specifičnih odgovora ANS tokom i posle vežbanja kod gojazne i ne gojazne populacije bi unapredio prognostički alat primenljiv i u kliničkoj i u sportskoj praksi.

Zaključak

Utvrđena je snažna veza između odgovora ANS, gojaznosti i vežbanja u fiziološkim i patofiziološkim uslovima.

Ključne reči: Autonomni nervni sistem, Gojaznost, Vežbanje, Varijabilnost srčane frekvence, Oporavak

Literatura

1. Rossi, R. C., Vanderlei, L. C. M., Gonçalves, A. C. C. R., Vanderlei, F. M., Bernardo, A. F. B., Yamada, K. M. H., ... de Abreu, L. C. (2015). Impact of obesity on autonomic modulation, heart rate and blood pressure in obese young people. *Autonomic Neuroscience*, (October). <http://doi.org/10.1016/j.autneu.2015.07.424>
2. Vrijkotte, T. G. M., van den Born, B.-J. H., Hoekstra, C. M. C. A., Gademan, M. G. J., van Eijsden, M., de Rooij, S. R., & Twickler, M. T. B. (2015). Cardiac Autonomic Nervous System Activation and Metabolic Profile in Young Children: The ABCD Study. *Plos One*, 10(9), e0138302. <http://doi.org/10.1371/journal.pone.0138302>

AUTONOMIC NERVOUS SYSTEM AND OBESITY: A NEW PERSPECTIVE

Tatjana Jezdimirović^{1,2}; Saša Semeredi²; Valdemar Štajer²; Sergej Ostojic^{2,3}

¹ Faculty of Sport and Tourism, EDUCONS University, Sremska Kamenica, Serbia

² Faculty of Sport and Physical Education, University of Novi Sad, Novi Sad, Serbia

³ University of Belgrade School of Medicine, Belgrade

Introduction

The autonomic nervous system (ANS) is the part of the nervous system that controls involuntary actions, including heart rate, muscle contractility or breathing (Vrijkotte et al., 2015; Rossi et al., 2015).

Methods

We reviewed the scientific literature and summarized the current state of correlation between exercise-related specific ANS outcomes and body composition indices in adults.

Results with discussion

The extent of activity of ANS is associated with the actual stress level. ANS responses to external stress (such as exercise) are rather complex, with intensity, volume and-or type of exercise might play a role. On the other hand, excess body fat is associated with altered autonomic function and it seems that exercise-induced responses of ANS in obese people are impaired, with both parasympathetic and sympathetic activity reduced in obese children and adults. Monitoring specific ANS responses during and after exercise in obese and non-obese population might advance a prognostic tool applicable in both clinical and athletic environment.

Conclusion

Strong connection has been found between ANS responses, obesity and exercise in physiological and pathophysiological conditions.

Keywords: Autonomic nervous system, Obesity, Exercise, Heart rate variability, Recovery

References

1. Rossi, R. C., Vanderlei, L. C. M., Gonçalves, A. C. C. R., Vanderlei, F. M., Bernardo, A. F. B., Yamada, K. M. H., ... de Abreu, L. C. (2015). Impact of obesity on autonomic modulation, heart rate and blood pressure in obese young people. *Autonomic Neuroscience*, (October). <http://doi.org/10.1016/j.autneu.2015.07.424>
2. Vrijkotte, T. G. M., van den Born, B.-J. H., Hoekstra, C. M. C. A., Gademan, M. G. J., van Eijsden, M., de Rooij, S. R., & Twickler, M. T. B. (2015). Cardiac Autonomic Nervous System Activation and Metabolic Profile in Young Children: The ABCD Study. *Plos One*, 10(9), e0138302. <http://doi.org/10.1371/journal.pone.0138302>

BIOMECHANICAL PARAMETERS OF TOP EUROPEAN T11 TRIPLE JUMPERS

*Vassilios Panoutsakopoulos¹; Apostolos S. Theodorou²; Mariana C. Kotzamanidou³,
Marko Aleksandrović⁴; Emmanouil Skordilis²; Iraklis A. Kollias¹*

¹Department of Physical Education & Sports Science, Aristotle University of Thessaloniki, Thessaloniki, Greece.

²School of Physical Education & Sports Science, National & Kapodistrial University of Athens, Athens, Greece.

³Faculty of Health & Human Sciences, Akmi Metropolitan College, Thessaloniki, Greece.

⁴Faculty of Sport and Physical Education, University of Niš, Niš, Republic of Serbia.

Introduction

Scarce evidence exists in the literature concerning triple jump technique and performance for athletes with visual impairment. The purpose of the present study was to indicate the biomechanical parameters associated with performance in class F11 triple jumping.

Method

Thirteen legal attempts executed by the three participants of the 2009 International Blind Sports Association European Championships T11 triple jump final were recorded with a stationary (sampling frequency: 300 fps) and a panning video camera (sampling frequency: 50 fps). Kinematical parameters were extracted with panning and 2D-DLT kinematical analysis methods. Correlation analysis was utilized in order to examine the relationship between the extracted biomechanical parameters and triple jump performance ($p < .05$).

Results with discussion

Triple jump official distance ranged between 10.70–12.76m ($12.08\text{m} \pm 0.59$, mean \pm standard deviation). An even distribution between the hop ($36.1\% \pm 1.9$) and the jump ($36.7\% \pm 3.5$) was revealed for the examined T11 jumpers. However, the best attempt was accomplished with a jump dominated technique ($36.0\% \pm 1.4$, $25.1\% \pm 1.9$ and $38.9\% \pm 1.7$ for the hop, step and jump, respectively). Velocity was decreased by $26.6\% \pm 6.4$ at the instant of take-off for the jump compared to the take-off for the hop. Jumping distance was negatively correlated with average approach velocity at the last three strides ($r = -0.65$) and the percentage distribution of the hop distance ($r = -0.78$).

Conclusion

Results indicated that top European T11 triple jump performance was correlated with a controlled approach velocity and a restrained hop distance. The execution of the step with a block landing was not favorable for maintaining horizontal speed and thus for maximizing jumping distance. Additional research is needed in order to establish the prediction of triple jump performance by the biomechanical parameters endorsed by athletes with blindness.

Keywords: visual impairment, blindness, triple jump biomechanics.

References

1. Panoutsakopoulos V., & Kollias I. (2008). Essential parameters in female triple jump technique. *New Studies in Athletics*, 23(4), 53-61.
2. Theodorou, A., & Skordilis, E. (2012). Evaluating the approach run of class F11 visually impaired athletes in triple and long jumps. *Perceptual and Motor Skills*, 114(2), 595-609.

STUDY THE EFFECT OF COORDINATION EXERCISES ON SPEED DEVELOPMENT OF FOOTBALL PLAYER U17

Hristyana Guteva¹; Plamen Nyagin¹; Iva Dimova¹

¹National Sports Academy 'Vassil Levski', Department "Track & Field", Sofia, Bulgaria

Introduction

Working with adolescents football players (U17) in the stage of specialized training process is essential to their future development as professional football players. On one had activities with youngsters must be attractive, but on the other hand they should develop their complex physical abilities as a precondition for future sport realization.

Method

The aim of the following study is to optimize training session with adolescents' football players (U17) by improving the effect of training sessions using a set of various coordination exercises. A pedagogical experiment was carried for establish the effect of this training model including 20 football players (U17) from PFC Levski Sofia and 20 players U17 from PFC Lokomotiv. In the beginning of the season both groups (one training using commonly used methodology and the other one using experimental methodology) were tested using special set of tests, revealing coordination abilities. After the end of the first training cycle were applied 5 more test to both groups. (Replace this with your text. Clearly describe the method used to conduct the experiment, including the statistical procedures, equipment specifications, etc.) - Times New Roman 11 pt, normal

Results with discussion

Both experimental and control groups showed equal levels in the beginning of the experiment. Using Students T-test we confirmed that increment in all results is statistically significant in both groups. The experimental group, using experimental training model, showed better results characterizing different form of speed and coordination compared to the first group using commonly used model.

Conclusion

Based on our experiment we found that training model using a set of coordination exercises have positive effect on speed development on adolescent football players (U17). Also from the results, we can conclude that priority use of coordination exercises effects positively all specific abilities linked to speed as start, start acceleration, running speed and maximal speed.

Key words: football players, U17, coordination exercises

References

1. Алиев, А., А. Гигов, П. Нягин, В. Гигова – Нормативи за оценка на скоростните възможности на 16-19 годишни футболисти от Р. Азербайджан, Сп. „Спорт и Наука“, 2010, бр. 6.
2. Гутев, Г., Дисертация, НСА, 2015.

MODELLING 110 M HURDLE STRIDE BASED ON SPORT RESULT FACTORS (JUNIOR AGE GROUP)

*Grigor Gutev*¹

¹National Sports Academy ‘Vassil Levski’, Department ‘Track & Field’, Sofia, Bulgaria

Introduction

The discipline 110 m hurdle for juniors (age U20) consists of clearing 10 barriers (height 100 cm) using specific technique – hurdle stride. Hurdle stride is similar to running stride but have its differences. The main idea of the following study is based on sport result complex factors (theory of M. Buchvarov): start acceleration, running with maximum speed and specific (hurdle) endurance.

Method

The aim of the following study is to reveal the influence of sport result complex factors on hurdle clearance technique, help modelling, and control sport result of junior athletes (U20). We analyze hurdle stride on 1st, 3rd and 9th hurdle of 21 hurdlers (94 cases) from Bulgaria during competitions registering in total 37 indexes using high speed camera (120 fps) and Kinovea 0.8.15 software. We trace the influence of all indexes (on different hurdles) to sport result.

Results with discussion

Respondents sport results varies between 13,98-18,96 sec. (avr. 16,06 sec.) – different qualification. We trace all indexes during competitions using correlation and variation analysis. A number of indexes with high influence on hurdle clearance technique are selected for control. Based on these results we created regression models of selected indexes valid from start acceleration and running with maximum speed (12 of 36 indexes correlate with the result), specific (hurdle) endurance (19 of 36 indexes correlate with result). Most indexes are presenting time (20), angular (14), metric (4) and speed (8).

Conclusion

The following study reveals hurdle stride kinematic structure changes under the influence of sport result main factors in the age group juniors. Through the establishment of stable factors (for certain part of the race distance) valid for all respondents, we developed a system for control using regression models. We found a number of kinematic parameters applicable to athletes in this age group and level of qualification.

Key words: hurdle stride, modelling, juniors

References 1. Карапетрова, Р., Дисертация – Моделиране на физическата подготовка на елитни лекоатлетки-копиехвърлячки, НСА, 2011.
2. Лазаров, И., Дисертация - Антропометрични модели на състезатели в бягането на средни разстояния, НСА, 2014.

QUANTITATIVE-QUALITATIVE EVALUATION OF SHOT PUT THROWERS SPORT AND TECHNICAL ABILITIES

Rumiana Karapetrova¹

¹National Sports Academy 'Vassil Levski', Department "Track & Field", Sofia, Bulgaria

Introduction

Shot put discipline is characterized by the speed-strength abilities of throwers. The huge strength potential will not give expected results if it is not combined with extraordinary speed-strength abilities combined by all physical abilities and coordination.

Method

The aim of the following study is to improve shot put throwers training process by quantitative-qualitative assessment of speed-strength abilities. Object of the study are shot put throwers physical abilities using indexes presenting the level of physical development of Bulgarian best shot put throwers. Subject of the study are 10 Bulgarian shot put throwers with personal results between 18,52 and 21,09 meters. We traced changes in 12 indexes – all revealing sport-technical and physical abilities. They are part of the training process and are used for control and development of physical abilities.

Results with discussion

We observe high level sample based on sport result – average value of the sport result is 19,44 m, and result ranges from 16,28 to 21,09 m (range is 4,81 m. In practice, this concerns the period from entering level of sport mastery to world elite level. All indexes are of great importance to the sport result based on correlation (r ranges from 0,64 to 0,93) and also correlate between themselves (r varies between 0,41 and 0,97) – all indexes are similar in form, content or rhythmic structure. We present qualitative-quantitative assessment of shot put throwers physical development based on Signal method – using a 7 level scale.

Conclusion

The following study gave valuable information to both sport pedagogues and shot put throwers revealing the importance of studied indexes and presenting a way for control of speed-strength abilities of shot put throwers. Setting the conditions of each thrower with Bulgarian best shot put throwers every specialist can find a way to correct speed-strength abilities development when it is needed.

Key words: shot put, modelling, speed-strength development, sport-technical abilities

References

1. Stoykov, S. (2007). The motor potential of Bulgarian throwers. Sofia: NSA.
2. Лазаров, И., Дисертация - Антропометрични модели на състезатели в бягането на средни разстояния, НСА, 2014.

ZAŠTO, GDE, ŠTA I KAKO PROCENITI MOTORIČKU OSPOSOBLJENOST POJEDINACA U ADAPTIVNOM FIZIČKOM OBRAZOVANJU?

Miloš Popović¹; Ivana Đorđević²; Ružena Popović³; Jadranka Kocić¹

1 Fakultet sporta i fizičkog vaspitanja, Univerziteta u Prištini (Kos. Mitrovica), Leposavić, Kosovo, Srbija¹ (PhD student)*

2 Fakultet fizičke kulture, Univerzitet Palackog, Olomouc, Češka Republika² (PhD student)*

3 Fakultet sporta i fizičkog vaspitanja, Univerzitet u Nisu, Srbija³

Uvod

U ovom delu autori daju kratki prikaz procene u Adaptivnom fizičkom vaspitanju (APE) kroz istoriju. Zakon građanskog prava 94-142, Obrazovanje za svu decu ometenu u razvoju (IDEA - 1975), je bio prvi zakonski utemeljen akt u istoriji obrazovanja u SAD koji je omogućio da sva deca sa invaliditetom, uzrasta od 3-21, imaju pravo na besplatno, odgovarajuće obrazovanje. Zakon se menjao mnogo puta, ali jedan od osnovnih aspekata zakona je koncept da samo deca sa posebnim vrstama invaliditeta mogu da se kvalifikuju za usluge specijalnog obrazovanja.

Metod

Trenutno postoji 13 zakonom priznatih invaliditeta, među njima su: autizam, gluvonemost, slepilo, oštećenje sluha, mentalna retardacija, višestruki invaliditet, ortopedska oštećenja, ostala oštećenja zdravlja, ozbiljan emocionalni poremećaj, specifične poteškoće u učenju, oštećenja govora ili jezika, traumatske povrede mozga, oštećenje vida, uključujući i slepilo. Inkluzija ima mnogo značenja, ali obično je povezana sa kvalitetom života u najmanje restriktivnom okruženju (NRO) i socijalnim kompetencijama. Ovo je uzajamno povezano sa stavovima pojedinaca sa i bez invaliditeta. Inkluzija je rukovođena na temelju principa vrednovanja različitosti. Pripadnost, prihvatanje, i osećaj podstreka su osnove inkluzivnog okruženja.

Rezultati sa diskusijom

Najzastupljenije prepreke za uključivanje učenika sa smetnjama u razvoju se odnose na pripremu i stavove nastavnika, kao i uočene i stvarne prepreke u nastavnom procesu koje uključuju opremu, planiranje, programiranje i vreme. Inkluzija je prouzrokovana mnogim faktorima: unutrašnjim i spoljnim, kontrolisanim i nekontrolisanim, kao i aktivnim i pasivnim. Ljudi svih uzrasta, vrste invaliditeta, kao i iskustva pokazuju individualne razlike u načinima kako reaguju, kada doživljavaju vrlo slične situacije u kretnim obrascima i ponašanju. Stvaranjem okruženja za fizičke aktivnosti koje poštuju različitost i podstiču napredak pojedinca su najbolji pristupi dizajniranju uspešnog uključivanja. Inkluzivno okruženje je ono koje pruža svim pojedincima podjednako zanimljive zadatke, jednako važne, podjednako privlačne za uključivanje. Inkluzivno okruženje se sastoji od fizičkog prostora i opreme, socijalno-emocionalne atmosfere i nastavnih strategija i metoda koje se primenjuju.

Zaključak

Fizički prostor treba da bude bez barijera i da uključuje različite vrste opreme koja se odnosi na nastavu/aktivnosti. Socijalno-emocionalna atmosfera treba da bude oslobođena stresa, podstičući više saradnju, nego favorizovanje najsposobnijih, najbržih, ili najjačih. Nastavne strategije treba da uključuju tehnike koje promovišu saradnju između instruktora i učenika, da odgovaraju različitim stilovima učenja, promovišu ličnu odgovornost, pružaju mogućnosti za samostalno učenje i koriste razna, neformalna sredstva procene za izvođenje nastave.

Ključne reči: Motorička osposobljenost, Testovi, Vrednovanje, Inkluzija, APE

Literatura

1. Popovic, D. M. (2011). *Motor Development of Children with Intellectual Disabilities* (unpublished master thesis), Faculty of Physical Culture, Palacký University, Olomouc, Czech Republic
2. Samuilidu, A. E. (2004). *Stimulacija motornog razvoja učenika sa mentalnom retardacijom*. Beograd: Zadužbina Andrejević, TODRA.

WHY, WHERE, WHAT AND HOW TO ASSESS MOTOR COMPETENCE OF INDIVIDUALS IN ADAPTED PHYSICAL EDUCATION?

Miloš Popović¹; Ivana Đorđević²; Ružena Popović³; Jadranka Kocić¹

1 Faculty of Sport and Physical Education, University of Pristine (Kos. Mitrovica), Leposavić, Kosovo, Serbia¹ (PhD student)*

2 Faculty of Physical Culture, Palacký University, Olomouc, Czech Republic² (PhD student)*

3 Faculty of Sport and Physical Education, University of Nis, Serbia³

Introduction

In this part authors give some introduction through the history of assessment in Adapted Physical Education (APE). Public Law 94-142, the Education for All Handicapped Children Act (IDEA - 1975), was the grounding law that for the first time in the history of education in the USA provided all children aged 3- 21 with disabilities the right to a free, appropriate education. The Law has been changed many times but one of the fundamental aspects of that legislation is the concept that only children with specific types of disabilities can qualify for special education services.

Method

There is currently 13 legally recognized disabilities among them are: autism, deaf-blindness, hearing impairment, mental retardation, multiple disabilities, orthopedic impairment, other health impairment, serious emotional disturbance, specific learning disability, speech or language impairment, traumatic brain injury, visual impairment, including blindness. Inclusion has many meanings, but typically it is linked to quality of life in the least restrictive environment (LRE) and social competence. This in turn is linked with attitudes of individuals with and without disabilities. Inclusion is guided by the fundamental principle of valuing diversity. Belonging, acceptance, and a sense of being supported are essentials of an inclusive environment.

Results with discussion

The most prevalent barriers to including students with disabilities are related to teacher preparation and teacher attitudes, as well as perceived and actual barriers to instruction that can include equipment, programming, and time. Inclusion is mediated by many factors: internal and external, controlled and uncontrolled, ad active and passive. People of all ages, types of disabilities, and experiences demonstrate individual differences in the ways they respond when experiencing very similar situations in movement settings. Creating physical activity environments that respect diversity encourages individual's improvement are the best approaches to the design of successful inclusion. Inclusive environment is one that offers all individuals tasks that are equally interesting, equally important, and equally engaging. Inclusive environment is made up of the physical space and equipment, the social-emotional atmosphere, and the teaching strategies that are used.

Conclusion

The physical space should be barrier free and include a variety of equipment related to the lesson/activity. The social-emotional atmosphere should be free of stress, emphasizing cooperation rather than survival of the fittest, fastest, or strongest. Teaching strategies should incorporate techniques that promote collaboration between instructor and learners, respond to different learning styles, promote self-responsibility, provide opportunities for independent learning, and use a variety of informal assessment tools to guide instruction.

Key words: Motor competence, Physical Fitness tests, Evaluation, Inclusion, APE

References

1. Popovic, D. M. (2011). *Motor Development of Children with Intellectual Disabilities* (unpublished master thesis), Faculty of Physical Culture, Palacký University, Olomouc, Czech Republic
2. Samuilidu, A. E. (2004). *Stimulacija motornog razvoja učenika sa mentalnom retardacijom*. Beograd: Zadužbina Andrejević, TODRA.

EFEKTI RAZLIČITIH PROGRAMA IZ FIZIČKOG VASPITANJA NA MOTORIČKE SPOSOBNOSTI UČENIKA ZAVRŠNOG RAZREDA OSNOVNE ŠKOLE

Milovan Ljubojević¹; Jovan Gardašević¹; Rajko Milašinović¹; Ivan Vasiljević¹; Danilo Bojanić¹; Aldijana Muratović¹; Marija Bujanja¹

¹ Univerzitet Crne Gore, Fakultet za sport i fizičko vaspitanje Nikšić, Crna Gora

Uvod

Rezultati mnogih istraživanja u oblasti fizičkog vaspitanja ukazuju da nastava fizičkog vaspitanja nije na odgovarajućem i zadovoljavajućem nivou. Nastavna praksa više je usmjerena ka usavršavanju sportsko-tehničkih elemenata a manje ka razvoju motoričkih i funkcionalnih sposobnosti učenika.

Metod

Cilj istraživanja je bio da se utvrde efekti standardnog i eksperimentalnog programa nastave na motoričke sposobnosti. Istraživanje je trajalo jednu školsku godinu, na uzorku od 113 dječaka, podijeljenih na kontrolnu (fizičko vaspitanje) i eksperimentalnu grupu (košarka). Za procjenu motoričkog prostora praćene su sljedeće varijable iz Eurofit baterije testova: flamingo, taping rukom, pretklon sa doseganjem u sjedu, skok udalj iz mjesta, dinamometrija dominantne ruke, ležanje – sjed za 30", izdržaj u zgibu i čunasto trčanje na 10x5m.

Rezultati sa diskusijom

Analiza rezultata na finalnom mjerenju pokazala je da su učenici kontrolne grupe imali bolje rezultate na finalnom mjerenju u odnosu na inicijalno u šest od osam varijabli. Učenici eksperimentalne grupe (košarka) su imali poboljšanje rezultata u 7 od 8 varijabli.

Zaključak

Eksperimentalni program nastave sa akcentom na košarku doprinio je razvoju motoričkih sposobnosti kod učenika, ali ne u mjeri u kojoj bi se moglo govoriti o superiornosti u odnosu na kontrolni-standardni program nastave.

Ključne reči : efekti, nastava, motoričke sposobnosti

Literatura

1. Arunović, D. (1982). *Program odbojke u jednogodišnjem ciklusu izborne nastave i njegov doprinos fizičkom vaspitanju učenika prve faze usmjerenog obrazovanja* (Doktorska disertacija). Beograd: Fakultet fizičkog vaspitanja.
2. Krsmanović, B. (1989). Aktivnost i angažovanje učenika na času fizičkog vaspitanja, Zbornik radova. Novi Sad: Fakultet fizičke kulture.

EFFECTS OF VARIOUS PHYSICAL EDUCATION CURRICULUM ON MOTOR SKILLS IN STUDENTS OF FINAL GRADES IN PRIMARY SCHOOL

Milovan Ljubojević¹; Jovan Gardašević¹; Rajko Milašinović¹; Ivan Vasiljević¹; Danilo Bojanić¹; Aldijana Muratović¹; Marija Bujanja¹

¹ The University of Montenegro, Faculty of Sports and Physical Education, Niksic, Montenegro

Introduction

Results of many researches conducted in field of physical education show that the physical education curriculum is not on the appropriate and satisfactory level. Teaching practice is more focused on improving the athletic and technical elements and less on development of motor and functional skills of students.

Method

The goal of this study is to determine effects of standard and experimental education curriculum on motor skills. This study lasted for one school year, and it was conducted on the sample consisting of 113 boys, divided into control (physical education) and experimental group (basketball). In order to asses motor space, following variables of Eurofit battery of tests were monitored: flamingo, hand tapping, seated forward bend (modified functional reach test), long jump, dynamo-metrics of dominant hand, lay – sit for 30", pull-up endurance, and pin running on 10x5m.

Results with discussion

Analysis of the results during the final measurement showed that students of control group had better results in final measurement in comparison to the initial one in six out of eight variables. Students of the experimental group had improved results in 7 out of 8 variables.

Conclusion

Experimental education curriculum with emphasize on basketball contributed to development of motor skills of students, but not at the level that would imply superiority over the control – standard education curriculum.

Key words: effects, teaching, motor skills

References

1. Arunović, D. (1982). *Volleyball curriculum in one year cycle of optional classes and its contribution to physical education of students in first phase of vocational education* (PhD study). Belgrade: Faculty of physical education.
2. Krsmanović, B. (1989). Activity and engagement of students during the physical education classes, Collection of studies. Novi Sad: Faculty of physical education.

MOGUĆI ANABOLIČKI EFEKTI SUPLEMENTACIJE KRETINOM KOD LJUDI

Valdemar Štajer¹; Tatjana Jezdimirović^{1,2}; Saša Semeredi¹; Sergej M. Ostojić^{1,3}

¹ Fakultet sporta i fizičkog vaspitanja, Univerzitet u Novom Sadu, Novi Sad

² Fakultet sporta i turizma, Univerzitet Edukons, Novi Sad

³ Medicinski fakultet, Univerzitet u Beogradu, Beograd

Uvod

Keratin je dobro poznat i efikasan dijetetski suplement koji pozitivno utiče na mišićne performanse tokom vremenski kratkih epizoda vežbanja i oporavka (Momaya i saradnici 2015). Pored pozitivnog uticaja na energetske procese, izgleda da dodatno konzumiranje kretina može izazvati i anaboličke efekte stimulacijom sinteze proteina i /ili uticajem na hormonske procese (Candow i saradnici 2015).

Metod

U ovom radu načinjen je kritički prikaz dosadašnjih istraživanja efekata kreatina na anaboličke i anti-kataboličke procese kod ljudi. (Deldicque i saradnici 2005; J. R. Hoffman i saradnici 2008; J. Hoffman i saradnici 2006; Louis i saradnici 2004; Saremi i saradnici 2010).

Rezultati sa diskusija

Pri konzumiranju velikih doza kreatina tokom mirovanja dolazi do stimulacije lučenja hormona rasta, snažnog anaboličkog hormona, što ima za posledicu oponašanje fizioloških odgovora na intenzivno vežbanje. Osim toga, akutna suplementacija kretinom pre ili tokom vežbanja može uticati na proizvodnju insulina i insulinu sličnog faktora rasta tip 1 (IGF-1). IGF-1 igraju važnu ulogu u izgradnji mišića i oporavku nakon vežbanja. Dalja istraživanja u ovom pravcu su neophodna, da bi ovi dokazi bili opšte prihvaćeni od strane stručne javnosti.

Zaključak

Kreatin bi trebalo razmatrati kao agens sa indiretnim anaboličkim efektima.

Ključne reči: kreatin, insulin, insulinu sličnog faktora rasta, izgradnja mišića, oporavak nakon vežbanja

Literatura

1. Burke, D. G., Candow, D. G., Chilibeck, P. D., MacNeil, L. G., Roy, B. D., Tarnopolsky, M. a., & Ziegenfuss, T. (2008). Effect of Creatine Supplementation and Resistance-Exercise Training on Muscle Insulin-Like Growth Factor in Young Adults. *International Journal of Sport Nutrition and Exercise Metabolism*, 18, 389–398.
2. Candow DG, Vogt E, Johannsmeyer S, Forbes SC, Farthing JP. Strategic creatine supplementation and resistance training in healthy older adults. *Appl Physiol Nutr Metab*. 2015 Jul;40(7):689-94.

POSSIBLE ANABOLIC EFFECTS OF CREATINE SUPPLEMENTATION IN HUMANS: AN OVERVIEW

Valdemar Štajer¹; Tatjana Jezdimirović^{1,2}; Saša Semeredi¹; Sergej Ostojić^{1,3}

¹ Faculty of Sport and Physical Education, University of Novi Sad, Serbia

² Faculty of Sport and Tourism, EDUCONS University, Serbia

³ University of Belgrade School of Medicine, Serbia

Introduction

Creatine has been well established as an effective dietary supplement to positively affect muscle performance during short-term exercise and recovery (Momaya et al. 2015). Besides energy-boosting effects of this additive, it seems that dietary creatine may act as an anabolic agent by stimulation of protein synthesis and/or hormonal signaling (Candow et al. 2015).

Methods

We critically reviewed the present data on the effects of creatine administration on anabolic and/or anti-catabolic responses in humans.

Results with discussion

In resting conditions and at high dosages, creatine enhances the secretion of growth hormone, a strong anabolic agent, mimicking the response of strong exercise. In addition, acute creatine supplementation before and/or during exercise could alter the production of insulin and insulin-like growth factor 1 (IGF-1), with IGF-1 plays an important role in muscle growth and post-exercise repair.

Conclusion

Creatine should be considered as an indirect anabolic compound.

Key words: creatine, insulin, insulin-like growth factor, building muscle recovery after exercise

References

1. Burke, D. G., Candow, D. G., Chilibeck, P. D., MacNeil, L. G., Roy, B. D., Tarnopolsky, M. a., & Ziegenfuss, T. (2008). Effect of Creatine Supplementation and Resistance-Exercise Training on Muscle Insulin-Like Growth Factor in Young Adults. *International Journal of Sport Nutrition and Exercise Metabolism*, 18, 389–398.
2. Candow DG, Vogt E, Johannsmeyer S, Forbes SC, Farthing JP. Strategic creatine supplementation and resistance training in healthy older adults. *Appl Physiol Nutr Metab*. 2015 Jul;40(7):689-94.

CHRONIC DISEASES AS A DETERMINANT IN THE PLANNING OF PHYSICAL ACTIVITY IN PEOPLE WITH DOWN'S SYNDROME

Sanela Pacić¹; Vasilija Krstić²; Radmila Nikić³; Fadilj Eminović³

¹ Faculty of Special Education and Rehabilitation, Belgrade

²Institution for day care for children, youth and adults with disabilities, "Sunce", Smederevo

³Faculty of Special Education and Rehabilitation, Belgrade

Introduction

Man is a social and biological being. Regardless of age and sex, the movement of the biological needs of every human being and without this they physically and mentally degenerates (Eminović et al., 2011). Implementation of physical activity (physical education, for sports and activities and recreation) aims to improve the general health condition, eliminate or ameliorate the condition caused by the presence of physical deformities as well as improving mental state of the individual, the development sport spirit and sense of the functioning of the group. Therefore, the aim of our work of magazines that review of the literature isolate the most common chronic diseases that occur in children/adults with Down syndrome as well as guidelines for planning physical activity in this population than in the presence thereof.

Method

We have used the method of theoretical analysis, descriptive methods.

Results with discussion

Down syndrome is one of the most common chromosomal disorders accompanied by mental retardation. Organization of motor skills in people with Down syndrome to a large extent depends on the disorder and the accompanying deficit. Many children and adults with Down syndrome have health problems that hinder them in performing physical activities. When we talk about the type of chronic disease in people with Down syndrome that primarily involves cardiac problems, stomach problems, chronic inflammation of the upper respiratory tract and ear infections also occur frequently medical conditions such as thyroid disease, epi seizures, mental illness, obesity and various oral diseases. A number of studies also reported the existence of anomalies and congenital defects in children with Down syndrome.

Conclusion

Diseases that need to be taken into account when it comes to exercise capacity and the physical activities are: a disorder of the thyroid gland, the problem with energy expenditure and substrate disturbance expenditure and inadequate response to exercise, and the presence of anemia. It is important, too, when we approach the structuring of physical activity, noted that there is a chronic progressive disease or non-progressive character, the presence of drug therapy and its effects on the performance of motor activity (slowness, fatigue).

Keywords: Down syndrome, chronic illnesses, physical activity.

References

1. Eminović, F., Čanović, D., Nikić, R. (2011). *Fizička kultura 1 - Физичко васпитање деце ометене у развоју*. Univerzitet u Beogradu, Fakultet za specijalnu edukaciju i rehabilitaciju, Beograd.
2. Eminović, F., Nikić, R., Stojković, I., Pacić, S. (2009). Attitudes toward inclusion of persons with disabilities in sport activities. *Sport Science*, 2(1): 72 – 77.

HRONIČNE BOLESTI KAO DETERMINANTA U PLANIRANJU FIZIČKIH AKTIVNOSTI KOD OSOBA SA DAUNOVIM SINDROMOM

Sanela Pacić¹; Vasilija Krstić²; Radmila Nikić³; Fadilj Eminović³

¹Fakultet za specijalnu edukaciju i rehabilitaciju, Beograd

²Ustanova za dnevni boravak dece, mladih i odraslih osoba sa smetnjama u razvoju "Sunce", Smederevo

³Fakultet za specijalnu edukaciju i rehabilitaciju, Beograd

Uvod

Čovek je društveno i biološko biće. Bez obzira na pol i starost, kretanje je biološka potreba svakog čoveka bez koje fizički i mentalno degeneriše (Eminović i sar., 2011). Sprovođenje fizičkih aktivnosti (fizičko vaspitanje, sportske aktivnosti i rekreacija) ima za cilj unapređenje opšteg zdravstvenih stanja, otklanjanje ili ublažavanje stanja nastalih usled prisustva telesnih deformiteta kao i unapređenje psihičkog stanja samog pojedinca, razvoj sportskog duha i osećaja za funkcionisanje u grupi. Zbog toga je cilj našeg rada da revijalnim pregledom literature izdvojimo najčešće hronične bolesti koje se javljaju kod dece/odraslih sa daunovim sindromom kao i smernice za planiranje fizičkih aktivnosti kod ove populacije u odnosu na prisustvo istih.

Metod

Korišćen je metod teorijske analize, deskriptivni metod.

Rezultati sa diskusijom

Down sindrom je jedan od najučestalijih hromozomskih poremećaja praćenih mentalnom retardacijom. Organizacija motoričkih sposobnosti kod osoba sa daunovim sindromom u velikoj meri zavisi od nivoa poremećaja i propratnih deficita. Mnoga deca i odrasli sa Down sindromom imaju zdravstvene probleme koji ih ometaju u izvođenju fizičkih aktivnosti. Kada govorimo o vrsti hroničnog oboljenja kod osoba sa daunovim sindromom, to pre svega, uključuje srčane probleme, stomadne probleme, hronične upale gornjih respiratornih puteva i infekcije ušiju, takođe se često javljaju zdravstveni poremećaji poput oboljenja tiroidne žlezde, epileptičnih napada, mentalnih oboljenja, gojaznosti i različitih oralnih bolesti. Veliki broj studija, takođe, beleži postojanje anomalija i urođenih defekata kod dece sa daunovim sindromom.

Zaključak

Oboljenja o kojima je potrebno voditi računa kada je u pitanju kapacitet vežbanja i same fizičke aktivnosti su: poremećaj štitne žlezde, problem sa utroškom energije kao i poremećaj utroška substrata i neadekvatan odgovor na vežbe, kao i prisustvo anemije. Bitno je, takođe, kada pristupamo struktuiranju fizičkih aktivnosti, istaći da li je hronično oboljenje progresivnog ili neprogresivnog karaktera, prisustvo medikamentozne terapije i njenog delovanja na izvođenje motoričkih aktivnosti (usporenost, zamorljivost).

Ključne reči: Daunov sindrom, hronične bolesti, fizičke aktivnosti.

Literatura

1. Eminović, F., Čanović, D., Nikić, R. (2011): *Fizička kultura 1 - Физичко васпийињање геце омејене у развоју*. Univerzitet u Beogradu, Fakultet za specijalnu edukaciju i rehabilitaciju, Beograd.
2. Eminović, F., Nikić, R., Stojković, I., & Pacić, S. (2009). Attitudes toward inclusion of persons with disabilities in sport activities. *Sport Science*, 2(1): 72 – 77.

APPLICATION OF MODIFY CROFIT BATTERY IN THE ELEMENTARY SCHOOL

Stela Srpak¹; Zvonimir Tomac¹; Tihomir Vidranski¹

¹J.J. Strossmayer University of Osijek, Faculty of Education

Introduction

In Croatian National curriculum of the Physical education teaching system are implemented the diagnoses the anthropological status of pupils in the 1st to 4th grades with the aim of quality programing and evaluate teaching process. The six motor tests and one test for estimate functional ability were used for the assessment of the pupils' functional and motoric abilities and three anthropometrics measures. The CROFIT battery (Neljak et al., 2013), originally made form Eurofit battery tests, are successfully used to assessment the same abilities in the higher grades of the primary school of the Croatian Education. The aim of this study was determinate validation and reliability of the modify CROFIT battery tests in the elementary school, which could improve the quality of the estimate anthropological status and the quality of teaching process with the pupils from the 1st to 4th grades.

Method

This research was conducted on the 52 pupils from the 1st to 4th grades of the elementary school. Variable samples were 8 motoric test, three anthropometrics measures and three tests for the assessment functional abilities. Method of internal consistency (Cronbach α) was used for estimate reliability of tests. Homogeneity was estimated by average items correlation (AVR). The validity of the measurement instruments was calculated by Pearson's coefficient of correlation and factor analysis.

Results with discussion

Results comparison of pupils 1st to 4th grade with norms for pupils of 5th grade is observed that the pupils from higher achieve better results in the two standardized CROFIT test. Reliability coefficients show high level in all applied tests. In the speed and explosive strength test the Cronbach $\alpha = 0.86$, in the repetitive strength test Cronbach $\alpha = 0.91$, in the coordination test Cronbach $\alpha = 0.94$ and in the agility test Cronbach $\alpha = 0.87$. Factor analysis (Guttman Kaiser's criterion for the factor extraction) had shown two significant factors that explain 62.91 % of total variance, named *factor of motor ability* and *morphological factor*.

Conclusion

In this study, results had shown that all applied CROFIT tests are significant correlated with standardized tests, which factor structure had earlier confirmed. All applied measurement instruments had shown high level of reliability. As a conclusion, CROFIT tests satisfy psychometric characteristic in order to be used for estimation of pupils' motor abilities in the elementary school.

Key words: elementary school, motor abilities assessment battery, psychometrics properties

References

1. Bala, G. (1999). Some problems and suggestions in measuring motor behavior of pre-school children. *Kinesiologia Slovenica*, 5 (1-2), 5, 9-10
2. Tsigilis, N., Douda, H. i P. Tokmakidis, S. (2002). Test-retest reliability of the Eurofit test battery administered to university students. *Perceptual and Motor Skills*, 95, 1297-1298

RESEARCH OF ANTHROPOMETRIC MARKS WITH MARATHON RUNNERS

Ivaylo Lazarov¹

¹National Sports Academy, Sofia, Bulgaria

Introduction

The modern science researches in sphere in track and field evidently proved that the part of anthropometric measurements are very important, despite of sports level, age and sex. A lot of publications recently, tracking the identification influence of morphological signs of sport working capacity, shows body structure of athletes or representing results of measurement of body sizes.

Method

Object of research are 35 men, competitors in running in marathon, which been examined this marks: high, weight, body fats, muscle mass. The researched anthropometric measurements were part of functional exam in competitors. The statistical methods that we have been used are: correlation analyze, variation analyze and sigmal method for the preparing levels of marks.

Results with discussion

High polyvalent correlations of muscle mass (%) can be seen in the research of men with the other examined marks: very big with weight (0.90) and active body mass (0.95); big with high (0.79) and fat mass (0.71); meaning with maximal speed (0.59). It comes to our attention that marathon runners had high levels of muscle mass. This is due to the high requirements to the manifestation of the power performance during the entire distance, and especially in the last 2.195 km.

Conclusion

1. Between the standard anthropometric marks and the sport achievement in running of marathon exists high influence; 2. Muscle mass is appearing to be primary anthropometric mark that have influence on maximal speed in running of men. Her levels has to varieties between 49.9-50.9%; 3. The values of anthropometric marks with athletes in marathon running should be in followed ranges: height: 169.5-179.2 cm; weight: 56.7-61.2; fat mass (%): 9.6-11.3; muscle mass (%): 49.9-50.9.

Keywords: marathon, anthropometric, body structure

References

1. Гутев, Г., Дисертация - Промени в спортно-техническите характеристики на препятственото бягане съобразно комплексните фактори на постижението, НСА, 2015
2. Карапетрова, Р., Дисертация – Моделиране на физическата подготовка на елитни лекоатлетки-копиехвърлячки, НСА, 2011

ENSEMBLE ROUTINES IN RHYTHMIC GYMNASTICS - QUALIFICATION FOR THE OLYMPIC GAMES – 2016

*Giurka Gantcheva*¹

¹National Sport Academy, Sofia, Bulgaria

Introduction

The preparation of the Olympic teams in gymnastics events is expressed in the selection of exercises and in the structure of the competitive routines. The exercises have a certain technical difficulty, value, and arrangement in the routines.

Method

Video analysis of the routines and data collection from the official competitive slips of teams Italian, Russian, Japon. Statistical methods for processing information about the values of the routines. Analytic-synthetic method.

Results with discussion

The Italian team as regards the difficulty, a relatively great number of exercises (30) are observed. They use exercises of high value from 1.0 to 0.7 points, but the difficulty moves under the average register of difficulty. The prevention against loss of points, is a good approach in creating routines, provided that during the struggle for medals the difference between the teams is 0,1-0,2. In the Russian team the predominant are the exercises with value 0.3-0.5 points, and only one exercise valued at 0.8 points. The graph of the difficulty with the Japanese team shows that the routine includes: smaller number of difficulties – 25 and the difficulty comes with an exercise valued at 1.1 points.

Conclusion

The analysis of the dynamics of the difficulty showed that the leading teams create their compositions according to the technical abilities of their competitors and the aspiration for inclusion of a limited number of exercises of high value. The ensembles of Italy and Japan are distinguished among those who perform exercises of maximum value.

Key words: rhythmic gymnastics, ensembles, routines

References

1. Gancheva, G. (1988) Analysis of ensemble routines. Journal "Coach's thought", 4.
2. Shishkovska, M. (2001) Evaluation of the components of gymnasts' mastership in rhythmic gymnastics. Author's summary of dissertation. Saint Petersburg.

SURVEY THE EFFECTIVENESS OF A METHODOLOGY FOR OPTIMIZING THE LEVEL OF MOTOR QUALITY SPEED AT 10-12 YEARS OLD, DEALING WITH RHYTHMIC GYMNASTICS

Vessela Ivanova¹; Giurka Gantcheva¹

¹National Sports Academy „Vassil Levski“, Gymnastic Department, Sofia, Bulgaria

Introduction

Many authors pay special attention to study and research of the speed, as it is an undeniable fact that the developed optimal speed is a needed for successful realization in the competition activity.

Methods

Testing (7 tests were used) of 43 gymnasts divided into a control (16) and experimental group (27); Observation; Variation analysis Hypotheses check - T- criteria of Student for independent samples; Comparative analysis.

Results with discussion

The survey results show that the proposed methodology increases the speed of movement in different parts of the body at the respondents from the experimental group, as the method at work includes pedagogical experiment. In the control group after the second testing was a decline in the development of speed, which raises many questions for discussion, namely, should the traditional forms of physical training, proven in the past to be replaced and if is yes what is need to change.

Conclusions

1. The experimental methodology increases the level of development of speed and can be successfully applied in this age group.
2. The achievements in the control group clearly show that the traditional methods for developing of speed are not effective, but rather degradation and needs to be replaced with new more advanced.
3. The results of tests for speed of upper and lower limbs showed a significant asymmetry in the development of motor quality at left and right.

Key words: Rhythmic gymnastics, methodology, speed.

References

1. Nikitushkin, C. (2009). Modern preparation of young athletes, Sovietsky sport, Moskva.
2. Hadhziev, N., K. Andonov, D. Dobrev, V. Petrov (2011). Physical preparation, NSA Press, Sofia.

SPORTSKO-REKREATIVNI OBJEKTI I MENADŽMENT KAO ČINILAC USPEHA U SPORTSKO-REKREATIVNIM AKTIVNOSTIMA

Petrović Lana¹; Kocić Jadranka¹; Aleksić Dragana¹; Stanković Slađana²

¹ Fakulteta za sport i fizičko vaspitanje u Leposaviću, Univerzitet u Prištini

²Fakultet Pedagoških nauka u Jagodini Univerziteta u Kragujevcu

Uvod

Sportsko-rekreativni objekti svojom strukturom, planiranom namenom i funkcionalnim statusom određuju, u velikoj meri, plansko-programsku orijentaciju kod izrade sportskih programa na svim nivoima organizovanja. Među sportskim objektima posebno mesto zauzimaju sportski centri kao polivalentni građevinski kompleksi koji, pružanjem usluga na tržištu, omogućavaju da se obezbede uslovi za bavljenje različitim modalitetima sportskih aktivnosti (sportsko obrazovanje, takmičarski sport, rekreativni sport, školski sport) i za različite kategorije korisnika.

Metod

U radu je, da bi se što detaljnije prikazali sportsko-rekreativni objekti i prostori za vežbanje, kao i njihova bitna uloga upražnjavanju sportsko-rekreativnih aktivnosti, korišćen je metod teorijske analize i metoda deskripcije. Klasifikacija sportsko-rekreativnih objekata izvršena je prema različitim kriterijumima: prema potrebama korisnika, prema urbanističkoj stalnosti, prema sportskim aktivnostima, prema građevinskom obliku, prema lokaciji.

Rezultati sa diskusijom

Izvršen je prikaz klasifikacije objekata: prema potrebama korisnika, prema urbanističkoj stalnosti, prema sportskim aktivnostima, prema građevinskom obliku, prema lokaciji, tipologija sportskih objekata. Ove osnovne tipove je dalje moguće razvrstavati prema uslovima gde se sportske aktivnosti odvijaju: na zemlji, na vodi, na snegu, na ledu, u vazduhu...Na osnovu svega proizilazi potreba za pravilnim rukovođenjem /menadžmentom/sportsko-rekreativnim objektima je usmeravanje i motivacija pojedinaca da obavljaju poslove funkcionisanja i održavanja sportskog objekta na efikasan način.

Zaključak

Sportsko-rekreativni objekti u velikoj meri određuju plansko-programsku orijentaciju kod izrade sportskih programa na svim nivoima organizovanja. Oni omogućavaju da se obezbede uslovi za bavljenje različitim modalitetima sportskih aktivnosti (sportsko obrazovanje, takmičarski sport, rekreativni sport, školski sport) i za različite kategorije korisnika. Metodom teorijske analize deskriptivnom metodom izvršena je klasifikacija sportsko-rekreativnih objekata prema različitim kriterijumima: prema potrebama korisnika, prema urbanističkoj stalnosti, prema sportskim aktivnostima, prema građevinskom obliku, prema lokaciji. Istaknuta je činjenica da pravilno rukovođenje sportsko-rekreativnim objektima je usmeravanje i motivacija pojedinaca da obavljaju poslove funkcionisanja i održavanja sportskog objekta na efikasan način, jeste bitan preduslov za realizaciju sportsko-rekreativnog potencijala svih struktura stanovništva.

Ključne reči: Sportski-rekreativni objekti, menadžment sportsko-rekreativnih objekata

Literatura

1. Kocić, J., Aleksić, D., Tošić, S.(2009): Osnove kineziologije i sportova estetsko-koordinacionog karaktera. Pedagoški fakultet u Jagodini Univerziteta u Kragujevcu.
2. Masterman G.: Strateški menadžment sportskih događaja .Clio, Beograd.

SPORTS AND RECREATIONAL FACILITIES AND MANAGEMENT AS A FACTOR OF SUCCESS IN SPORTS AND RECREATIONAL ACTIVITIES

Petrović Lana¹; Kocić Jadranka¹; Aleksić Dragana¹; Stanković Slađana²

¹Master student of the Faculty of Sports and Physical Education in Leposavic , University of Prishtina

² Faculty of Pedagogical Sciences in Jagodina , University of Kragujevac

Introduction

Sports and recreational facilities in its structure, the planned purpose and functional status is determined, to a large extent, planning and program orientation in making sports programs at all levels. Among the sports facilities have a special place as a multi-purpose sports facilities construction complexes, providing services in the market, make it possible to provide the conditions for practicing different modalities of sports activities (sports education, competitive sports, recreational sports, school sports) and for different categories of users.

Method

The paper is to show as much detail as sports and recreation facilities and spaces for exercise, as well as their important role in the exercise of sports and recreational activities, use the methods of theoretical analysis and description method. Classification of sports and recreational facilities was carried out according to various criteria according to the needs of users, according to the urban continuity, according to sports activities, according to the construction form and to location.

Results with discussion

Executed an overview of the classification of objects: according to user needs, according to the urban continuity, according to sports activities, according to the construction form, location, typology of sports facilities. These basic types is still possible to classify under conditions where sports activities take place: on land, on water, on snow, on ice, in the air ... Based on the results the need for proper leadership / management / sports and recreational facilities and is channeling motivation of individuals to perform tasks operation and maintenance of the sports facility in an efficient manner. Based on the above results the need for proper leadership / management / sports and recreational facilities is the direction and motivation of individuals to perform tasks operation and maintenance of the sports facility in an efficient manner.

Conclusion

Sports and recreational facilities to a large extent determine the planning-program orientation in making sports programs at all levels. They enable to provide conditions for practicing different modalities of sports activities (sports education, competitive sports, recreational sports, school sports) and for different categories of users. The method of theoretical analysis descriptive method were classified sports and recreational objects according to various criteria according to the needs of users, according to the urban continuity, according to sports activities, according to the construction form according to location.

It is emphasized that the proper use of sports and recreational facilities is the direction and motivation of individuals to perform tasks operation and maintenance of the sports facility in an efficient manner is an essential prerequisite to the realization of sports and recreational potential of all structures of the population.

Keywords: Sports and recreational facilities, management of sports and recreational facilities

References

1. Kocić, J., Aleksić, D., Tošić, S. (2009): Osnove kineziologije i sportova estetsko-koordinacionog karaktera. Pedagoški fakultet u Jagodini Univerziteta u Kragujevcu.
2. Masterman G.: Strateški menadžment sportskih događaja .Clio, Beograd.

TREND PROMENA INICIJALNOG NIVOA MOTORIČKIH SPOSOBNOSTI STUDETKINJA POLICIJSKE AKADEMIJE

Nenad Koropanovski¹; Radivoje Janković¹; Raša Dimitrijević¹

¹Kriminalističko-policijska akademija, Beograd, Srbija

Uvod

Različiti modeli edukacionih procesa predstavljaju obeležje savremenog sistema obrazovanja. Permanentna potreba za napretkom podrazumeva stalno unapređenje postojećih modela. Kako bi ovaj proces bio uspešan neophodan preduslov je poznavanje i kontrolisanje svih delova sistema. Pored toga, od posebnog značaja su selekcionni kriterijumi i početni nivo izabranih parametara na početku procesa obrazovanja. Cilj ovog rada je utvrđivanje trenda promena inicijalnog nivoa motoričkih sposobnosti studentkinja Kriminalističko-policijske akademije (KPA).

Metod

Istraživanje je obahvatilo rezultate sa prijemnih ispita 2011. godine (N=155), 2012. godine (N=159), 2013. godine (N=164) i 2014. godine (N=173). Pored ukupnog broja ostvarenih bodova koji reprezentuju generalni nivo razvijenosti bazičnih motoričkih sposobnosti (BMS), analizirana su i rezultati motoričkih sposobnosti procenjenih baterijom testova koja se koristi na prijemnom ispitu na KPA: Stisak šake (FmaxS), Sklekovi (SKL), Podizanje trupa (TR), Skok u dalj sa zamahom rukama (DALJ), Skok u vis sa zamahom rukama (ABAL), Grčenje-opružanje (GR) i Kuperov test (KT). Postojanje generalne razlike varijabiliteta između grupa utvrđeno je primenom MANOVA, dok je za utvrđivanje parcijalnih razlika između parova varijabli korišćen Bonferoni test. Statistička značajnost definisana je na nivou $p < 0.05$.

Rezultati sa diskusijom

Rezultati pokazuju da na generalnom nivou postoji statistički značajna razlika između studentkinja u odnosu na godinu prijemnog ispita na nivou vrednosti Wilks' Lambde od 0.576 ($F=16.198$, $p < 0.05$). Razlike su utvrđene u BMS i kod testova FmaxS, TR, ABAL i GR.

Zaključak

Dobijeni rezultati ukazuju na različite inicijalne nivoe motoričkih sposobnosti studentkinja. Trend promena je negativan, tako da se može govoriti o opadanju inicijalnog nivoa motoričkih sposobnosti. Rezultati ovog istraživanja ukazuju na potrebu evaluacije kriterijuma prijemnog ispita na KPA.

Ključne reči: selekcija, trend, bazične motoričke sposobnosti, žene

Literatura

1. Dimitrijević, R., Koropanovski, N., Dopsaj, M., Vucković, G., Janković, R. (2014). The influence of different physical education programs on police students' physical abilities. *Policing: An International Journal of Police Strategies & Management*, 37(4), 794-808.
2. Janković, R., Koropanovski, N., Vučković, G., Dimitrijević, R., Atanasov, D., Miljuš, D., Marinković, B., Ivanović, J., Blagojević, M., Dopsaj, M. (2008). Trend promena osnovnih antropometrijskih karakteristika studenata Kriminalističko-policijske akademije u toku studija. *Nauka, bezbednost, policija*, 13(2), 137-152.

TREND OF CHANGES IN MOTOR ABILITIES INITIAL LEVEL AT THE POLICE ACADEMY FEMALE STUDENTS

Nenad Koropanovski¹; Radivoje Janković¹; Rasa Dimitrijević¹

¹Academy of Criminalistic and Police Studies, Belgrade, Serbia

Introduction

Different models of teaching processes represent the characteristic of the modern education system. The permanent need for education advancement implies continuous improvement of existing models. To obtain this process to be successful, a necessary precondition is the knowledge and control of all system components. In addition, of particular importance are the selection criteria and the initial level of chosen parameters at the beginning of the education process. The aim of this study is to determine the trend of changes in motor abilities initial level at the female students of the Academy of Criminalistic and Police Studies (ACPS).

Method

The study included the results of the entrance exams in year 2011. (N = 155), 2012. (N = 159), 2013. (N = 164) and 2014. (N = 173). In addition to the total number of points which represent the general level of basic motor abilities development (BMA), the results of single motor abilities were also analyzed and assessed with a battery of tests used for entrance exams in the ACPS: "Hand grip" (FmaxHG), the Push-up (PU), the Sit-up (SU), the Long jump (LJ), the Abalac (ABAL), the Body flexion-extension (FE) and the Cooper test (COOP). The existence of the general variability differences between groups was determined by using MANOVA, while for the determination of partial differences between pairs of variables Bonferroni test was used. Statistical significance was defined at the level of $p < 0.05$.

Results with discussion

The results show that on a general level there is a statistically significant difference between female students in comparison to the year of the entrance exam at the level of Wilks' Lambda 0.576 ($F = 16.198$, $p < 0.05$). The differences were found in the BMA and in tests of FmaxHG, SU, ABAL and FE.

Conclusion

The obtained results indicate the different motor abilities initial levels of female students. Trend of changes is negative, so there is the decrease of the initial level of motor abilities. Results of this study indicate the need for evaluation of the criteria which is used on the ACPS entrance exam.

Key words: Selection, Trend, Basic motor abilities, Women

References

1. Dimitrijevic, R., Koropanovski, N., Dopsaj, M., Vuckovic, G., Jankovic, R. (2014). The influence of different physical education programs on police students' physical abilities. *Policing: An International Journal of Police Strategies & Managment*, 37(4), 794-808.
2. Janković, R., Koropanovski, N., Vučković, G., Dimitrijević, R., Atanasov, D., Miljuš, D., Marinković, B., Ivanović, J., Blagojević, M., Dopsaj, M. (2008). Trend promena osnovnih antropometrijskih karakteristika studenata Kriminalističko-policijske akademije u toku studija. *Nauka, bezbednost, policija*, 13(2), 137-152.

PARENTS ATTITUDE TOWARDS MAIN BARRIERS IN GIRL'S FOOTBALL PARTICIPATION ON P.E. CLASSES

Aleksandar Ignjatović¹; Živorad Marković¹; Boban Janković¹

¹Faculty of Education, University of Kragujevac, Jagodina

Introduction

Many countries have a problem with levels of activity and obesity. This problem is particularly critical among girls. In addition to low levels of physical activity among girls, there are many researches showing a large percentage of girls that are relatively inactive within the PE class. Summary reports investigating evidence on physical education and sport in primary schools all showing high popularity of football. For the children aged 7-15 year, football is the most common sport activity. Similarly, football is very popular activity during physical education classes. However, there is large gap between the participation of boys and girls in football game. One of the FIFA mission and priority for the next four years is a foundation of women's football and encourage its growth and development.

Method

Parents of elementary schoolchildren girls (n=100) completed Originally Questionnaire with a 5-point Likert-type scale with responses ranging from 1 (Strongly Agree) to 5 (Strongly Disagree) was developed from the previous studies (3) in order to identify barriers that prevent 7 – 10 year-old girls from participating in football games and what can be done to overcome these barriers.

Results with discussion

The results of questionnaire don't supported the concept of previously established strategies for girl's football participation in large percentages. On the questions regarding the participation in football activities parents believe that if positive sides of the game were presented to the girls it would increase their desire to participate in the football game. However, large percent of parents believe that football is boys game (79%). Majority of parents (71%) believe that there are more suitable physical activity for girls rather than football. Additionally, large percentage (57%) believe that girls have more chance for success in other physical activity. More than half of parents (54%) that participated in investigation believe that regular participation in football would effect negatively on girls.

Conclusions

Research has shown that majority of parents (79%) believe that football is mostly a sport for boys. Considering their prejudices about girls P.E. classes dealing with football should be promoted football among parents as a sport that can be enjoyed equally by boys and girls. Research also identifies the differences between the attitudes of parents with attitudes of teachers in relation to the main barriers that stand towards greater involvement of girls in football.

Key words: Football, parents, girls

References

1. Clement, D, Brooks., D., & Wilmoth, B.(2009). Parental attitudes towards physical activity; A preliminary analysis, In. J. Fitness 5, (2),1-11.
2. Wetton, A, Radley, R., Jones, A., & Pearce, M. (2013). What Are the Barriers Which Discourage 15-16 Year-Old Girls from Participating in Team Sports and How Can We Overcome Them? *Bio Med. Research International*, Volume,ArticleID738705,8pages <http://dx.doi.org/10.1155/2013/738705>

STAVOVI RODITELJA O GLAVNIM BARIJERAMA ZA UKLJUČIVANJE FUDBALA KAO AKTIVNOST ZA DEVOJČICE MLAĐEG ŠKOLSKOG UZRASTA

Aleksandar Ignjatović¹; Živorad Marković¹; Boban Janković¹

¹Fakultet pedagoških nauka univerziteta u Kragujevcu, Jagodina

Uvod

Mnoge zemlje imaju problem sa smanjenim nivoom fizičke aktivnosti što uzrokuje povećanje gojaznosti. Ovaj problem je posebno kritičan kod dece mlađeg školskog uzrasta, posebno među devojkama. Pored niskog nivoa fizičke aktivnosti među devojkama, postoji mnogo istraživanja koja pokazuju veliki procenat devojaka koje su relativno neaktivne u okviru fizičkog vaspitanja. Pregledani izveštaji o fizičkom vaspitanju i sportu u osnovnim školama pokazuju veliku popularnost fudbala. Za decu uzrasta od 7-15 godina, fudbal je najčešća sportska aktivnost. Slično tome, fudbal je veoma popularna aktivnost tokom časova fizičkog vaspitanja. Međutim, devojčice se u mnogo manjoj meri uključuju u časove sa tematikom fudbalske igre, pa se postavlja pitanje o mogućnostima masovnijeg uključivanja devojčica.

Metod

Roditelji devojčica, u dve osnovne škole u Jagodini (100 ispitanika), su za potrebe istraživanja popunjavali anketu od 15 pitanja sa skalama Likertovog tipa sa odgovorima u rasponu od 1 (slažem se u potpunosti) do 5 (u potpunosti se ne slažem) koja ima za cilj da iskaže stavove roditelja o fudbalu kao aktivnost za devojčice, kao i razloge sprečavanja devojčica mlađeg školskog uzrasta da učestvuju u aktivnostima fudbala. Kao i šta može biti učinjeno da se poveća nivo uključenosti devojčica u aktivnosti fudbala.

Rezultati sa diskusijom

Većina roditelja se slaže da su sva deca podjednako motivisana za časove fizičkog vaspitanja i shvataju važnost fizičkih aktivnosti. Roditelji se uglavnom slažu da bi devojčice u većem broju učestvovala u aktivnostima fudbala ukoliko bi im se prezentovale pozitivne strane bavljenja ovom aktivnošću ali i pored toga većina roditelja (71%) se u potpunosti slažu da za devojčice postoje adekvatnije aktivnosti od fudbala. Veliki procenat roditelja (54%) smatraja da će učestvovanje u fudbalskim aktivnostima imati negativan uticaj na devojčice.

Zaključak

Istraživanje je pokazalo da većina roditelja (79%) smatraju da je fudbal pretežno sport za dečake. S obzirom na njihove predrasude o bavljenju devojčica mlađeg školskog uzrasta fudbalom treba raditi na promociji fudbala među roditeljima kao sporta kojim se mogu baviti podjednako i dečaci i devojčice. U istraživanju su identifikovane i razlike između stavova roditelja sa stavovima učitelja u odnosu na glavne barijere, koje stoje ka većem uključivanju devojčica u fudbalsku igru.

Ključne reči: Fudbal, roditelji, devojčice.

Literatura

1. Clement, D, Brooks., D., & Wilmoth, B.(2009). Parental attitudes towards physical activity; A preliminary analysis, In. J. Fitness 5, (2),1-11.
2. Wetton, A, Radley, R., Jones, A., & Pearce, M. (2013). What Are the Barriers Which Discourage 15-16 Year-Old Girls from Participating in Team Sports and How Can We Overcome Them? *Bio Med. Research International*, Volume,ArticleID738705,8pages <http://dx.doi.org/10.1155/2013/738705>

RUNNING SPEED DYNAMICS IN THE DISCIPLINE 110 M HURDLES – MEN

Iva Dimova¹; Hristyana Guteva¹; Jelio Dobrev³; Valentin Filiov²; Grigor Gutev¹

1 National Sports Academy ‘Vassil Levski’, Department ‘Track & Field’, Sofia, Bulgaria

2 National Sports Academy ‘Vassil Levski’, Department ‘Track & Field’, Sofia, Bulgaria

3 Trakia University, Stara Zagora, Bulgaria

Introduction

Among hurdle running discipline one of most interesting and spectacular is the 110 m distance. Speed dynamics are of interest to both sport specialists in the field of theory and practice.

Method

The aim of the following study is to research in details running speed dynamics (using running time splits) in the discipline 110 m hurdles for men. In total 49 cases were analyzed using a video analysis and statistical methods (variance and correlation analysis). For conducting the following study, we recorded official competitions using video camera (Nikon D5100) and analyzed intermediate times for clearing each hurdle videos using Kinovea 0.8.24.

Results with discussion

Based on their sport results, respondents were divided to two groups – with high (under 14,50 sec.) and low level (above 14,50 sec.) of qualification. Using a correlation analysis, we discovered influence of different parts of the distance to the result. In addition we applied variation analysis for extracting details for specifics of high and low qualification hurdles running speed. Also using all data, we developed models for speed running speed evaluation based on Sigmal method.

Conclusion

The following study reveals in details 110 m hurdle running speed dynamics using intermediate times for the age group men for two levels of sport qualification. Presented data is useful for sport practice for on field athletes’ control using presented models for running speed evaluation.

Key words: hurdles, running speed, men

References

1. Карапетрова, Р., Дисертация – Моделиране на физическата подготовка на елитни лекоатлетки-копиехвърлячки, НСА, 2011.
2. Лазаров, И., Дисертация - Антропометрични модели на състезатели в бягането на средни разстояния, НСА, 2014.

ASSESSMENT OF FUNCTIONAL EFFICTIVNES WITH ATHLETES IN MIDDLE DISTANCE RUNNING

Fehim Joshan¹; Ivaylo Lazarov¹; Romyana Karapetrova¹

¹National Sports Academy, Sofia, Bulgaria

Introduction

One of the tasks of functional diagnostics in sport is a study of the changes that occur in cardiorespiratory system when carrying out training activities. In contemporary sports science and practice exists effective methodological approaches that are related to the precise dosage of training effects.

Method

Subject of study were 20 men and 20 women. The runners were tested twice. They performed 6x1000 m in 3-minute passive pause progressively increasing speed. During the test were measured by telemetry complication following marks: pulse rate; oxygen consumption; oxygen pulse. The results were analyzed with correlations and regressions.

Results with discussion

Compering between the quantitative values of researched marks confirms expectations for change in the overall functional status of the athletes. Quantitative expression of this change are the following: oxygen consumption increased from 62.46 ml/kg to 65.77 ml/kg; running speed associated with this value increased from 4.83 m/sec. 4.99 m/sec.; running speed at the anaerobic transition increased from 3.83 m/sec. 3.95 m/sec., running speed in aerobic threshold increased from 3.58 m/s to 3.80 m/sec., the limit of pulse markers reduced as follows: a maximum of 196.11 to 192.44 beats/min.

Conclusion

1. The speed of recovery of the pulse frequency in the phases of the shortened rest is correct adaptation marker for determination of individual tolerance in running loads and level of training of the athlete. 2. Between the intensity (speed) of running and pulse rate in the phases of load and rest there functional dependence. 3. The parameters of individual working pulse rate that characterize the specificity of adaptation processes are grouped in the following three ranges: unlimited adaptation-pulse rate of 135 to 160 beats/min.; limited adaptation-pulse rate of 161 to 175 beats/min.; impaired adaptation-over 175 beats/min.

Keywords: adaptation, functional diagnostic, training activities

References

1. Гутев, Г., Дисертация - Промени в спортно-техническите характеристики на препятственото бягане съобразно комплексните фактори на постижението, НСА, 2015
2. Карпетрова, Р., Дисертация – Моделиране на физическата подготовка на елитни лекоатлетки-копиехвърлячки, НСА, 2011

SIX-WEEK PREPARATION PERIOD AND ITS EFFECTS ON TRANSFORMATION MOVEMENT SPEED WITH FOOTBALL PLAYERS UNDER 16

Jovan Gardašević¹; Ivan Vasiljević¹; Danilo Bojanić¹; Aldijana Muratović¹; Milovan Ljubojević¹; Rajko Milašinović¹; Marija Bubanja¹

¹The University of Montenegro, Faculty of Sports and Physical Education, Niksic, Montenegro

Introduction

The main aim of the research was to identify a level of quantitative changes of the movement speed with fifteen years old football players under the influence of the programmed football training of a six weeks preparation period.

Method

According to the time orientation this was a longitudinal study with the aim to define in a two timely different points a quantitative changes of the movement speed under the influence of the programmed football training with fifteen years old football players under the influence of the programmed training process, which involved a summer preparation period of forty-two days. The training programme covered forty-four training units. The research was made on a sample of 120 cadet level football players. To estimate the movement speed three tests have been used: foot tapping on the wall, sprint to 20m high start and sprint to 60m high start. In the area of comparative statistics, we used discriminant parametric procedure t-test for big paired samples.

Results with discussion

Can be concluded that there are statistically significant differences in all three variables to estimate the movement speed. This confirmed the hypothesis that the expected significant positive quantitative changes of basic-motor abilities influenced by the proposed model of training in preparation period with fifteen years old football players. The authors were guided by the fact that this kind of training program in preparation period, where dominates the situational model training is very effective in terms of raising the movement speed level with fifteen years old.

Conclusion

The obtained results can be directed towards innovation plans and programs in the preparation period, and the adaptation of the same needs of the respective population.

Key words: football, movement speed, preparation period, movement speed

References

1. Bjelica, D. (2003). Uticaj fudbalskog treninga na biomotorni status kadeta Crne Gore. *Doktorska disertacija*, Fakultet sporta i fizickog vaspitanja Univerziteta u Beogradu.
2. Gardašević, J. & Bjelica, D. (2014). Efekti rada u pripremnom periodu na brzinu vođenja lopte petnaestogodišnjih fudbalera. *Sport Mont*, 40,41,42/XII, 160-166.

INDEKS AUTORA / INDEX OF AUTHORS

- Aldijana Muratović 130, 131, 148
Aldvin Torlaković 84, 85
Aleksandar Ignjatović 20, 21, 144, 145
Aleksandar Ivanovski 35, 96, 97
Aleksandar Janković 62, 63, 64, 65
Aleksandar Nedeljković 42, 43, 44, 45
Aleksandar Stojanovic 32, 33
Aleksandra Zdravković 36, 37
Aleksić Dragana 140, 141
Ana Gromović 30, 31
Ana Orlić 30, 31, 86, 87
Andrea Aleksić 78, 79
Apostolos S. Theodorou 124
Armin Paravlić 40, 106, 107, 112, 113
Arnela Borovac-Bekaj 84, 85
Athanaïlîdis Ioannis 118
Boban Janković 144, 145
Bojan Jorgić 106, 107
Bojan Leontijević 63, 63, 64, 65, 66, 67
Bojan Mitrović 76, 77
Bojan Pejčić 86, 87
Bojan Ugrinić 96, 97
Boris Glavač 116, 117
Borislav Obradović 48, 49, 74, 75
Branka Savović 22, 23
Branko Aleksić 58, 59
Danica Janićijević 108, 109, 114, 115
Danica Pirs 26, 27
Daniel Hahn 70
Danijela Živković 52, 53
Danilo Bojanić 130, 131, 148
Dejan Gavrilović 54, 55
Dejan Ilić 108, 109, 114, 115
Dejan Suzović 44, 45, 58, 59, 72, 73
Đorđe Kozomara 110, 111
Dragan M. Mirkov 46, 47
Dragan Strelić 116, 117
Dragana Aleksić 78, 79
Dragiša Mladenović 94, 95
Dragoljub Višnjic 20, 21
Dunja Antić 90, 91
Dušan Filipović 48, 49
Dušan Mitić 90, 91, 104, 105
Dušanka Lazarević 30, 31, 38, 39
Duško Spasovski 88, 89
Ekrem Čolakhodžić 84, 85
Emmanouil Skordilis 124
Esad Besirovic 26, 27
Evdokia Samouilidou 24, 25
Fadilj Eminović 134, 135
Faris Rašidagić 84, 85
Feđa Pišćević 54, 55
Fehim Joshan 147
Filipović Nenad 66, 67
Giurka Gantcheva 138, 139
Gligor Škripan 114, 115
Goran Bošnjak 50, 51
Goran Kasum 28, 29
Goran Nerandžić 104, 105
Goran Nešić 60, 61, 68, 69
Gorana Tešanović 50, 51
Grigor Gutev 126, 146
Hristyana Guteva 125, 146
Igor Stanojević 106, 107
Ilona Mihajlović 50, 51
Iraklis A. Kollias 124
Irina Juhas 98, 99
Iva Dimova 125, 146
Ivan Vasiljević 130, 131, 148
Ivana Đorđević 128, 129
Ivana Klaričić 100
Ivana Milanović 80, 81, 86, 87
Ivaylo Lazarov 137, 147
Jadranka Kocić 78, 79, 128, 129, 140, 141
Jelena Simić 60, 61
Jelena Vukosavljević 52, 53
Jelio Dobrev 146
Josip Cvenić 100, 101
Jovan Gardašević 130, 131, 148
Katarina Herodek 76, 77
Katarina Horvat 100
Katarina Nejić 52, 53
Kellis Eleftherios 118
Ksenija Bubnjević 110, 111
Lela Marić 110, 111
Lidija Moskovljević 80, 81, 82, 83
Ljiljana B. Lazarević 38, 39
Mariana C. Kotzamanidou 124
Marija Bujanja 130, 131, 148
Marija Zegnal Koretić 35, 96, 97
Marijana Mladenović 28, 29
Marina Djordjević Nikić 116, 117
Marjan Malcev 34
Marko Aleksandrović 106, 107, 124

Marko Vidnjević 40, 112, 113
 Marković Milan 56, 57
 Milan B. Jelić 46, 47
 Milan Dolga 24, 25
 Milan Stojić 52, 53
 Mile Randelović 110, 111
 Milena Mijailović 108, 109
 Milena Živković 42, 43, 44, 45
 Milinko Dabović 82, 83
 Milivoj Dopsaj 54, 55, 56, 57, 66, 67
 Miloš Maksimović 116, 117
 Miloš Mudrić 58, 59
 Miloš Pejović 62, 63
 Miloš Popović 128, 129
 Milovan Ljubojević 130, 131, 148
 Miroslav Marković 76, 77
 Mladen Živković 48, 49
 Mourtzios Christos 118
 Natasa Sturza Milic 32, 33
 Nenad Djuricic 70
 Nenad Koropanovski 142, 143
 Nevenka Breslauer 35
 Nikola Ćosić 64, 65
 Nikola Majstorović 46, 47, 60, 61
 Olivera M. Knezevic 46, 47
 Petrović Lana 140, 141
 Plamen Nyagin 125
 Rade Jovanović 74, 75
 Radivoje Janković 142, 143
 Radivoje Radaković 66, 67
 Radmila Nikić 134, 135
 Rado Pišot 112, 113
 Rajko Milašinović 130, 131, 148
 Raša Dimitrijević 142, 143
 Ratko Stanković 48, 49
 Ratko Stanković 74, 75
 Roman Kebat 84, 85
 Rumiana Karapetrova 127, 147
 Ružena Popović 24, 25, 128, 129
 Sandra Radenović 22, 23, 36, 37
 Sanela Pacić 134, 135
 Sanja Mandarić 82, 83
 Saša Bujanj 48, 49, 52, 53, 74, 75
 Saša Đurić 42, 43, 44, 45
 Saša Pantelić 76, 77, 91, 92
 Saša R. Filipović 46, 47
 Saša Semeredi 120, 121, 122, 123, 132, 133
 Saša Vajić 116, 117
 Savičević Dejan 72, 73
 Sergej M. Ostojić 132, 133
 Sergej Ostojić 120, 121, 122, 123
 Slađan Milanović 46, 47
 Slađana Stanković 78, 79
 Slaven Kršić 50, 51
 Slobodanka Dobrijević 80, 81
 Snežana Radisavljević Janjić 30, 31, 38, 39
 Sophia Tripagnastopoulos 26, 27
 Srđan Milosavljević 96, 97
 Srećko Jovanović 58, 59
 Stanimir Stojiljković 88,89, 104, 105
 Stanković Slađana 140, 141
 Stefan Đorđević 106, 107, 112, 113
 Stela Srpak 136
 Stevan Grujić 110, 111
 Tanja Cvetković 74, 75
 Tanja Nedimovic 32, 33
 Tijana Purenovic 48, 49
 Tatjana Jezdimirović 120, 121, 122, 123, 132, 133
 Tea Pirsl 26, 27
 Tihomir Vidranski 100, 136
 Urška Gašperin 40
 Valdemar Štajer 120, 121, 122, 123, 132, 133
 Valentin Filiov 146
 Vassilios Panoutsakopoulos 124
 Veselin Jakovljević 52, 53
 Vasilija Krstic 134, 135
 Vessela Ivanova 139
 Violeta Novaković 91, 92
 Vladimir Grbić 68, 69
 Vladimir Ilić 104, 105
 Vladimir Jakovljević 50, 51
 Vladimir Miletić 98, 99
 Vladimir Timotijević 58, 59
 Vulović Radun 66, 67
 Živorad Marković 20, 21, 144, 145
 Zoran Savić 60, 61, 68, 69
 Zorana Miljkovac 82, 83
 Zorica Davidović 98, 99
 Zvonimir Tomac 100, 136

SADRŽAJ

PROGRAM RADA NAUČNE KONFERENCIJE 2015	5
2015 SCIENTIFIC CONFERENCE PROGRAMME	5
SESIJA 1 / SESSION 1	
Živorad Marković, Dragoljub Višnjić, Aleksandar Ignjatović	
STAVOVI UČENIKA MLAĐEG ŠKOLSKOG UZRASTA O ĐAČKOJ TORBI	20
THE ATTITUDES OF YOUNGER SCHOOL AGE STUDENTS TOWARDS A SCHOOLBAG	21
Sandra Radenović, Branka Savović	
SUPKULTURA NAVIJAČA STRANIH FUDBALSKIH KLUBOVA U SRBIJI	22
SUBCULTURE OF SUPPORTERS OF FOREIGN FOOTBALL CLUBS IN SERBIA	23
Ružena Popović, Evdokia Samouilidou, Milan Dolga	
KVALITET ŽIVOTA DECE I OMLADINE ŠKOLSKOG UZRASTA	24
QUALITY OF LIFE IN SCHOOL-AGE CHILDREN AND YOUTH	25
Tea Pirsl, Danica Pirsl, Esad Beširović, Sofija Tripagnastopoulos	
REKLAMIRANJE INVALIDNOSTI - FER-PLEJ ILI PRLJAVA IGRA	26
DISABILITY ADVERTISING - FAIR PLAY OR FOUL PLAY	27
Goran Kasum, Marijana Mladenović	
ANKSIOSNOST I TAKMIČARSKO SAMOPOUZDANJE KOD SPORTISTA SA I BEZ INVALIDITETA	28
ANXIETY AND COMPETITIVE SELF-CONFIDENCE AMONG ATHLETES, WITH OR WITHOUT DISABILITIES	29
Ana Orlić, Ana Gromović, Dušanka Lazarević, Snežana Radisavljević Janić	
KONSTRUKCIJA SKALE STAVOVA PREMA FIZIČKOM VASPITANJU	30
CONSTRUCTION OF SCALE OF ATTITUDES TOWARDS PHYSICAL EDUCATION	31
Natasa Sturza Milić, Tanja Nedimović, Aleksandar Stojanović	
ISTRAŽIVANJE STAVOVA VASPITAČA I RODITELJA O ZNAČAJU FIZIČKE AKTIVNOSTI U PREVENCIJI VRŠNJAČKOG NASILJA	32
RESEARCH OF THE PRESCHOOL TEACHERS' AND PARENT'S OPINION ON THE IMPORTANCE OF PHYSICAL ACTIVITY FOR THE PREVENTION OF PEER VIOLENCE	33
Marjan Malcev	
THE INFLUENCE OF MOTOR ABILITIES ON SOCIOMETRIC STATUS OF THE GROUP AT MALE STUDENTS OF 12 YEARS OLD	34
Marija Zegnal Koretić, Aleksandar Ivanovski, Nevenka Breslauer	
THE SPORTS COACH AND HIS ROLE AS AN EDUCATOR OF CHILDREN AND YOUNG ADULTS	35
Aleksandra Zdravković, Sandra S. Radenović	
MIŠLJENJE STUDENATA O POTREBI USVAJANJA ZDRAVIH ŽIVOTNIH NAVIKA	36
STUDENTS' OPINION ABOUT THE IMPORTANCE OF ACQUIRING HEALTHY LIFESTYLES	37
Dušanka Lazarević, Ljiljana B. Lazarević, Snežana Radisavljević Janjić	
PSIHOLOŠKI KORELATI UKLJUČENOSTI STUDENTKINJA U SPORT I VEŽBANJE	38
PSYCHOLOGICAL CORRELATES OF FEMALE STUDENT'S ENGAGEMENT IN SPORT AND EXERCISE ...	39

Marko Vidnjević, Urška Gašperin, Armin Paravlić PHYSICAL-COGNITIVE TECHNIQUES FOR ADULTS IN TRANSITION FROM LATE MIDDLE AGE TO EARLY OLD AGE.....	40
SESIJA 2 / SESSION 2	
Saša Đurić, Milena Živković, Aleksandar Nedeljković POUZDANOST I KONKURENTNA VALIDNOST PARAMETRA MAKSIMALNE SILE DOBIJENOG IZ LINEARNE RELACIJE SILA-BRZINA	42
RELIABILITY AND CONCURRENT VALIDITY OF THE MAXIMUM FORCE PARAMETER OBTAINED FROM THE LINEAR FORCE-VELOCITY RELATIONSHIP	43
Milena Živković, Saša Đurić, Dejan Suzović, Aleksandar Nedeljković RELACIJA SILA-BRZINA U RUTINSKIM TESTIRANJIMA MIŠIĆA NOGU: EVALUACIJA PARAMETARA MAKSIMALNE SILE	44
THE FORCE-VELOCITY RELATIONSHIP IN ROUTINE TESTING OF LEG MUSCLES: EVALUATION OF MAXIMUM FORCE PARAMETERS.....	45
Nikola J. Majstorović, Olivera M. Knezević, Milan B. Jelić, Sladan Milanović, Saša R. Filipović, Dragan M. Mirkov RAZLIKE U PERIFERNIM I SUPRASPINALNIM ADAPTACIJAMA NAKON TRI TIPRA AKUTNOG IZOMETRIJSKOG TRENINGA JAČINE	46
DIFFERENCES IN PERIPHERAL AND SUPRASPINAL ADAPTATIONS FOLLOWING THREE TYPES OF ACUTE ISOMETRIC STRENGTH TRAINING	47
Saša Bubanj, Dušan Filipović, Mladen Živković, Ratko Stanković, Borislav Obradović, Tijana Purenović METRIJSKE KARAKTERISTIKE MERNIH INSTRUMENATA ZA UTVRĐIVANJE EKSPLOZIVNE SNAGE MIŠIĆA.....	48
METRIC CHARACTERISTICS OF MEASURING INSTRUMENTS FOR THE DETERMINATION OF EXPLOSIVE MUSCLE STRENGTH	49
Goran Bošnjak, Vladimir Jakovljević, Gorana Tešanović, Ilona Mihajlović, Slaven Kršić STATIČKO I DINAMIČKO RASTEZANJE KAO PRIPREMA ZA SPRINTERSKO TRČANJE	50
STATIC AND DYNAMIC STRETCHING AS PREPARATION FOR SPRINT RUNNING	51
Jelena Vukosavljević, Saša Bubanj, Danijela Živković, Veselin Jakovljević, Milan Stojić, Katarina Nejić POVEZANOST EKSPLOZIVNE SNAGE I TELESNOG SASTAVA RUKOMETAŠA STAROSTI 14-16 GODINA U ZAVISNOSTI OD IGRAČKE POZICIJE.....	52
CORRELATION EXPLOSIVE STRENGTH AND BODY COMPOSITION HANDBALL PLAYERS AGED 14-16 DEPEND OF PLAYING POSITIONS	53
Feda Piščević, Dejan Gavrilović, Milivoj Dopsaj ANALIZA TAKMIČARSKE AKTIVNOSTI VRHUNSKIH KIK BOKSERA U OKVIRU MEĐUNARODNIH TAKMIČENJA.....	54
ANALYSIS OF THE COMPETITIVE ACTIVITIES OF TOP KICK BOXERS IN INTERNATIONAL COMPETITIONS.....	55
Marković Milan, Dopsaj Milivoj ANALIZA TAKMIČARSKE AKTIVNOSTI RVAČA SLOBODNIM STILOM NA PRVIM EVROPSKIM OLIMPIJSKIM IGRAMA 2015. GODINE.....	56
ANALYSIS OF FREESTYLE WRESTLERS' COMPETITIVE ACTIVITY ON THE FIRST EUROPEAN OLYMPIC GAMES 2015.....	57
Branko Aleksić, Vladimir Timotijević, Miloš Mudrić, Srećko Jovanović, Dejan Suzović RAZLIKE MOTORIČKIH SPOSOBNOSTI KARATISTA JUNIORSKOG UZRASTA PREMA SPECIJALIZACIJI ..	58
DIFFERENCES OF MOTOR ABILITIES OF JUNIOR KARATEKA ACCORDING THE SPECIALISATION ...	59

Goran Nešić1, Nikola Majstorović, Zoran Savić, Jelena Simić UTICAJ DVOMESEČNE PAUZE U TRENINGU NA MOTORIČKE SPOSOBNOSTI ODBOJKAŠICA UZRASTA 13 I 14 GODINA	60
THE IMPACT OF A TWO MONTH BRAKE FROM TRAINING ON MOTOR ABILITIES IN 13 TO 14 YEARS OLD FEMALE VOLLEYBALL PLAYERS	61
Aleksandar Janković, Bojan Leontijević, Miloš Pejović TAKTIČKA EFIKASNOST REPREZENTACIJA OSVAJAČA SVETSKOG PRVENSTVA U FUDBALU 2010. I 2014. GODINE	62
TACTICAL EFFICIENCY OF THE WINNING FOOTBALL NATIONAL TEAMS AT THE 2010 AND 2014 FIFA WORLD CUP	63
Bojan Leontijević, Aleksandar Janković, Nikola Ćosić UPOREDNA ANALIZA TAKTIČKOG ISPOLJAVANJA FUDBALERA PARTIZANA NA UTAKMICAMA U EVROPSKIM TAKMIČENJA I SUPER LIGI SRBIJE	64
COMPARATIVE ANALYSIS OF TACTICAL MANIFESTATION OF THE FOOTBALL PLAYERS OF PARTIZAN IN THE GAMES OF EUROPEAN COMPETITIONS AND THE SERBIAN SUPERLIGA	65
Radivoje Radaković, Milivoj Dopsaj, Nenad Filipović, Radun Vulović, Bojan Leontijević POUZDANOST ANALIZE KRETANJA VRHUNSKIH FUDBALERA TOKOM UTAKMICE MERENA SOFTVERSKIM SISTEMOM ZA ANALIZU KRETANJA TRACKING MOTION BIOIRC SYSTEM.	66
THE RELIABILITY OF MOTION ANALYSIS AT ELITE FOOTBALL PLAYERS DURING THE MATCH MEASURED BY THE TRACKING MOTION BIOIRC SOFTWARE SYSTEM	67
Zoran Savić, Goran Nešić, Vladimir Grbić RAZLIKE U ISPOLJAVANJU OPŠTIH I SPECIFIČNIH MOTORIČKIH SPOSOBNOSTI ODBOJKAŠICA I NETRENIRANIH DEVOJČICA STAROSTI 15 GODINA	68
DIFFERENCES IN MANIFESTATION OF GENERAL AND SPECIFIC MOTOR ABILITIES OF FEMALE VOLLEYBALL PLAYERS AND NON-ATHLETES GIRLS AGED 15 YEARS	69
Nenad Djuricic, Daniel Hahn INFLUENCE OF DIFFERENT ISOMETRIC PRELOADS ON ECCENTRIC FORCE ENHANCEMENT AND MUSCLE ACTIVITY.	70
SESIJA 3 / SESSION 3	
Suzović Dejan, Savičević Dejan PARAMETRI PLIVAČKIH SPOSOBNOSTI UČENIKA OSNOVNE ŠKOLE	72
PARAMETERS OF SWIMMING SKILLS OF PRIMARY SCHOOL PUPILS	73
Rade Jovanović, Saša Bubanj, Mladen Živković, Ratko Stanković, Borislav Obradović, Tanja Cvetković RAZLIKE U EKSPLOZIVNOJ SNAZI MIŠIĆA FUDBALERA I NESPORTISTA SREDNJEŠKOLSKOG UZRASTA	74
THE DIFFERENCES IN THE EXPLOSIVE MUSCLE STRENGTH OF FOOTBALL PLAYERS AND NON-ATHLETES IN HIGH SCHOOL AGE	75
Bojan Mitrović, Miroslav Marković, Saša Pantelić, Katarina Herodek RAZLIKE U MOTORIČKIM SPOBNOSTIMA UČENIKA SREDNJIH ŠKOLA IZ GRADSKIH I SEOSKIH PODRUČJA OPŠTINE LEBANE.	76
DIFFERENCES IN MOTOR SKILLS OF HIGH SCHOOL STUDENTS IN URBAN AND RURAL AREAS OF THE COMMUNITY OF LEBANE.	77

Andrea Aleksić, Dragana Aleksić, Jadranka Kocić, Slađana Stanković	
EFEKTI PRIMENE ELEMENATA RITMIČKE GIMNASTIKE U NASTAVI FIZIČKOG VASPITANJA NA RAZVOJ STATIČKE SNAGE KOD UČENICA MLAĐEG ŠKOLSKOG UZRASTA	78
EXAMINATION OF EFFECTS OF RHYTHMIC GYMNASTICS TEACHING OF PHYSICAL EDUCATION ON STATIC STRENGTH OF 3 TH & 4 TH GRADE PUPILS OF ELEMENTARY SCHOOLS	79
Slobodanka Dobrijević, Lidija Moskovljević, Ivana Milanović	
ZNAČAJ UKLJUČIVANJA DEVOJČICA MLAĐEG ŠKOLSKOG UZRASTA U REKREATIVNI PROGRAM RITMIČKE GIMNASTIKE.....	80
THE IMPORTANCE OF INVOLVING YOUNGER SCHOOL AGE GIRLS IN THE RECREATIONAL PROGRAM OF RHYTHMIC GYMNASTICS.....	81
Sanja Mandarić, Zorana Miljkovac, Lidija Moskovljević, Milinko Dabović	
EFEKTI RAZLIČITIH VRSTA PLESOVA NA KOORDINACIJU U RITMU.....	82
EFFECTS OF DIFFERENT DANCES TO THE COORDINATION IN RHYTHM	83
Aldvin Torlaković, Arnela Borovac-Bekaj, Faris Rašidagić, Roman Kebat, Ekrem Čolakhodžić	
EFIKASNOST PROGRAMA INKLUZIVNE NASTAVE TJELESNOG ODGOJA NA DJECU SA TEŠKOĆAMA U RAZVOJU- PRIMJER ŠKOLE PLIVANJA	84
EFFICIENCY OF THE PROGRAMME OF INCLUSIVE PHYSICAL EDUCATION IN CHILDREN WITH DISABILITIES – SWIMMING SCHOOL EXAMPLE.....	85
Bojan Pejčić1, Ana Orlić1, Ivana Milanović	
STAVOVI NASTAVNIKA FIZIČKOG VASPITANJA PREMA INKLUZIJI DECE SA RAZVOJNIM SMETNJAMA	86
ATTITUDES OF PHYSICAL EDUCATION TEACHERS TOWARDS INCLUSION OF CHILDREN WITH DEVELOPMENTAL DISABILITIES	87
Duško Spasovski, Stanimir Stojiljković	
PROCENA KVALITETA I OBIMA POKRETA U FITNESSU – COREFITMAX	88
ASSESSMENT OF MOVEMENT QUALITY AND QUANTITY IN FITNESS – COREFITMAX	89
Dunja Antić, Dušan Mitić	
MOTIVACIJA ŽENA ZA GRUPNE FITNESS PROGRAME	90
MOTIVATION OF WOMEN GROUP FITNESS PROGRAMS	91
Violeta Novaković, Saša Pantelić	
EFEKTI PROGRAMA AKTIVNOSTI NA REKREATIVNOJ NASTAVI NA PSIHO-FIZIČKE SPOSOBNOSTI UČENIKA	92
EFFECTS OF THE PROGRAM ON RECREATION ACTIVITIES CONTINUE ON THE ABILITY OF STUDENTS.....	93
Dragiša Mladenović	
SPECIFIČNOSTI OBUKE SKIJANJA KOD DECE.....	94
SPECIFIC FEATURES OF SKIING TRAINING WITH CHILDREN.....	95
Bojan Ugrinić, Aleksandar Ivanovski, Marija Zegnal Koretić, Srđan Milosavljević	
ANALIZA FAZA MENADŽMENTA U REALIZACIJI SPORTSKO REKREATIVNOG KAMPA	96
ANALYSIS OF PHASE OF MANAGEMENT IN REALIZATION OF SPORTS AND RECREATIONAL CAMP ..	97
Bojan Ugrinić, Aleksandar Ivanovski, Marija Zegnal Koretić, Srđan Milosavljević	
AKTIVNOSTI U PRIRODI U FUNKCIJI ZAŠTITE ŽIVOTNE SREDINE NA PRIMERU MAPIRANJA DIVLJIH DEPONIIJA NA IZLETNIČKOJ TURI	98
OUTDOOR ACTIVITIES IN FUNCTION OF ENVIRONMENT PROTECTION ON EXAMPLE OF MAPPING ILLEGAL DUMPS ALONG THE HIKING TOUR	99

Katarina Horvat, Tihomir Vidranski, Ivana Klaričić, Zvonimir Tomac, Josip Cvenić THE DIFFERENCES IN THE TOTAL WEEKLY ACTIVITY AND DIFFERENCES IN ONE LESSON OF PE BETWEEN 3RD AND 4TH GRADE PUPILS OF ELEMENTARY SCHOOL.	100
Josip Cvenić THE EFFECTS OF THEORETICAL CLASSES ON HEALTH RELATED FITNESS OF FEMALE STUDENTS ..	101
SESIJA 4 / SESSION 4	
Stanimir Stojiljković, Goran Nerandžić, Dušan Mitić, Vladimir Ilić UPOREDNA ANALIZA MAKSIMALNE POTROŠNJE KISEONIKA KOD ŽENA PUŠAČA I NEPUŠAČA U FITNESSU	104
COMPARATIVE ANALYSIS OF MAXIMAL OXYGEN CONSUMPTION IN FEMALE SMOKERS AND NON-SMOKERS IN FITNESS	105
Stefan Đorđević, Bojan Jorgić, Marko Aleksandrović, Igor Stanojević, Armin Paravlić ZASTUPLJENOST DEFORMITETA RAVNOG STOPALA KOD DECE OD 6 DO 14 GODINA U SRBIJI: SISTEMSKO PREGLEDNO ISTRAŽIVANJE	106
THE REPRESENTATION OF FLAT FOOT DEFORMITY FOR CHILDREN AGES BETWEEN 6 TO 14 YEARS IN THE REPUBLIC OF SERBIA: SYSTEMATIC REVIEW STUDY	107
Danica Janićijević, Milena Mijailović, Dejan Ilić STATUS STOPALA DEVOJČICA MLAĐEG ŠKOLSKOG UZRASTA	108
FOOT STATUS AMONG YOUNG SCHOOL AGE GIRLS	109
Ksenija Bubnjević, Lela Marić, Stevan Grujić, Đorđe Kozomara, Mile Ranđelović UTICAJ KONTINUIRANOG FIZIČKOG FEŽBANJA AEROBNOG TIPNA NA NIVO PROLAKTINA U KRVI TOKOM DOJENJA.	110
THE INFLUENCE OF CONTINUOUS PHYSICAL EXERCISE OF THE AEROBICS TYPE UPON THE LEVEL OF PROLACTIN IN BLOOD DURING BREASTFEEDING	111
Armin Paravlić, Rado Pišot, Marko Vidnjević, Stefan Đorđević UTICAJ NIVOVA FIZIČKE AKTIVNOSTI NA STEPEN UHRANJENOSTI ADOLESCENATA- SISTEMATSKO PREGLEDNO ISTRAŽIVANJE	112
THE IMPACT OF THE LEVEL OF PHYSICAL ACTIVITY ON THE BODY COMPOSITION PARAMETERS IN ADOLESCENTS- SYSTEMATIC REVIEW STUDY	113
Dejan Ilić, Gligor Škripan, Danica Janićijević ANALIZA TELESNOG STATUSA ODBOJKAŠICA UZRASTA OD 11 DO 14 GODINA	114
POSTURAL STATUS ANALYSIS OF FEMALE VOLLEYBALL PLAYERS 11-14 AGE	115
Boris Glavač, Marina Djordjević Nikić, Miloš Maksimović, Dragan Strelčić, Saša Vajić ŽIVOTNE NAVIKE, MORFOLOŠKI I MOTORIČKI RAZVOJ UČENIKA VOJNE GIMNAZIJE, TOKOM ČETVOROGODIŠNJEG ŠKOLOVANJA	116
LIFESTYLE HABITS, DEVELOPMENT OF MORPHOLOGICAL CHARACTERISTICS AND MOTOR ABILITIES IN THE MILITARY HIGH SCHOOL STUDENTS DURING FOUR YEARS OF STUDY	117
Mourtzios Christos Athanailidis Ioannis Kellis Eleftherios PLANTAR PRESSURES IN SIMULATED TENNIS MOVEMENTS AT DIFFERENT SURFACES	118

POSTER SESIJE / POSTER SESSION

Saša Semeredi, Valdemar Štajer, Tatjana Jezdimirović, Sergej Ostojić DODACI ISHRANI U PREVENCIJI I LEČENJU MIŠIĆNE ATROFIJE	120
DIETARY AGENTS IN THE MANAGEMENT OF MUSCLE WASTING.....	121
Tatjana Jezdimirović, Saša Semeredi, Valdemar Štajer, Sergej Ostojić AUTONOMNI NERVNI SISTEM I GOJAZNOST: AKTUELNA STANOVIŠTA	122
AUTONOMIC NERVOUS SYSTEM AND OBESITY: A NEW PERSPECTIVE	123
Vassilios Panoutsakopoulos, Apostolos S. Theodorou, Mariana C. Kotzamanidou, Marko Aleksandrović, Emmanouil Skordilis, Iraklis A. Kollias BIOMECHANICAL PARAMETERS OF TOP EUROPEAN T11 TRIPLE JUMPERS.....	124
Hristyana Guteva, Plamen Nyagin, Iva Dimova STUDY THE EFFECT OF COORDINATION EXERCISES ON SPEED DEVELOPMENT OF FOOTBALL PLAYER U17	125
Grigor Gutev MODELLING 110 M HURDLE STRIDE BASED ON SPORT RESULT FACTORS (JUNIOR AGE GROUP) ...	126
Rumiana Karapetrova QUANTITATIVE-QUALITATIVE EVALUATION OF SHOT PUT THROWERS SPORT AND TECHNICAL ABILITIES	127
Miloš Popović, Ivana Đorđević, Ružena Popović, Jadranka Kocić ZAŠTO, GDE, ŠTA I KAKO PROCENITI MOTORIČKU OSPOBLJENOST POJEDINACA U ADAPTIVNOM FIZIČKOM OBRAZOVANJU?	128
WHY, WHERE, WHAT AND HOW TO ASSESS MOTOR COMPETENCE OF INDIVIDUALS IN ADAPTED PHYSICAL EDUCATION?.....	129
Milovan Ljubojević, Jovan Gardašević, Rajko Milašinović, Ivan Vasiljević, Danilo Bojanić, Aldijana Muratović, Marija Bubanja EFEKTI RAZLIČITIH PROGRAMA IZ FIZIČKOG VASPITANJA NA MOTORIČKE SPOSOBNOSTI UČENIKA ZAVRŠNOG RAZREDA OSNOVNE ŠKOLE.....	130
EFFECTS OF VARIOUS PHYSICAL EDUCATION CURRICULUM ON MOTOR SKILLS IN STUDENTS OF FINAL GRADES IN PRIMARY SCHOOL.....	131
Valdemar Štajer, Tatjana Jezdimirović, Saša Semeredi, Sergej M. Ostojić MOGUĆI ANABOLIČKI EFEKTI SUPLEMENTACIJE KRETINOM KOD LJUDI	132
POSSIBLE ANABOLIC EFFECTS OF CREATINE SUPPLEMENTATION IN HUMANS: AN OVERVIEW ...	133
Sanela Pacić, Vasilija Krstić, Radmila Nikić, Fadilj Eminović CHRONIC DISEASES AS A DETERMINANT IN THE PLANNING OF PHYSICAL ACTIVITY IN PEOPLE WITH DOWN'S SYNDROME.....	134
HRONIČNE BOLESTI KAO DETERMINANTA U PLANIRANJU FIZIČKIH AKTIVNOSTI KOD OSOBA SA DAUNOVIM SINDROMOM	135
Stela Srpak, Zvonimir Tomac, Tihomir Vidranski APPLICATION OF MODIFY CROFIT BATTERY IN THE ELEMENTARY SCHOOL	136
Ivaylo Lazarov RESEARCH OF ANTHROPOMETRIC MARKS WITH MARATHON RUNNERS	137
Giurka Gantcheva1 ENSEMBLE ROUTINES IN RHYTHMIC GYMNASTICS - QUALIFICATION FOR THE OLYMPIC GAMES – 2016	138

Vessela Ivanova, Giurka Gantcheva SURVEY THE EFFECTIVENESS OF A METHODOLOGY FOR OPTIMIZING THE LEVEL OF MOTOR QUALITY SPEED AT 10-12 YEARS OLD, DEALING WITH RHYTHMIC GYMNASTICS.....	139
Petrović Lana, Kocić Jadranka, Aleksić Dragana, Stanković Slađana SPORTSKO-REKREATIVNI OBJEKTI I MENADŽMENT KAO ČINILAC USPEHA U SPORTSKO-REKREATIVNIM AKTIVNOSTIMA	140
SPORTS AND RECREATIONAL FACILITIES AND MANAGEMENT AS A FACTOR OF SUCCESS IN SPORTS AND RECREATIONAL ACTIVITIES	141
Nenad Koropanovski, Radivoje Janković, Raša Dimitrijević TREND PROMENA INICIJALNOG NIVOVA MOTORIČKIH SPOSOBNOSTI STUDETkinJA POLICIJSKE AKADEMIJE.....	142
TREND OF CHANGES IN MOTOR ABILITIES INITIAL LEVEL AT THE POLICE ACADEMY FEMALE STUDENTS	143
Aleksandar Ignjatović, Živorad Marković, Boban Janković PARENTS ATTITUDE TOWARDS MAIN BARRIERS IN GIRL'S FOOTBALL PARTICIPATION ON P.E. CLASSES.....	144
STAVOVI RODITELJA O GLAVNIM BARIJERAMA ZA UKLJUČIVANJE FUDBALA KAO AKTIVNOST ZA DEVOJČICE MLAĐEG ŠKOLSKOG UZRASTA	145
Iva Dimova, Hristyana Guteva, Jelio Dobrev, Valentin Filiov, Grigor Gutev RUNNING SPEED DYNAMICS IN THE DISCIPLINE 110 M HURDLES – MEN	146
Fehim Joshan, Ivaylo Lazarov, Romyana Karapetrova ASSESSMENT OF FUNCTIONAL EFFICTIVNES WITH ATHLETES IN MIDDLE DISTANCE RUNNING	147
Jovan Gardašević, Ivan Vasiljević, Danilo Bojanić, Aldijana Muratović, Milovan Ljubojević, Rajko Milašinović, Marija Bujanja SIX-WEEK PREPARATION PERIOD AND ITS EFFECTS ON TRANSFORMATION MOVEMENT SPEED WITH FOOTBALL PLAYERS UNDER 16.....	148
INDEKS AUTORA	149

